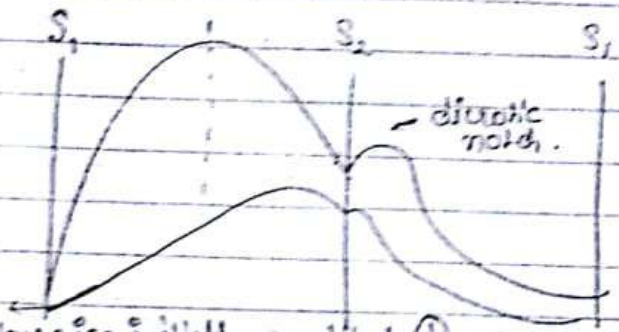
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date: 27/02/2017
Page: 1

CVS

① PULSE :



AS
= Slow rise initially, amplitude ↓, dicrotic notch ↓/∅

- Aortic value = 2.5 cm^2
- Severe A. stenosis = <1 cm^2
  ejection velocity ⩽ >4 m/sec. (↓ = 1 m/s)
  transvalvular gradient > 40 mm
  (Left ventricle – Aorta)
- Super-severe = E Delay > 5 m/sec.
  TV gradient > 55 mm.

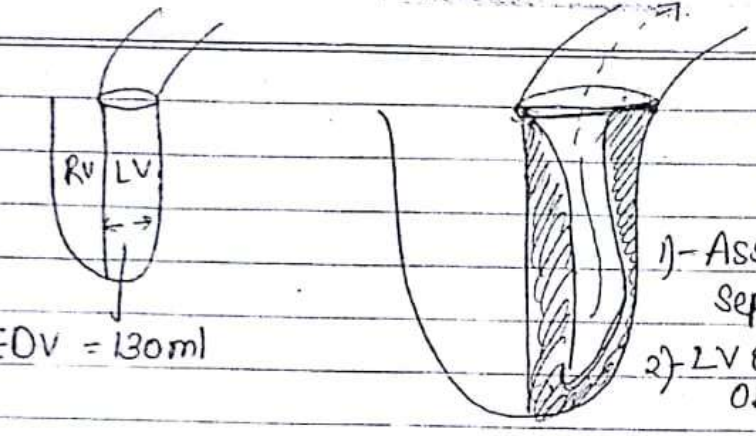
AS
↳ Slow rise (Pulsus tardus et PARVUS) ← Slow rise → ↓ amplitude
↳ amplitude ↓
↳ dicrotic notch ↓/∅ (Anacrotic Pulse)
↳ Ent Dnotch

② HOCM :

- AD
- β myosin gene defect
- Chr. 14

www.FirstRanker.com
Scanned by CamScanner

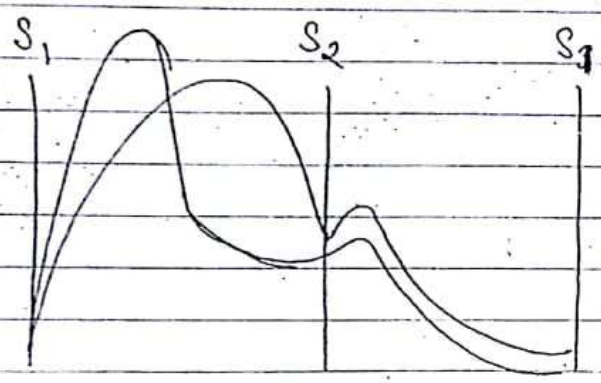
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



EDV = 130ml

1)- Assymmetrical Septal Hypertrophy
2)- LV outflow tract Obstruction (LVOTO)
3)→ Diastolic dysfunction
Systolic dysfunction.

(4)



collapsing pulse
↓ Radial (A)
Character.

HOCM
- fast rise
- fast fall
- "Jerky pulse"
- Pulsus Bisferiens
↳ character → Carotid (A)

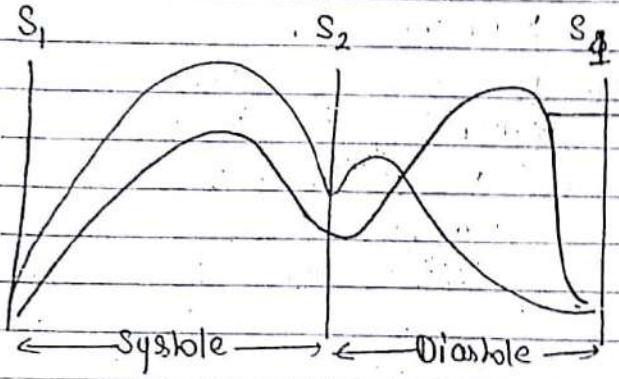
(3) Water Hammer pulse / Corrigan's / collapsing pulse.
- Radial (A) = character.
- Aortic Regurgitation

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

③ Dilated Cardiomyopathy (DCM): Globular ♡.

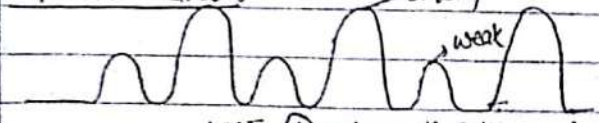
- Alcohol → toxin
- Sequalae of viral myocarditis
  - ↳ Coxsackie B
- m.c. non-infective: sarcoidosis
- Chemotherapy in Hodgkin lymphoma → ABVD
  - A - Adriamycin = Cardiotox
  - B - Bleomycin
  - V - Vinblastine/dar
  - D - Dacarbazine



- twice beating pulse (systolic + dystole).

A - Alternence → LVF
B - Bigeminus → V. Bigeminy.
A → Anacrotic → AS
B → Bisfirience → HOCM ('Jerky pulse')
C → Collapsing → AR
D → Dicrotic → D.C.M. (twice beating pulse)

P. Alternans:



④ Viral myocarditis

- LVF ① Ant. wall MI = LAD
  - ② wet beri beri = thiamine ①
  - ③ S. Aranda

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(7) Digoxin toxicity
↳ m.c. Arrhythmia = Ventricular Bigeminy

DOC = lignocaine / Phenytoin
↑ with companion

P. Bigeminus

(N) pulse (N) pulse

Premature ventricular Contraction
↓
weak pulse

(N) pulse
↓
weak pulse
(N) pulse
↓
weak pulse

digoxin toxicity DOC = digiband
↓ 1st line Mx (1) KCl correction (i.v.)
(2) Mg correction ($MgSO_4$) (i.m.)
(3) digiband
Hemodialysis (not done)
↳ b/c digoxin = ↑↑ Vd (volume distribution)
↑↑ Protein bounding.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Normal urine output = 1ml/kg/hr = (1-5L)
Oliguria = <0.3ml/kg/hr
Polyuria = >2ml/kg/hr

companion

② CHF

① Acute CHF : — 1st earliest symptoms ↓ Sympathomimetic overactivity

① - diaphoresis (+)
② - Palpitations
③ - Pink frothy sputum
④ - Dyspnea grade III (minimal activity)
⑤ - dizziness / vertigo / syncope

O/E

- tachycardia (earliest sign)

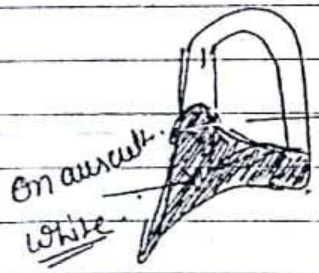
LVF	RVF
① - SBP ↓	① m.c.c. of RVF = LVF > Cor Pulmonale
② - oliguria	② JVP ↑↑ [5-8 Cm H_2O] Pulsatile JVP (↑↑)
③ - pulmonary edema - B/L fine Crepitations	

* Bi-Basilar Crept = ILD (Interstitial lung ds)

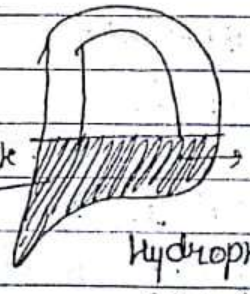
non pulsatile ↑ JVP
① Cardiac temponade
② SVO Sup. vena cava Obstruction

④ S_3 : Ventricular gallop rhythm (low pitch ♡ sound : BELL)

⑤ B/L infra-axillary Breath sound ↓↓



Meniscus sign
(Pl. effusion B/L
C.P. angle Blunting



Hydropneumothorax
C.P angle blunt

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

JVP pulsation
- pulsation seen
- never felt
- Jugular venous frequency
-
- deep inspiration (N) → JVP falls
- RVF (+) + deep inspiration → JVP rise
(compliance ↓) (Kussmaul sign (+))
① Constructive pericarditis
② RCM
③ Inf wall MI
not (↑) in
Cardiac tamponade.

Abdomino-Jugular Reflex
- JVP (+) palpable
- Kussmaul sign (+)
(+) - Tender Hepatomegaly → indicate RVF
↳ sudden stretching of capsule of liver
Pulsatile liver = TR (Tricuspid Regurgitation)
Systolic pulsation Liver = TR
pre-systolic " " = T.S.

FRAMINGHAM CRITERIA - feature of acute CHF

minor criteria	major criteria
① Tender Hepatomegaly (not first sign)	① ↑↑ JVP
② Hypotension	② ↓ Bf. crepitation (Fine)
③ oliguria	

Pedal edema
↳ feature of chronic CHF

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Kerley B line = 1.5 cm

Investigation: (Acute CHF)

① - BNP level ↑
B-type natriuretic peptide ↑
ventricle ⊕ → volume overloading

② SBP ↓ → GFR ↓ → RAAS ⊕ → aldosterone ↑
↳ ⊕ = ENac

→ K/H+
CO2
ENac
Salt + H_2O

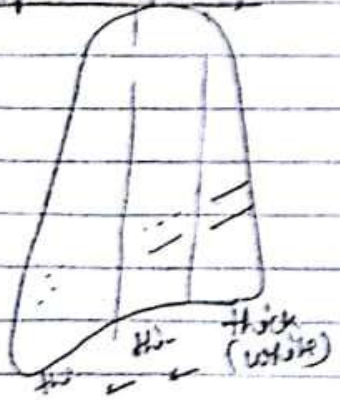
② Metabolic Alkalosis

③ urinary sodium : low

④ CXR
↳ earliest Radiological sign of pulmonary edema
- prominent upper lobe veins (cephalization)
- CT Ratio ↑ > 0.5
- PCWP ↑ (N = 8-12 mm Hg)
↳ due to ↑ transudation
- Bat wing pulmonary edema
- Cardiac border not seen
- Silhouette sign
⊛ - Kerley B line
(1cm to pleural surface)
outer border

① CHF
② Lymphangiomatosis
③ Carcinomatosis

Vascular pattern of lung



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

IOC for CHF = Echocardiography → only pick up systolic dysfunction companion

a) Systolic dysfunction

$= EF = \frac{SV\ (N)}{EOV} = 65\%$

$EF < 65\%$

b) diastolic dysfunction $= \frac{SV}{EOV\ (\uparrow)}$ (compliance ↓)

↓

Pulmonary edema (Pooling of blood in lungs) . EF > (N) / (↑)

Ejection fraction method calculation: (EF) = volume 3D concept

1. Thermodilution
2. Echo
3. M.U.G.A scan
4. Cardiac MRI

↓

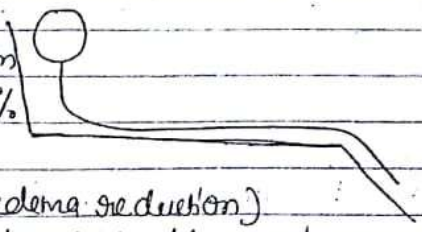
Cardiac MRI (best test)

V

multiple uptake gated acquisition scan = Tc^{99}

Rx: Acute CHF

1. Reverse Trendelenburg position
2. O_2 @ Rebreathing Mask >60%
3. i.v. Furosemide 20mg
4. (i.v.) Morphine a) (Pulmonary edema reduction) causes pooling of blood from pulmonary to systolic system) (3mg i.v. / 10mg i.m. / 15mg sc)
   b) sympatholytic (↓ infarct size)
   c) Air-Hunger ↓
   d) Pain ↓



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Acute CHF management
L - Lasix
M - Morphine
N - Nitrates
O - O_2
P - Positioning

↓

if still
SpO_2 - 80%
Crepitation - +++

↓

Cardiogenic Shock

⑤ I.V NTG drip

Dobutamine - β_1 - HR ↑

Dopamine
1-2 µg/kg/min D_1 ↑GFR
2-10 µg/kg/min β_1 ↑CO
>10 µg/kg/min α_1 α_1 → VC → ↑BP.

Nor-epinephrine.
↳ DBP ↑ → coronary flow ↑

⑥ ⓐ Norepinephrine (best drug) (DBP - ↑) 70 - 100

ⓑ add dopamine
SBP - 100 mmHg

Ⓒ dobutamine
(only given after SBP raising)

↓

⑦ SpO_2 : 70%
Crepitation - ++

↓

NESIRITIDE = natriuresis
MILRINONE = ino-dilator
(↑ power, ↓ load)

↓

⑧ central cyanosis ++
↳ Left ventricle assist device (LVAD)
[HEART-MATE TM]

- no role of Digoxin → Acute CHF
① ↳ ⊖ Na/K pump
↑ Ca^{+2} - inotropic ↑
↑ O_2 consumption.
② vagus stimulation
↑ HR → ↓ O_2 consumption

③ proarrhythmogenic drug.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
Anti companion

β blocker CI in - acute CHF

- preffered agents = Mx chronic compensatory CHF
- mortality reducing drug - in chr. CHF
  - Metoprolol
  - Bisoprolol
  - Carvedilol

Carvedilol > metoprolol

Chr CHF ① ventricular remodelling
ACE ⊖
β-blocker = O_2 consumption ↓

② Pedal edema / Ascitis / Pericardial edema
- Spironolactone (S/E gynecomastia)
- eplerenone (no s/e)



Acute CHF = LMNOP
Cardiogenic shock = only shock CVP ↑
NE + dopamine + dobutamine

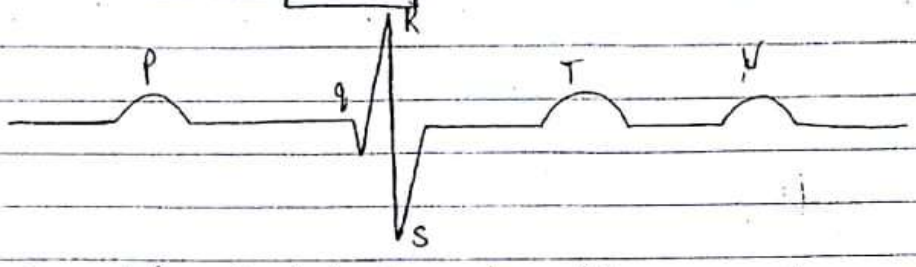
Chronic CHF - β-blocker = DOC
- ACE ⊖
- diuretics (uptil edema)

① Pedal edema
② Ascitis
③ pericardial edema.

www.FirstRanker.com
Scanned by CamScanner

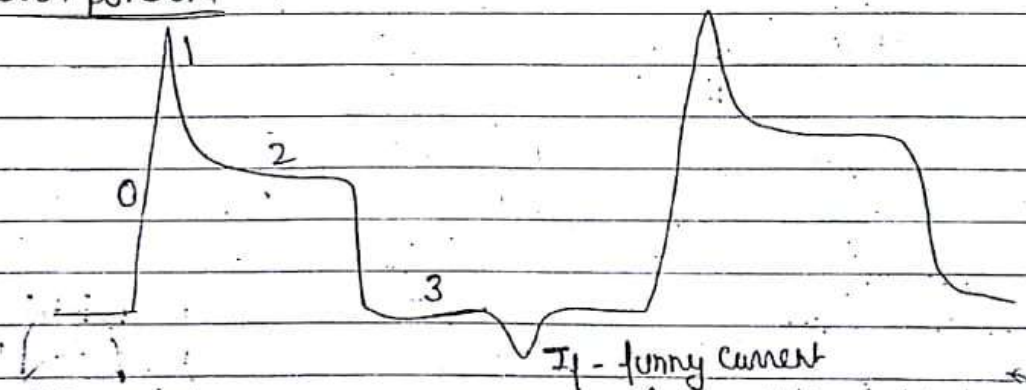
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ECG



U → delay Repolarisation of papillary muscle
T → Repolarization
q → septal activation
qRS → ventricular depolarization
P → Atrial depolarization
P-R int → A-V nodal conduction
S-T segment → iso-electric segment

Cardiac Action potential



Automaticity decided by

phase 2 → ST segment
phase 0 → qRS
phase 1 → qRS
phase 3 → T wave

SA node potential = −55mV
firing potential SA node = 60-100 bpm.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(60-100bpm)
SA node
Bachmann Bundle
Rt. Atria
Wenckebach bundle
(45-60bpm) AV node
AV nodal delay.
BOH (40bpm)
Purkinje fibre (20-40bpm)
(15-20bpm)
R
T

depolarisation = qRS = endo - epi
Repolarisation = T = epi - endocardial.

??
"Isolated Cardiac tissue"
↓
depolarization = epi - endo
Repolarization = endo - epi

Common area
RAD
LAD
P wave
40msec

Pwave
Pwave = < 120 msec = 3 small squares
Pwave (HI) = <2.5 mm = limb lead
<1.5 mm = Chest lead.

① MS : LA ↑
>120msec
P mitrale

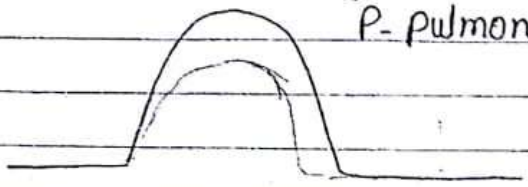
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

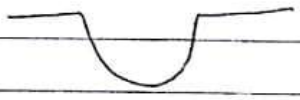
Date / /
Page
my companion

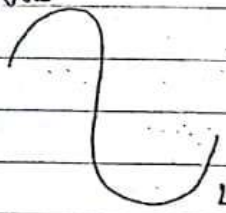
② M.S = LA enlarge
PA Hypertension
RVH : RA overloading

P- Pulmonale = long standing M.S.
> 2.5 mm limb lead
(किसी भी lead में हो सकता है)

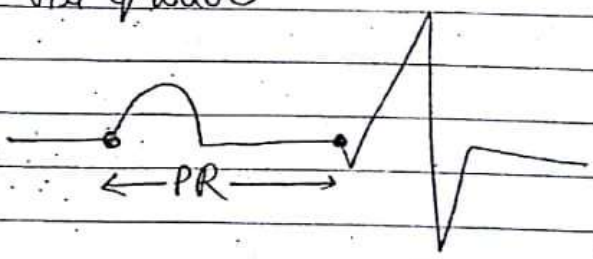


P- wave = always upright <120 msec

aVR ⇒  = Ove

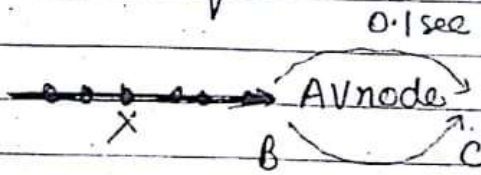
V_1 ⇒  = biphasic
RAD
LAD

② PR interval
till q-wave


PR

↓
1st degree Heart Block

(1) Athletes (Marakon)
(2) Aschoff nodule - Rheumatic
(3) Sarcoidosis : granuloma
(4) Hemochromatosis
(5) endomyocardial fibroelastosis (Sonthi India) (Idiopathic)



$PR \propto \frac{1}{HR}$

(N) PR = 120 - 200 m sec
(3-5 small sq.)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

(N) PR = 160 m sec
Sit up : HR ↑
PR = 140 msec

I° degree block = effort intolerance
↳ ECG = P-R = 200 msec
(after exercise no change of PR)

Connection Problem not pacemaker

↓

℞ = Oral Atropine
(anticholinergic drug)

defect

		HR	PR
SA node	→ Sick sinus syndrome	45-60 bpm	↑
AV node	→ Complete ♡ block	< 40 bpm	
BOH	→ Mobitz II ♡ block	≤ 15-20 bpm	

- m.c. bradyarrhythmia causing sudden cardiac death post MI
↳ Mobitz II H. Block

- m.c. tachyarrhythmia SCD post MI - (reverse sign)
(m.c. arrhythmia after MI) ↳ ventricular fibrillation.
∴ < 1 Hr (golden period)

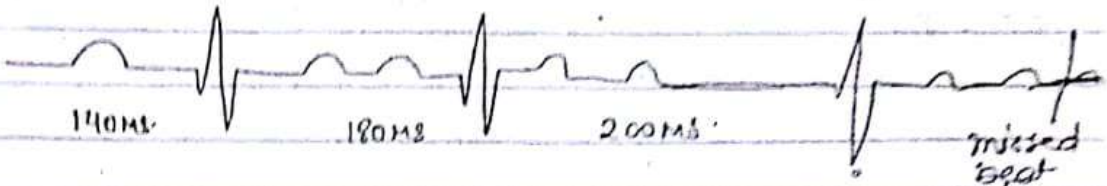
② 2° degree ♡ block

ⓐ Mobitz I / wenckebach phenomenon = problem inside the AV node

SA node ⟶ AV node ⟶ slow conduction
A B X C
⟵ PR ⟶
PR ↑↑↑ - missed beat = PR ↑↑↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



asymmetrical PR interval before & after missed beat.

- dizziness vertigo syncope

⑥ Mobitz II

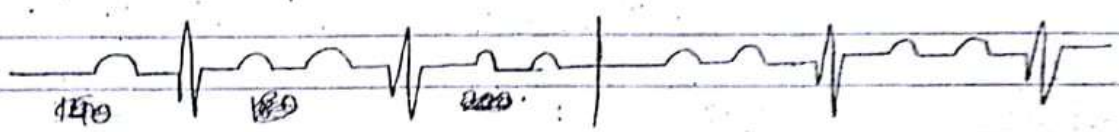
SA node → AV node → X

A B C

← PR →

defect in BOH

- no change in PR interval



- Symmetrical PR before & after missed beat
- lethal Arrythmia (anteroseptal myocardial infarction)
- Pacemaker (Temporary pacemaker insertion = best Rx)

3rd degree ♡ block

SA node → atrial Rate = 100 bpm

no conduction (complete damage)

AV node — AV dissociation ⊕nt → low Cardiac Output

BOH → ventricular Rate = 40 bpm

Reason
1. Bradycardia
2. AV dissociation

Symptoms
on standup - position change
↳ HR, no change
- syncope/vertigo
- dizziness
(Hollat seatune karte hain)

K/a
Stokes Adam Syndrome/
complete ♡ block

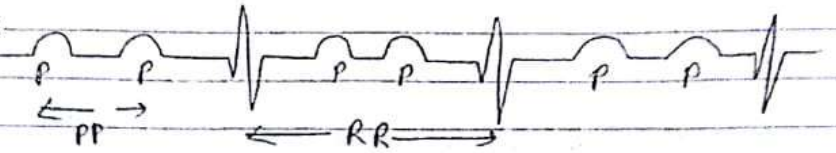
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

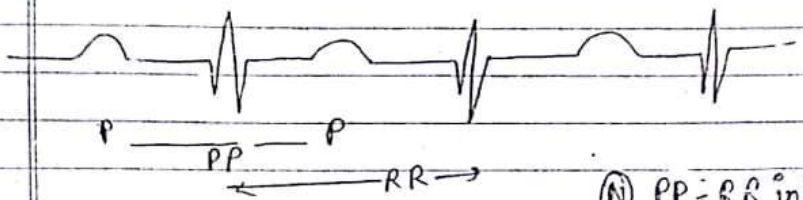
Rheumatoid Arthritis → improve during pregnancy. (exception)

On E.C.G.

3rd degree



(N) P.



(N) PP = RR interval.

3rd degree block

(1) absence of (N) Sinus rhythm.
(2) P-P interval } unequal
R-R interval }

T/t of choice = Dual Pace

I	2	3
SAnode ←→ AVnode	MI : weekness	SLE - autoimmune
effort intolerance	PR ↑↑↑ → missed beat → ↑↑↑	Ro Ab → IgG
PR (↑)	HR ↓↓ → dizziness → ↓↓	transplacental spread
Symp (+) : PR (↑)		fetus
Rx : oral Alnopine		SAnode → loobpm
		AVnode
		BOH → <40bp even destroy before birth of baby.
	MII	
	PR : missed beat : PR	
	BOH #	(N) neonate HR = 120 bpm.
		SLE fetus
		Apgar score (↓)
		(N) delivery

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Baby born from SLE mother:

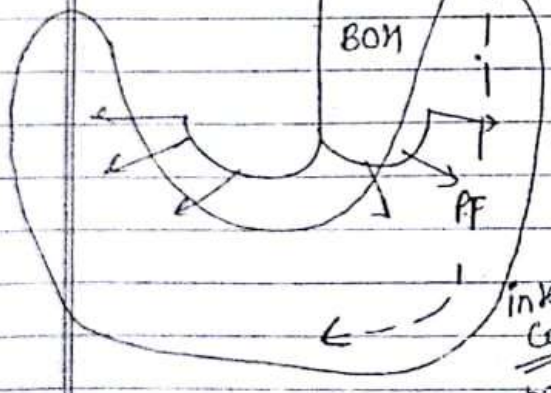
HR = 40 bpm
mario Reflex = ↓ / sluggish
(N) delivery.
Apgar score = low
on ECG = P-P, R-R unequal

→ Klg neonatal lupus caused by Lo Anti-So

Rx : Dual Pacing (on 1st day of life)

neonatal lupus

(1) Ro - IgG1 (cross placenta)
(2) Butterfly Rash
(3) HR ↓ : ECG
(4)



→ Wolf Parkinson White syndro

fast conduction

(1) accessory pathway
(2) Pre-excitation syndrome
↓ Klg
Bundle of Kent

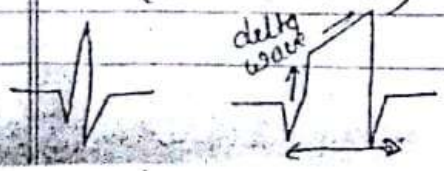
(3) 20-yr → asymptomatic
Palpitations
Syncope on exercise
Sudden cardiac dea
In sibling

inter-myocyte conduction (slow, so wide QRS)

HR ↑ = diastole duration ↓
EDV ↓
SV ↓
CO ↓

Ventricular Rate = 220 - age bpm
(Possible maxi)

(4) ECG :
a) short PR interval (fast conduc
b) wide QRS complex



www.FirstRanker.com
Scanned by CamScanner

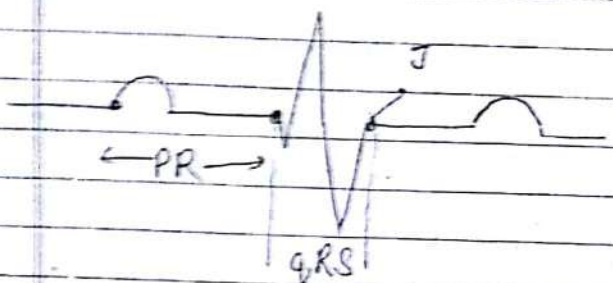
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
AnyCompanion

(N) QRS complex = 80-100 msec = 2 small square.

wide QRS = WPW syndrome.
(Intermyocyte conduction)

(2)



PJ = PR + qRS ⇝ Constant.
↓ ↓
Short Knit broad intermyocyte conduct
↓
i.e. in WPW syndrom PJ interval generically constant. acquired dis.

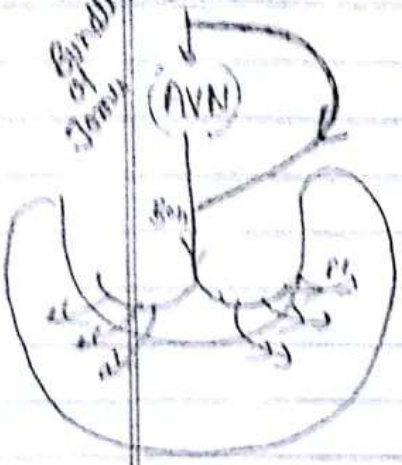
Q. 20 yr : Pilot
asymptomatic
medical fitness.

ECG = PR < 120 msec
< 3 small square
delta wave
> qRS : 2 small square.
PJ = (N)
↓
UNFIT

℞ ⇒ Oral flecainide = DOC
Radio frequency Ablation = TOC

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



Lown - Ganong Levine Syndrome

1) accessory pathway
2) Sudden Cardiac death in sibling
3) Asymptomatic
Palpitation
Syncope on exertion
4) ECG:
PR - <120 msec <3 small squares
QRS - (N) ≤2 small squares
PJ - (↓)/short
no delta wave
↓
unfit

Rx: Oral flecainide (DOC)
Radiofrequency Ablation (TOC)

Pre excitation Syndrome

(1)	WPW Syndrome	LGL Syndrome
(2)	Kent's Bundle	James Bundle pathway
	PR (↓)	PR (↓)
	delta wave (+) (Seen in upslope of R wave)	(-)
	QRS complex - wide	(N)
	PJ interval (N)	Short
	DOC Oral flecainide	Oral flecainide
	TOC RFA	RFA

SCD

(1) MI → V fibrillation ≫ Mobitz II ♡ block — actual cause of death = Ischemic Ventricular fibrillation
(2) HOCM - Athletes/Football →
(3) WPW syndrome → HR ↑ → EDV ↓↓ → CO ↓
(4) LGL syndrome →
(5) BRUGADA Syndrome → Sodium channel defect → sudden cardiac death

m.c.c. of sudden nocturnal death = South Asian males.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

MRI Relative C/I for = Pacemaker pt.

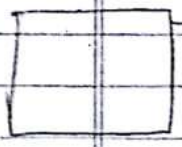
Date / /
Page
CardioCompanion

Bradyarrhythmia : Pacemaker required

① Sick-Sinus syndrome = 40-60 bpm → SAnode ↓
② Complete H. Block = <40 bpm → AVnode ↓
③ Mobitz II H. Block = 15-20 bpm → BOH ↓
↳ (Temporary pacemaker insertion)

Ist degree H. block = oral atropine
Ist degree H. block in Athlete = may be (N) = no Rx.

Site of the pacemaker = left side infraclavicular area below the skin of chest (Computer...
→ having titanium coating
→ Battery life - 5-7 yrs
→ leads (Radio-opaque)
↳ touch ~~Left~~ Right ventricle (not Rt Atria)
- Single lead pacemaker = RV
- double lead pacemaker = RA. RV
- triple lead pacemaker = RA RV LV (Superior)


→ Read = ECG
Analyse ECG
arrythmia detect
DC Shock give.

Implantable Cardioverter defibrillator (ICD) = for tachyarrhythmia pt.
Site = where tachyarrhythmias

① DCM → alcohol
② RCM
③ HOCM
④ LV aneurysm → MI
⑤ Brugada Syndrome → S
⑥ Long QT syndrome (paediatric cond.
⑦ Romano-ward syndrome (AD inheritance)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Holiday Heart Syndrome
- Binge drinking → DCM
- Atrial fibrillation.
- SCD
- T/t = ICD

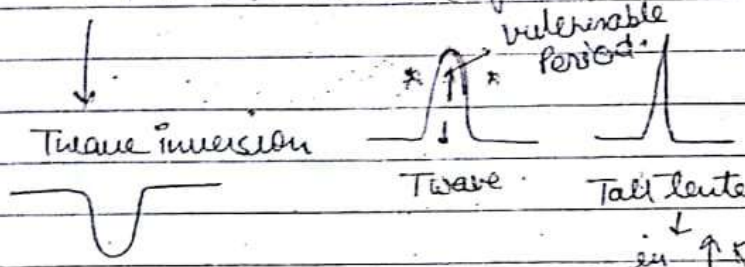
(2) RCM → Amyloidosis
(3) HOCM → AD, Chr.
→ MI

Twave

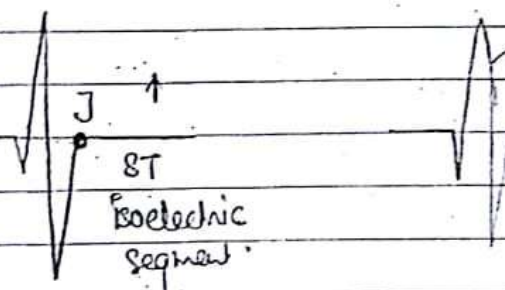
MI → 1st sign in ECG is tall Twave (Hyperacute Twave)

↓

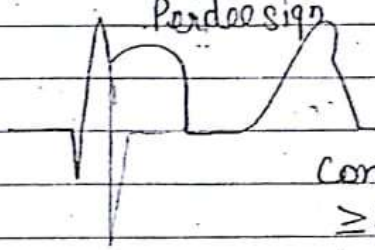
Twave inversion



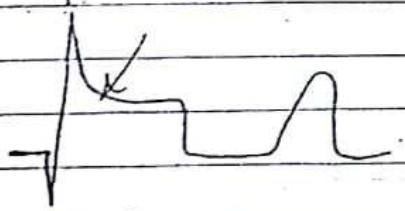
(2) minute



MI
↓
Pardee sign



Convex
≥ 2mm ♂
≥ 1.5 mm ♀



ST ↑ Concave
☆ acute pericarditis.

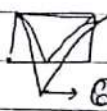
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Hrs ③ deep Q wave

q_1 = Septal activation ⑦
= lead V_5, V_6
= 40 msec
<1mm



Q wave = cell death = can't reverse
(in lead V_5, V_6) = ECG finding persist for life

Or = previous/old MI
Persists till life

(N) V_1 = QS or rS V_3 = RS V_6 = R/S

non-progression of R-wave = ECG finding of MI

① Hyperacute T] reperfusion myocardial ischemia → see.
② T-wave inversion]
③ ST ↑ Pardee → myocardial injury → min
④ deep Q] cell death. → hrs.
⑤ non-progression of R wave]
⑥

Current of injury :
= ST ↑
= Pardee sign.

STEMI → ST elevation MI :
- Catheter lab facility ⑦
- door to device time < 90 min.
- Percutaneous intervention (PCI)
(Primary PCI)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Cath lab facility ⊖
- Thrombolysis
- door to needle time <30 min
- PCI >> thrombolysis

NSTEMI :- ABE - MOAN
A - Abciximab (glycoprt II_b/III_a Ⓡ antagonist)
B - β-blocker
E - enoxaparin (Blood thinner)
M - Morphin
O - O_2
A - Aspirin
N - NTG → DOC

↓

Check SpO_2 ↓, BP ↓, crepts + (If not improved)

↓

delayed PCI (delayed percutaneous intervention)

T-wave inversion :
① myocardial ischemia (in all leads)

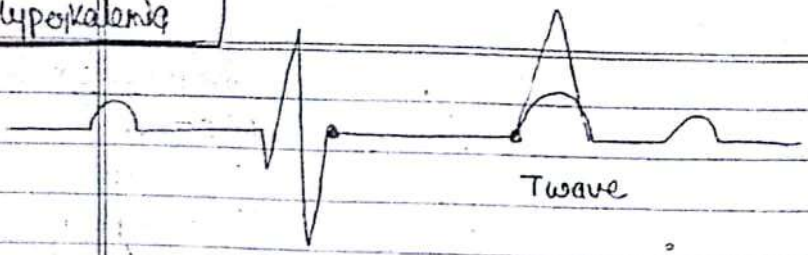
myocardial injury (most)
→ Troponin I = Ⓝ < 0.04 mg/dL
in MI = ① atleast 2 time, [X5] . [X10] times
↓ minimum for MI — seen in type 4A MI — type 5 MI

myocompanion
-thrombolysis
① STEMI
② Stroke
③ large pulmonary ⑤ embolism
④ Severe deep ⑤ thrombosis
⑤ Acute limb ischemia

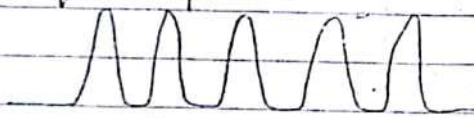
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Hyperkalemia



K ↑ = Repolarization ↑
>6.5 = tall tented T wave
= ST ↑
>7.0 = P wave ↓/⊖
>7.5 = QRS broades
>8.0 = QRS merge ⊂ T



Sine wave pattern
↓
death
↓
Cause → diastolic Arrest

℞: ① DOC: Calcium gluconate (i.v.)
② insuline Regular iv. (most effective drug) @
via infusion pump.
(send K^+ inside cells → K^+ fall)
(0.5 meq - 1 meq)
③ Salbutamol nebulization
④ LASIX / Furosamide
↳ loss of K^+ through urine = Kaliuria
⑤ K^+ binding Resin enema
Kalyexate (action after >4 hrs) @
⑥ Hemodialysis (most effective strategy) @

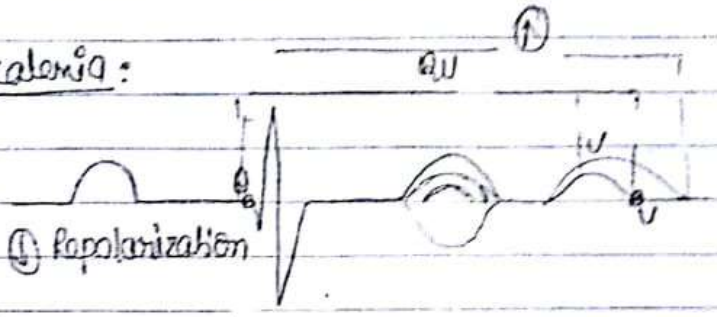
In Hyperkalemia ECG changes not cured is →
(i.e. Sine wave pattern not present in ECG)
So no immediate threat to life
↓
So Calcium gluconate is not given

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Q. not routinely used for Rx of Hyperk$^+$ → Soda bicarbonate
(used when metabolic acidosis is

② Hypokalemia:



① Twave ↓↓/Onf
② Twave inversion* → myocardial ischemia
③ Prominent U wave
(duration of U-wave ①
not vertical height)
④ Prolonged QU interval
death → due to Respiratory paralysis → due to ① K$^+$

Rx: KCL + IVF

③ ST-elevation
① electrolyte - K↑
② LBBB
③ early repolarization variants = Physiological ST ①
④ Ventricular Aneurysm
T ⑤ Trauma : Pericardiocentesis
I ⑥ Injury : Ischemia : MI
O ⑦ Osbourne wave - in hypothermia
N ⑧ non-occlusive vasospasm | Prinzmetal angina → Only cause of ST ① angina
Variant angina

Acute pericarditis : Concave upwards
Brugada syndrome → ECG : ST ① in V$_1$, V$_2$
Tako-tsubo cardiomyopathy.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Brugada syndrome
- ST ↑ in $V_1 V_2$
- SCN5A #
- RV epicardium
- Torsades de pointes → SCD

ST depression

(1) Chronic stable angina :
↓
>70% obstruction in any coronary (A)
- chest pain → exertion / emotion
- duration < 10 min
- Recurrent attack
- Post prandial angina
- K/a Hibernating myocardium / Reversible ischemia

(2) LVH :
↓
in pt HOCM / Aortic stenosis / HTN (long standing)
↓
demand of O_2 ↑
supply (N)
↓
Subendocardial ischemia

(3) (N) sized ♡
- a) Cocaine snorting (vasoconstrictor)
- b) severe Anemia → Hb ↓ → O_2 carrying capacity (↓) → ischemia.

(4) Hypokalemia (K^+ ↓)

(5) Digoxin (Hockey stick sign)
(not digoxin toxicity it cause → arrhythmia)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

mycompanion

Digoxin administration (not toxicity)

- PR ↑ : HR ↓
- ST ↓
- QT ↓

Digoxin toxicity = digibond

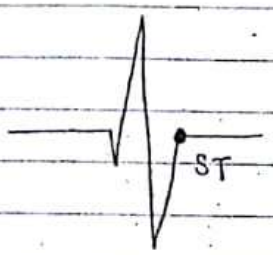
extra cardiac >> Cardiac

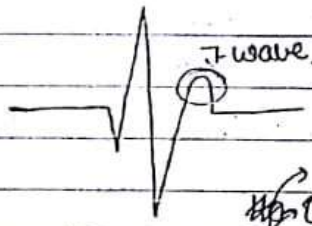
m.c. S/E N/V

V. bigeminal = lignocaine

Characteristic Xanthopsia (yellow vision)

Nonparoxysmal Atrial Tachycardia (NPAT) = No ↓↑ required
c AV block





J. wave
Osbourne wave

Hypothermia → fast Rewarming active

Catheter Core temp < 35°C

most accurate site for checking core body temp

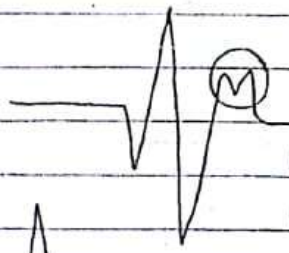
① Pulmonary Ⓐ
② Rectum
③ Lower part of esophagus
④ tympanic memb.

mild 32-35
moderate 28-32
Severe < 28°C

TOC
① warm saline Peritoneal dialysis.
② space blanket

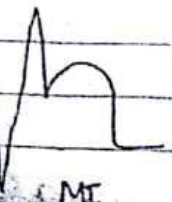


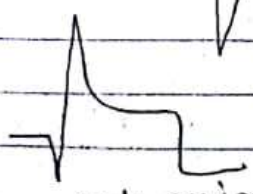
= WPW syndrome



Epsilon wave

Arrhythmogenic (ARVD)
Rt. ventricular dysplasia.





acute pericarditis.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

SVT (1) AF
(2) PSVT
(3) Atrial flutter
(4) WPW syndrome

Date / /
Page
my companion

SVT = narrow complex qRS = ≤1 small square
(Supraventricular (1))



→ ectopic focus : 200 bpm
intermyocyte conduction : slow

(N) qRS = 80 - 100 msec = 2 small square

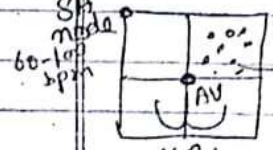
VT = wide complex qRS = >3 small square

A. fibrillation
A. flut
PSVT
V.T.

m.c. sustained arrythmia = A. fibrillation

↓

(1) – multiple ectopic foci
(2) – +ve M of pt. (mou Ia/I > RI)
(3) – ectopic foci Rate = 300 - 600 bpm
(4) – P wave ⊖ve
(5) – AV nodal block



↓ embolism

AV nodal block	V. Rate
2 : 1	200
3 : 1	133
4 : 1	100 bpm

– m.c.c. of embolic stroke = non Rheumatic A. fibrillation

(6) Irregularly irregular pulse

A. fibrillation

Q. 40yr alcoholic → [DCM]
↳ Binge drinking → C/O palpitation
dizziness
Vertigo
Syncope

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

C: ~~~~~
~~~~~
unconscious

O/E

- Pulse : fast, irregular
- Count pulse Rate
- auscultate heart Rate
- BP ↓↓

} doesn't match → significant pulse deficit - early arrhythmia > 10 bpm

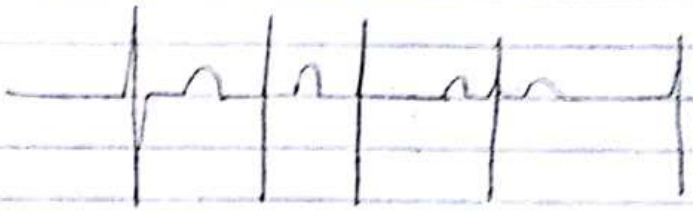
$S_1$ : loud
variable.

$S_1$ ∝ intensity ∝ HR ↑

- ECG

| | | | |
|---|---|---|---|
| I | aVL | $V_1$ | $V_4$ |
| II | aVR | $V_2$ | $V_5$ |
| III | aVF | $V_3$ | $V_6$ |

II : rhythm strip - HR



Dx early arrhythmia of variable P-R intervals

(1) R.R. ↓ ($P\text{-}P \propto \frac{1}{HR}$)
(2) P-R - variable
(3) P wave ⊖ve
(4) narrow QRS

Rx :

(1) Rate control : HR ↓ (diastolic duration ↑)
↳ Nesmolol (i.v.) } LOV ↑
(short acting β blocker) } CO ↑
digoxin (iv) pharm

(2) anticoagulation (transesophageal endocardiography) } TEE
Clot ⊕
- oral dabigatran
- oral rivaroxaban

warfarin - intracranial Hemorrhagic stroke

www.FirstRanker.com
Scanned by CamScanner
~~~~~

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

③ Rhythm control
- iv Ibutilide
- ~~Cardi~~ chemical cardioversion
class III : MOA :
ectopic focus : ↓↓
↓
fails
electrical cardioversion
— (200 J biphasic DC shock)
↳ causes permanent ablation of ectopic focus.

R - Rate controle
A - Anticoagulation
C - Chemical cardioversion
E - electrical cardioversion.

Protocol for ♀ ♂/t of A. fibrillation

Anticoagulation in A. fibrillation

CHA_2DS_2 VAS score

C - CHF	1	
H - HTN	1	
A - Age	2	(65-75 yr : 1)
D - D.M.	1	>75 : 2
S - previous H/O stroke	2	
V - Vascular ds in pt / coronary Ⓐ ds / pulmonary Ⓐ ds.		
A - age (65-75	1	
S - sex (♀)	1	

Net score ≥ 1 = anticoagulation

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Best 1st line.

Q. A. fibrillation + acute CHF

↓

① esmolol → CI in acute CHF

② digoxin → Vagus ⊕ → AV nodal conduction slower
Ventricular Rate ↓

A. fibrillation:

① SBP ↓↓ → DC shock C/I
Risk of cerebral embolism ↑

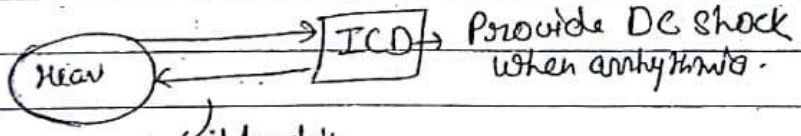
② Esmolol

③ CHA_2DS_2VAS : dabigatran

④ Rhythm control : ibutilide

⑤ ↓
if chemical cardioversion fail
↓
electrical cardioversion

⑥ Recurrent A. fibrillation
a) medical Rx = oral amiodrone
↓ fails
b) MAZE procedure (microlaser Rx) = tissue from around face
↓
c) ICD (implantable cardioverter defibrillator)



↓ if lead #

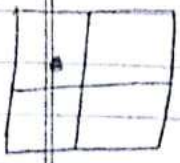
Pt. on ICD
C/O shocks electrical on chest → CXR
what is 1st investigation

malposition ↓ lead fracture
↓
Redeployment ICD

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

A. Flutter



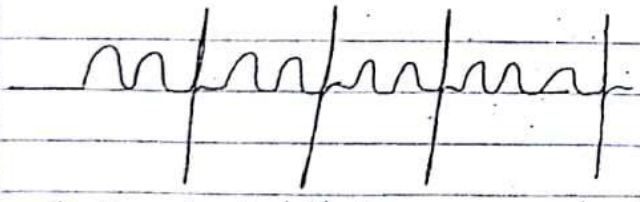
(1) foci - single.
(2) Site - Rt sided
(3) location - Cavotricuspid isthmus
(4) firing frequency = 240 - 350 bpm
(5) AV nodal block - lower grade
2:1 block ⇒ 175 bpm
constant tachycardia
(not change like AF)

60yr ♂
COPD (2 packs/day)
C/O palpitations
syncope

O/E HR = 175 bpm, regular
Pulse deficit → (-)nt
BP = ↓↓↓ / ERROR (unrecordable)

ECG

I	aVL	V_1	V_4
II	aVF	V_2	V_5
III	aVR	V_3	V_6
II			



(1) Saw tooth / flutter wave - lead II, III, aVF
(2) R-R (↓)
(3) R-R regular
(4)

Rx:
(1) iv Esmolol
(↓HR → (↑) diastole
(↑) EDV
(↑) SV (↑) CO

www.FirstRanker.com
Scanned by CamScanner

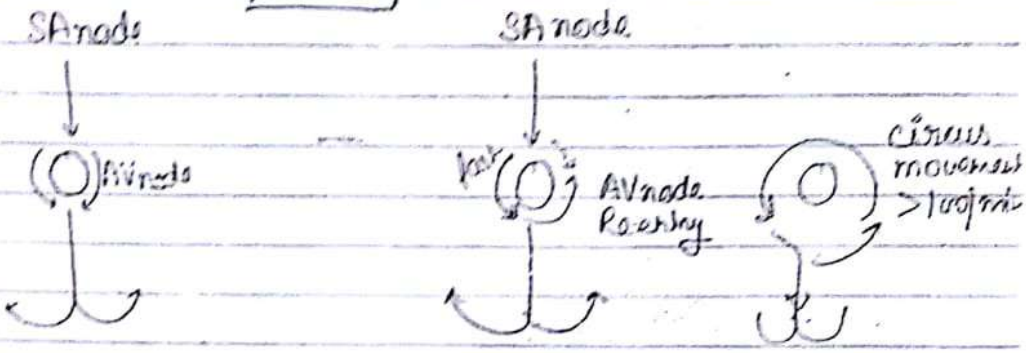
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(2) anticoagulation (oral dose LMWH/IV)
(Risk of pulmonary embolism)

(3) Inj. Adenosine - for shut down ectopic foci

(4) DC shock - 50 J (biphasic)

PSVT



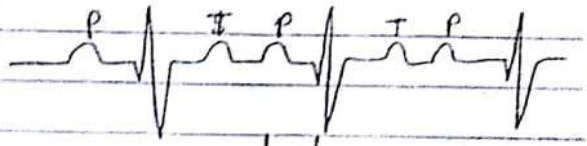
AV-nodal Re-entrant tachycardia : PSVT

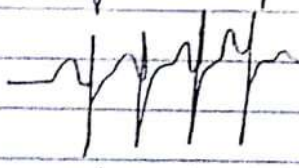
- Usually (N)
- Young ♀ = palpitations, dizziness, syncope, vertigo → cold sensation on face → vomiting → sudden termination of symptoms. ↓ due to vagus (+)

Self termination of arrhythmia = in PSVT

ECG = (N)

HOLTER (24-48 hrs.) = device for ECG record

(N) 

(1) R-R (↓)
(2) R-R - Regular
(3) ST (↓)
(4) Hidden P wave (merging T wave) 

Rx:

(1) Carotid Sinus massage (CSM like Hi) = vagal stimulation
(2) for 10 sec. ⊥ to angle of jaw
bursts of (not continuous - b/c desensitization of (B))

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
study companion

in paediatric 1st line Mx PSVT

1) ~~face~~ ice pack
2) Oculocardiac massage
3) Valsalva maneuver

CSM → C/I in pt having atherosclerosis in internal carotid (A)

↓

if tear Carotid (A) bruit = ICA atherosc

(2) i.v. adenosine = 6mg | 12mg

MOA : AV nodal delay. (↑)

S/E

Bronchospasm (self-limiting)

(3) Verapamil (iv)

MOA - AV nodal delay (↑)

(4) DC Shock (R0-200J) = biphasic

PSVT pt. + SBP ↓↓ (Hemodynamic compromise) = DC Shock

VT + SBP ↓↓ = DC Shock

V Fib + SBP ↓↓ = DC Shock

QB exception: A-fib + SBP ↓↓ = Esmolol

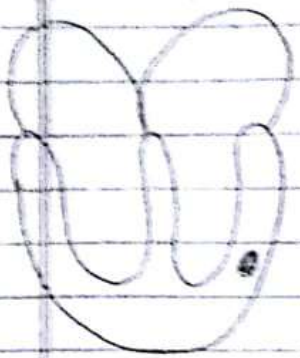
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Lignocaine never be given in sterile vial → death can occur

Date
Page
My companion

VT



monomorphic VT

- Atrial Rate = 100 bpm
- ectopic focus = automaticity
- V. Rate = 250 bpm
- Pulseless VT
  - ① disable
  - ② EDV
- AV dissociation = k/a VT
- → 3 Premature Ventricular contraction
  HR ≥ 100/min
- wide QRS complex
  (Intermyocyte conduction)
- Capture beats
- AV dissociation (Hidden P. wave)

R_x:

DC Shock 200 J biphasic

VT (stable) + BP = 100/70

↳ R_x:

DOC = Post MI - VT = lignocaine (IV)

Xylocaine / Lignocaine Local Anesthesia = contains Soda metabisulphite Cardiotoxic
(↳ never inject (b)blood vessels)

Xylocard Lignocaine – Cardiology
Plain (not ↑ soda metabisulphite)
So given I.V.

DOC:

Stable VT = amiodarone
(Post MI) Stable VT = lignocaine I.V.
Pulseless VT = DC shock (200 J)

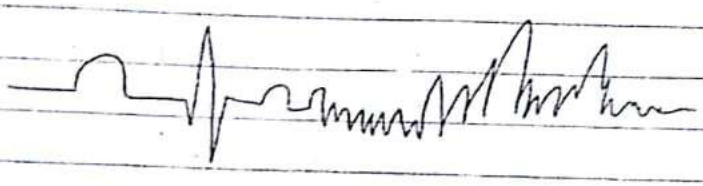
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page
mycompanion

Polymorphic VT / Torsade de pointes

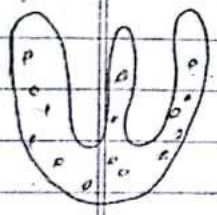
= >3PVC , HR >100
amplitude = variable



Causes:

1. Hypokalemia → villous adenoma → laxatory diarrhoea → ↓ K^+
2. Hypomagnesemia
   - ↳ Gitelman syndrome (mg loosing / wasting)
3. class IA, Ic, III antiarrhythmic drugs
4. Erythromycin + Ketoconazole / Astemizole / Terfenadine / Cisapride
   - Proarrhythmogenic drug if combined these drugs

Rx: DOC = Torsade de pointes
= $MgSO_4$ (iv)



Ventricular fibrillation

- "Bag of worms"
- Twitch : SBP ↓↓
  Pulse ⊖

ECG

<5min : DC shock
>5min ① check pulse
② DC shock
③ iv adrenaline
I°do → ④ CPR

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

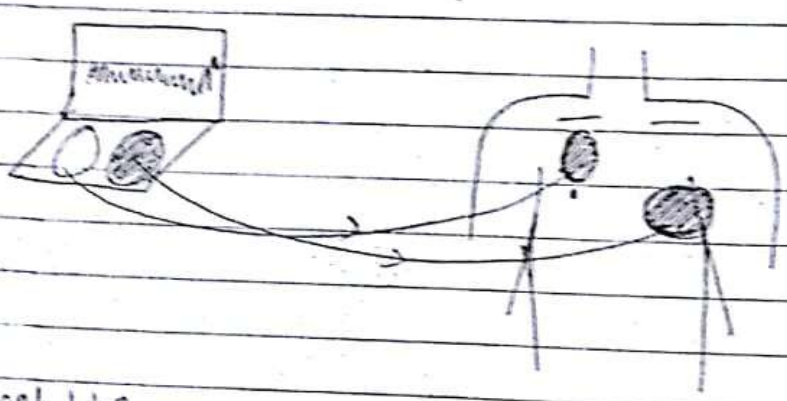
Date
Page
my COMPANION

CPR:

① 30 : 2 X 60-90 ~~sec~~ sec.
Chest compression : 100-120/min
Sternal depression - 5cm
lower ½ sternum

- mc. solid organ lacerated in CPR ⇒ liver (left lobe) (Trauma or Hypovolemia by others)
- mc. Rib # in CPR ⇒ 4-6th Rib

② DC Shock
- A.E.D. (Automated external defibrillator)



③ Repeat 1+2
④ Repeat 1+2
⑤ I.V. adrenaline
① coronary perfusion
② hypoxia

Asystole

① CPR : 30 : 2 X 60-90 sec
② I.V adrenaline ⑦ SAN
failed I.V access
↳ intraosseus adrenaline
Tibia - 2cm below Tibial tuberosity

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

* Intracardiac Adrenalin ⇒ Never given
* Neonate = umbilical vein
  ↳ endotracheal tube of baby + AMBU bag

↓ If fail

(3) Repeat Adrenaline

↓ If fail

(4) DC shock is c/I in flat line ECG

↓

(5) adrenaline ——— Ventricular fibrillation
Then
DC shock

Pulseless BP ↓
ECG

← rhythm → V. fib	→ asystole ←
(1) BLS : 30:2 (Basic life support)	BLS : 30:2
(2) DC shock X3	↓
(3) IV adrenaline	adrenaline repeat
↑ Coronary perfusion	↓ then
	DC shock

{ Vasopressin, atropin ↳ withdrawn } AHA 2015

$NaHCO_3$ = Can be use
If $P_H < 7.15$

www.FirstRanker.com
Scanned by CamScanner

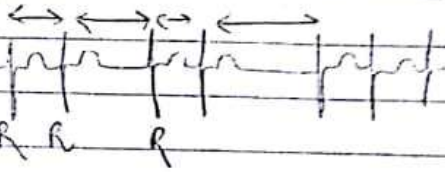
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

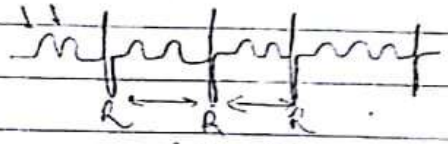
Post resuscitation - V. T

↳ amiodarone

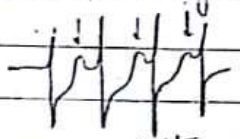
- Pulse less VT = DC shock

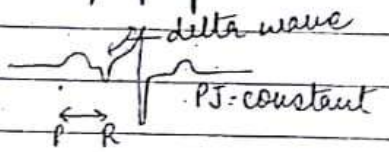
SUMMARY - see lead II

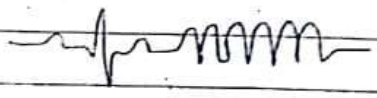
A. fib  (R-R unequal) = Esmolol/digoxin

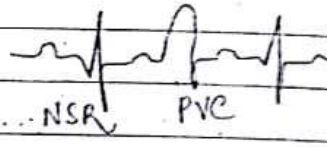
A. flutter II, III, aVF  (R-R equal) (")

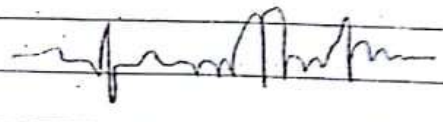
single NB(N) wave

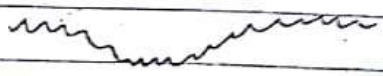
AVNRT (PSVT)  = Adenosine

WPW  = Procainide

VT  = DOC Lignocaine

V. Bigeminy →  = DOC Lignocaine

T. de pointes  = MgSO4

V. fibrillation 

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

12 lead ECG

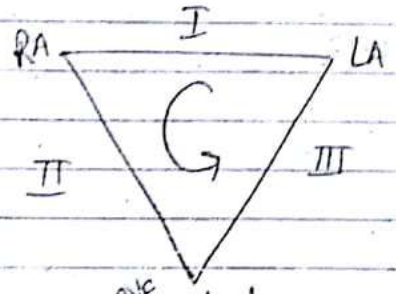
Paediatric 12 lead = 12 lead + (V4R)
(Physiological RVH)

Chest lead — EITHOVEN

V1 = 4 I/c space, R. P.S.L
V2 = " " L = Para Sternal line (PSL)
V3 - V9 - V4
V5 = 5 I/c space L = Mid clavicular line
V6 = " " = AAL
" " = MAL
V7 = " " = PAL (Post. Axillary line)
V8 = " " = Scapular line.
V9 = " " = Paravertebral line

→ Post wall MI ✱

Limb lead



In Amputation
electrode place on stump

Augmented lead :→ Voltage is 1.5 time ↑ than Limb lead

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
mycompanion

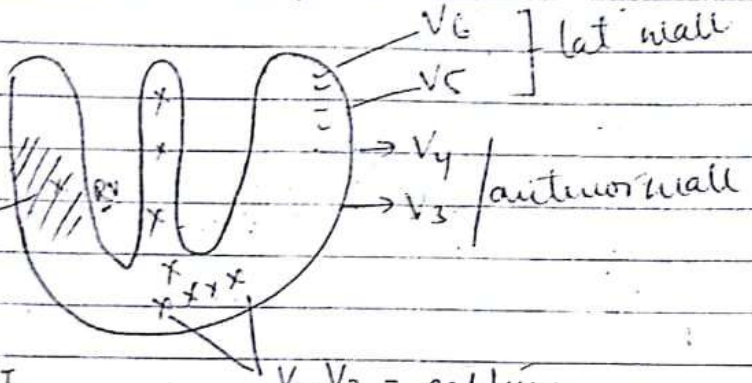
In aVR = Right atria

V_P ... V_T

aVf = Right ventricle

for RV = lead II, III, aVF
V_4R

V_1, V_2 = septum & some part of anterior wall
V_5, V_6 = axillary part of myocardium



Q
V_4R
aVF
lead II, III
* Inf wall MI

I	aVL	V_1	V_4
II	aVR	V_2	V_5
III	aVf	V_3	V_6

II ⇒ count Heart Rate ⇒ Rythm etc

① HR
② Axis : I / aVF
③ P : upright : < 3 small square (S.S)
P–R : 3–5 SS → ↓ = WPW, LGL
→ ↑ = Heart block
④ QRS : 2 SS
→ narrow = SVT
→ wide = VT
⑤ ST segment = elevation / depression
⑥ Inverted lession wave

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

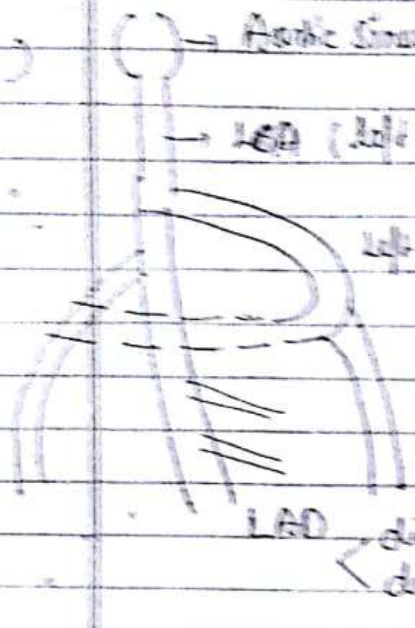
① QT interval ∝ 1/Ca, Mg → 360–400 msec
= 10.11 ss

arrhythmia

plat MI → LAD septal branch block V1, V2 I, aVL

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



inf-wall MI = Rt coronary

ECG Algorithm

1. Count HR
2. Calculate axis
3. P-QRS-ST-QT
   3 2 10-11

PR = 3-5

4. P- pulmonale / mitrale
5. QRS: narrow / wide / delta / J wave / epsilon

PR = ↓ = HPB / LGL syndrome
ST = ↑/↓
QT ∝ 1/HR

Bradyarrhythmia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CAD

(1) Atherosclerosis.

Q: CAD / Cancer / Infection / PEM

- → m.c.c. of mortality in India / USA = CAD (50%)
- m.c. blood vessels involve. = (ACP)
  Abd. Aorta > Coronary (A) > Popliteal (A)
  (m.c. peripheral (A))
- Coronary (A) m.c. involving = left Anterior descending (A)
- least involve blood vessels = internal mammary (A)
  ↓ so used in Coronary (A) bye (CABG: Chemist)

if involve

(1) Abdominal (A)
- → AA aneurysm = > 5.5 cm (spontaneous rupture)

(2) Coronary (A)
- → acute coronary syndrome
  1. MI
  2. UA (Unstable angina)
  3. PA (prinzmetal angina)

  | chest pain at rest.

not Chronic stable angina
- → chest pain on exercise.

(3) Popliteal (A)
- → Claudication

T.A.O. → lesion digital to origin of tibial (A)
- < 45 yr of age
- Smoker
-

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page _____
my companion

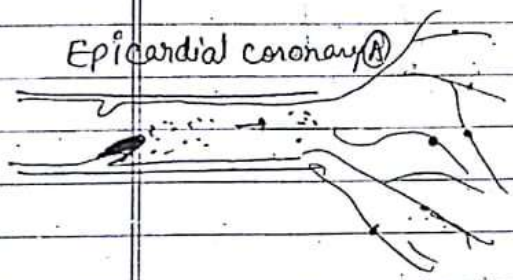
SCA (sickle cell Ⓐ) Acute chest syndrome

- sticky RBC
- developing MI / stroke
- no Atherosclerosis
- so acute chest syndrome
- not K/a acute coronary syndrome.

Unstable Angina :



Plaque Fissure/tear (due to high flow of blood).
↓
Collagen exposed
↓
attract platelets plug formation
↓
Clot formation
↓
↑ in size
↓
anticlotting body system activates
Protein C/S/ATIII



"Athero-embolism" Perforation
↓
Chest pain at Rest

- 60 yr ♂
- Chest pain at Rest X 3 hr
- diaphoresis / dyspnea
- ECG → ST Ⓝ / ↓ 50% / 25%
  T wave inversion 25%
- TropI = Ⓝ value = 0.04 ng/dl
  = ↑ but not so much
  (2X, 3X, 5X, 10X never seen)
  ↳ seen in large/~~main~~ coronary Ⓐ Block)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Rx:
1. i.v. abciximab gp IIb / IIIa ⊖
2. inj. enoxaprin (S.C.)
3. i.v. Metoprolol (↓HR
4. morphine ↓O_2 consumption

C/I of cardioselective β-blockers ⇒ metoprolol (↓HR)

C/I of non selective
- COPD
- Asthma
- PAD (??)
- Buerger's ds

5. inf. wall MI

6. O_2
7. Aspirin 325 mg chewable tablet uncoated
8. iv NTG
   ↳ observe pt → SpO_2 ↓, BP ↓, Crepitus +++ → P.C.I (Percutaneous coronary intervention)
   ↳ observe pt → SpO_2 ↓, BP, Crepitus

UA/NSTEMI

↓	↓ UA	NSTEMI
ST (N)	ST (N)	ST (N)
troponin I	(↑)	(↑) x2 times

Rx:

ABE - MOAN iv
↓ if
failure of RT
↓
P.C.I.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page _____
my companion

Indication of PCI:

1. STEMI
2. NSTEMI (A)
3. UA (A)

Clinical Initiation of UA

"accelerating angina"

chest pain → exertion / emotion ⟹ chest pain at rest

↓

Chronic stable angina

↓

(more atherosclerosis → chances of heart lower.)

Luminal reduction of diameter of coronary (A) > 70 %

Atheroembolism (less fibrosis, more chances of embolism (more dangerous))

Prinzmetal Angina:

spasm of epicardial Coronary (A)

in (N) healthier pt → on fast walk

in PA → endothelial cell malfunction (due to atherosclerosis) → (↓) amount of NO release → (↑) chances of spasm.

- 60ys
- ♀ female
- Chest pain at Rest
- X3 hr (successive episodes)
- winter months > summer mnth
- early morning (m.c.) than evening
- H/O migraine attacks

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Aspirin, statin, HTN → given at time of surgery.

Vasospastic dz
(1) Prinzmetal A
(2) migraine
(3) Raynaud's phenomenon

Rest Hx
- Raynaud's phenomenon (white-blue-~~white~~)
- ECG:
  ST ↑ [Variant Angina]
- troponin I = (N)
  (no cell death so (N) troponin I differentiate from MI)

Rx:
(1) i.v. NTG drip = (DOC)
  tab. isosorbide mononitrate (after discharge)
  + CCB (amlodipine) (at time of bed)
  (to prevent tolerance from Nitrate & early morning vasospasm)

(2) Statin = HMG CoA Reductase (−)
  (all pt. ∈ ASCVD
  atherosclerotic cardiovascular dz)
  Pitavastatin > Rosuvastatin > Atorvastatin
  (19 hr) (14 hr)
  (maxi. cholesterol synthesis - at night
  so statin taken at bed time

Aspirin 75mg ECASA (enteric coated
Atorvastatin 40mg
Telmisartan 40mg

→ scheduled for Sx
medicine (+) = day of operation
↓
(↓) risk of intra op-MI

during Sx if (Lab cholaysteotomy OT: MI)
  (a) SBP ↓,
  (b) pulmonary edema (+)
  (c) SpO_2 ↓
(1) trauma to major BV
(2) Anaesthetic drug : vaso dilation
(3) MI → for Δ → TEE (transesophageal echocardiography
  = stunned myocardium
  sudden (↓) contractility

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Chest pain at rest > 20 min

Poor at localisation
RV ischemia ← ① ECG and/or
② · Trop I and/or
most accurate way for Δ of MI ③ · TEE
↳ operator dependent

↓
elevated Cardio Biomarkers
(trop I) > trop T ≫ CPK-Mb

D.M. pt = have silent MI
↓
sudden cardiac death in D.M. = silent MI

(MI)

① Type I MI : due to thrombus formation → Atherosclerosis.

② type 2 MI : Coronary (A) dissection → non atherosclerotic
Cocaine
Severe Anemia

③ type 3 MI : development of SC Death
(V. fibrillation > Mobitz II H. block)

④ type 4A MI : during P.C.I. + baloon F Material
↓
Clot form ⊕

4B MI : Latent stent thrombosis
(Bare metal stent
Medicated / drug eluting stent)
⊛ SiRolimus
⊛ Everolimus → reduce chances of MI

⑤ type 5 MI : during C.A.B.G. (coronary (A) bipass grafting)
a) suture F. body → clot form
b) intraop. bleeding
c) clamp Aortic sinus → block left main coronary (A)

for Δ of type 4A MI = trop. I (↑) x5 LVF
type 5 MI = trop I (↑) x10

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

PA → Rt side ♂ — Lt side ♀ involve
→ ♂
→ Rt coronary (F)
→ Lt ant descendy (A)

Expanded definition of MI:

STEMI	NSTEMI	UA	PA
ECG ST ↑	ST ⓝ	ST ⓝ	ST ⓝ
Trop I ↑	↑	↑	ⓝ
Tx	PCI	ABE - MOAN → delayed PCI	IV NTG, Tab TSB + CCB

Acute Coronary Syndrome

Chest pain Rest ↓ 3-4 hrs

ECG

ST ↑ — Trop I ↑ → STEMI → Primary PCI (90 min) or STR (30 min) (thrombolysis) + CCB

ST ⓝ — Trop I ↑ → NSTEMI → IV NTG DRIP + ABE - MOAN → delayed PCI

Trop I ⓝ → Primary Angina

ST ⓝ — Trop I ⓝ → Unstable angina → IV NTG DRIP + ABE - MOAN → delayed PCI

Atherosclerosis Markers:

1. High sensitive CRP ↑ → predictor for future coronary (A) events
2. total cholesterol ↑ > 3.5 / HDL ↓
3. Lipoprotein A ↑ / Apolipoprotein B ↓ = ↑ incidence
4. Homocysteinemia : AR → premature atherosclerosis

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

5HT → Histamine → flushing, serotonin → secretory diarrhoea
H_2 → excessive gastric acid
Niacin ↑ Statin ↑

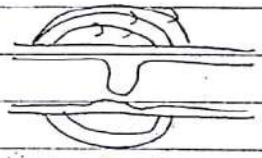
⑤ LDL ↑
⑥ HDL ↓

(HDL ↓ > LDL ↑) more imp for Atherosclerosis.

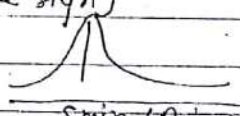
Niacin
5HT → Histamine
→ serotonin
→ H_2
C/I in → PUD, Asthma, COPD

(no drug to ↑ HDL except niacin but it have many S/E)

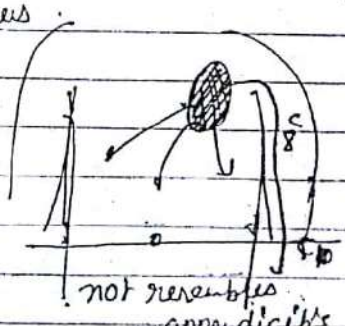
Imaging for Atherosclerosis :
① intravascular USG (best)
② Coronary CT angiography



Chronic stable Angina: chest pain on exercise, b/c development of collaterals → so good prognosis
- luminal diameter reduction >70%
- 50 yr HTN (non-compliance)
- smoker
- ♂
- chest pain at exertion (Levine sign)
- diaphoresis ⊕
- duration <10 min
- Radiating in nature (C_8, T_1) (medial side of Arm/forearm/Jaw/upper jaw)
- never go below level of umbilicus.



Cardiac plexus → responsible for pain
① Sup. Cervical cardiac (N) → jaw
② Inf. cervical cardiac (N) → Levine sign
③ Thoracic splanchnic (N) → downward
→ nerve mediating pain of MI
- (N) mediating pain of acute pericarditis = phrenic (N)
→ Radiation of pain to left shoulder - diverticulum



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Post-prandial Angina:

ECG - ST (N), asymptomatic

Stress test (Treadmill) - symptomatic → chronic stable angina

ECG - ST (↓)

drug given = S.L. NTG + Rest

Repeat ECG: ST (N)

↓

K/a Reversible ischemia

Stress test

(1) Tread mill test (1st test to be used)

Bruce protocol

speed (↑) gradually / 3min; 7cycles

ECG ⇒ ST (↓) ≥ 1mm ≥ 80msec : 2 contigous lead $V_1 V_2$ / $V_3 V_4$ / $V_5 V_6$.

Premature termination of test if

(1) chest pain

(2) ST (↓) >3mm

(3) BP ↓ >20mm Hg

achieve

Target Heart Rate: = 85% (220 - age)

Trade mill test C/I	modified Bruce Protocol
(1) Paraplagia	(1) Protocol +
(2) Charcot joints (DM	(2) target +
(3) Burger's ds / TAO	(3) C/I
(4) deep vein thrombosis	sensitivity >80%
(5) B/L severe Osteoarthritis of knee	
(6) morbid obesity	
(7) Supervalvular severe AS	
(8) Unstable Angina / PA	
(9) tear in Aorta	
(10) MI < 48 hr	

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

morbid obesity
chest pain on minimal activity
↓
① test dc Stress Echocardiography = drug stress
i.v Dobutamine : β_1 · HR ↑ consequent.
ECG → ST ↓ ≥ 1mm ≥ 80msec, 2 leads
↓
Echo → contractility ↓
Sensitivity → 90%

② test: Myocardial perfusion imaging (most accurate test)
Thallium - 201 : Gamma camera.
(Thallium scan) give digital overview of obstructed vessels (anatomical)
↳ Thallium 201
↳ same sensitivity
Sestamibi scan
↳ Tc 99

(A) ∪ (B)
↓
fixed obstruction

Radioactivity of A > B due to (B) blood flow

Sensitivity = 95%

④ test: PET scan best test for dx of → chronic stable Angina / Hibernating myocardium / Reversible Angina
↓

Best test	
① PET scan	> 95%
② Thallium scan / sestamibi scan	95%
③ Stress echo	90%
④ TMT	80%

Rx of chronic stable Angina
① DOC = β-blocker
(major mortality ↓ : metoprolol : cardioselective)
② Aspirin Tab 75 mg (enteric coated) [ECASA] } life-long (↓ mortality)
If Aspirin gastritis then give
Clopidogrel = 75 mg

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

2. S.L. NTG = emergency tab
   Dosing : sublingual / spray
   max 3 tab over 15 min
   → Bottle / Buccal spray / transdermal patch

3. Tab. Isorbide mononitrate (post parandial angina) → long acting nitrate, so no prolonged tolerance, drug holiday = 8 hrs/day

4. Tab. Metoprolol 50mg
   SHR : Conserve fuel

5. Tab. Atorvastatin
   (Regress Atherosclerosis)

6. Tab. Ranolazine / Ivabradine / Trimetazidine
   metabolism efficient
   If : funny current
   ↓ rate of depolarisation

7. B6 / B12 = Homocysteinemia

8. Stop smoking : nicotine → vasoconstriction

↓

failure of medical therapy

Coronary Angiography = Gold standard test for determining rate of CSA

↓

femoral A : Local Anes ++ → no. of blockage, site, % of → Real time
Sedation + (B/L not steep)

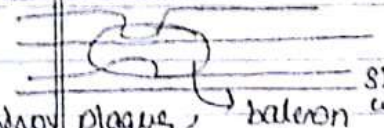
- Seldinger technique
- Judkins Catheter
- Under fluoroscopic guidance

↓

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Single vessel ds. ——→ 1st of choice
PCI PCI + stenting



destroy plaque, Pressure 1800mmHg
↳ debris → platelet plug → thrombosis
Type 4A-MI

pre-op (antiplatelet drug)
- Prasugrel
- Ticlopidine
- Ticagrelor } P_2Y_{12} ⊖
enoxaparin.

Intra op
- Eptifibatide
- Abciximab } GP II b/III a
- Tirofiban

(2) double vessel ds ——→ PCI + stenting

(3) double vessel ds ∈ multiple atherosclerosis block ——→ C.A.B.G
coronary (A) bypass grafting

(3) triple vessel ds
i.e. LAD blockage → Ant surface of ♡ ——→ C.A.B.G.
LCX ↓ → Post/Lateral surface.
RCA ↓ → Inf. surface
(preferred graft)
(1) internal mammary (A)
(2) greater saphenous vein
(3) Radial (A)
(if coronary)
(4) gastroepiploic (A)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

blockage

Date / /
Page
my companion

Q/ pt c/o
2AD #, EF <40% → CABG

CABG indication
① Triple V.ds
② double V.ds c multisite #
③ 2AD # c EF <40%

Revascularization strategy in Hibernating myocardium

PCI → 4A MI
Bare metal stent, 4B MI

PCI + stent (drug eluting stent)
everolimus
sirolimus

CABG

Mortality Reduction in CSA
statin, B6
Aspirin
Metoprolol → maxi. benifit.
PCI/CABG
Nitrates → no benefit/no survival benefit

indication of PCI
① NSTEMI
② STEMI
③ UA
④ single vessel ds-CSA
⑤ double V.ds.

β-blocker used in
① STEMI
② NSTEMI
③ UA
④ CSA
⑤ Chr. CCF

C/I in (β-blocker)
① acute CCF
② Bradyarrhythmia
③ Inf. wall MI

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ABE → Community acquired : Streptococcus
↳ Hospital " — Staph aureus companion

Infective Endocarditis : (IE)

1. SABE : Strep viridan > enterococci
2. iv drug abuser : R sided endocarditis : Staph aureus > pseudomonas
3. Prosthetic valve endocarditis : C.O.N.S.
   - <lysi : (coagulase negative staph)
   - >lysi : Streptococcus viridans.

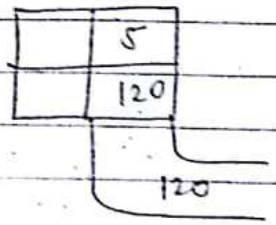
Left Sided Endocarditis

- patent fossa ovalis
- Enterococci

NVE = native valve endocarditis
mitral valve (High pressure diff. gradient)
PVE = prosthetic valve endocarditis
Aortic valve

maxi. chances of IE

AS	LV-AO
AR	Ao-LV
MS	LA-LV
MR	LV-LA



least chances of IE : ASD
- ($L_A - R_A$ = 4mm)
- no shunt murmur
- flow murmur → mid diastolic murmur



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

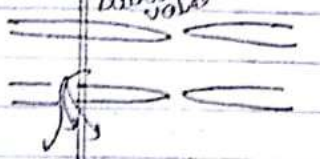
Duke's criteria : IE
Duke's staging : colorectal ca

modified Duke's criteria :



complication
- fever ± chills/rigors
- splenic abscess
  spleen tip palpable
- Brain Abscess
  C/L Hemiplegia
- gangrene toes/fingers

H/O
RHD ± fever x 2 wks, spleen ⊕ = IE
(Pre existing ♡ ds) → RHD
→ DCM



- blood leak
- new onset murmur in pt. of pre existing ♡ ds.

major criteria	minor criteria
① Echo finding - vegetation, friable - Valve abscess - Ring abscess - Perforation - Jet of blood : Regurgitation	① fever > 101°F ② predisposing condition of iv drug abuse central line Patent fossa ovalis. immunological ③ Post strep. Glomerulonephritis matter (Hematuria) : rare. ④ Osler nodes : tip fingers ⑤ Roth spots : fundus exam ↳ also seen in anemia leukopenia.
② Blood culture ⊕ - 3 blood sample, 3 diff. site @ 1hr gap ∈ in 24 hr 2+/3+ → Some organism 1+/3 → Coxiella Burnetii : Q fever Animal farmer, fever x 2 wks	

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rigorous — used in valve stenosis cases (valvulotomy)

(3) new onset murmur in pre-existing H. ds.

Embolic manifestation:
(a) splinter Hemorr (nail bed)
(b) Janeway: erythematous macule palm/sole.

△ of IE:

IE: 1 major + 3 minor criteria
or
5 minor criteria (in case of antibiotic)

△: culture ⊖ endocarditis:
→ ampicillin + gentamycin + Cloxacillin - IV drug abuser
MRSA: vancomycin
VRSA: linezolide
Streptogramins

after blood report coming ↓

Culture / Sensitivity

if

↓ fail (if fever not going)
Prosthetic valve deployment in pt.

- Longest vegetation in ♡ seen in → fungal inf. (not bacterial).
  ↳ candida albicans.

- Libman Sacks endocarditis (LSE): - SLE (DOC SLE = steroids)
  - no infection
  - Sterile vegetation [no bacteria + only fibrin]
  - inf. surface of ♡ valve
  ?? - MR (acute [Pulmonary edema]

Rx:
- Valvuloplasty (best Rx)
- steroids C/I in (LSE)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Non-bacterial thrombotic endocarditis = NBTE
- large female.
Cause - malignancy [Mc AML]
(acute promyelocytic leukemia) → DOC - ATRA
Rx:
- Tt the malignancy.
- All-trans retinoic acid
- Arsenic trioxide

Rheumatic endocarditis.
- Characterised by Aschoff nodules.
- most common site - Coronal end

IE (not a criteria for Δ)
1. fever
2. IV drug abuser
3. murmur
4. splenomegaly (a complication not Δ its criteria)

www.FirstRanker.com
Scanned by CamScanner

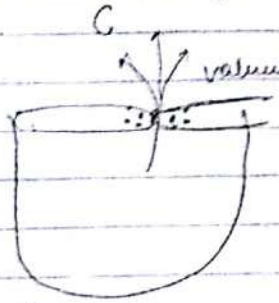
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

RHF

mycompanion

Jones criteria

(1) Cardi'his
↳ Subclinical cardiitis
Echo findings (+)
inflammation of valve cusps
Jet of blood - cusps.



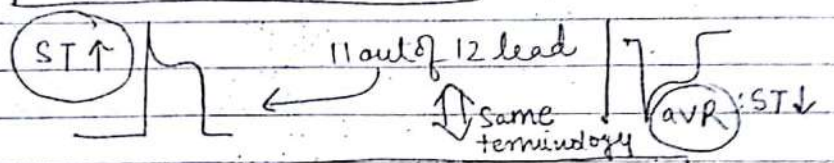
"CAREY COOMBS MURMUR"

(I) CARDITIS
Rheumatic

Pericarditis
chest pain at Rest
Radiation to the left shoulder
Recurrent Sore throath (+)
(5-15yrs)

O/E pericardial friction Rub
↳ equal in both I & Expiration **
but Pleural rub = Inspiration

ECG



** In pericarditis : P-R Segment ↓ depression
11 + 12 lead except- aVR

Rx : STEROID (DOC of Rheumatic pericarditis)
↳ sudden stopage is C/I d/t "Addisonian Crisis" (Hypoglycemia)

Rheumatic myocarditis
acute CHF
S_3 (+)
B/L crepts (+)
due to dilatation of heart → functional MR/TR (Pansystolic murmur)
Rx LMNOP

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rheumatic endocarditis

Valves damage	valvular lesion	Surface of valve injured
g/c : mitral are : Pulmonic	in active carditis ⇒ is MR : child (<18y) in carditis ⇒ M·S : adult (>18y) M·S >> MR	Commissural end # ↓ Carey Comb (delayed Diastolic murmur)

I. ARTHRITIS (FARTHEST) ★

R. sore throat —(2 week)→ unability to walk

ankle → Knee → elbow

asymetric (migratory polyarthritis)

- NON EROSIVE arthritis
- no deformities (rarest deformities : JACOUD'S arthritis 0·01%) 99·9%

Low endemicity	High endemic
• USA	• India
• Polyarthritis	• monoarthritis (is also major ★ criteria)

Rx : Aspirin

III. Syndenham Chorea : (LATE) ★

Sore throat —(3–6 month)→ CHOREA

- Semi purposive, Fast
- involuntary movement in Hand

★ Poor performance at school
Poor Hand writing

LESION = CAUDATE nucleus
★

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page
mycompanion

O/E → DARTING TOUNGE, Pronator sign, Hung up reflex
(Lizard like)

Rx Self limiting condition (No treatment)
- Haloperidol → dopamine = (drug induce Parkinsonism)
- phenobarbitone - s/e sedation
- valproate - sedation

(IV) Subcutaneous Nodules :
Tender
- Extensor
- Olecron
- Shin
- Spinous process of vertebrae

[but Rheumatoid Nodule = Non tender]

(V) Erythema marginatum
(Rose spot typoid)

m/c = arthritis

MINOR
- Fever
- arthralgia / polyarthralgia

Lab
TLC = ↑
ESR = ↑ — low endemic (U.S.A) country > 60 mm
→ High endemic (India) > 30 mm
CRP = ⊕
P-R = ↑ / 1st degree Heart block

Essential criteria
- Asolitre ↑ > 200 IU > 18yr
  > 333 IU (in paedia) (5-15yr)
- Recent streptococcal infection = < 45 day

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

or Rapid Streptococcal antigen Test
or Throat Swab : (+) Streptococcus

Δ 2 major + Essential
1 major + 2 minor + Essential

ARTHRITIS "can't co exist" CHOREA
<2 wk >3 month

* CHOREA gravidarum
↳ Recurrence of chorea in pregnancy

Q * CHOREA associated in Normal Valve

Rx Aspirin = Pain
Steroid = R. Pericarditis
MR = Valvuloplasty *
* M.S = < 1.5 cm²
scar
↓
RVH
LA enlargement ⇒ R.L.N = ORTNER Syndrom *
PVH : pul edema
PAH : RVH (compleane ↓)
Hepatomegaly (+)
Ascites / Pedal edema (+)
* embolic stroke (only valvular lesion)
causing
is MS

Rx
Percutaneous mitral ballon valvotomy *
(PMBV)
↳ Severe MS HI

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Basilic vein
↓
subclavian
↓
RA
↓
IA septum puncture
↓
mitral valve (balloon)

- Calcified Severe mitral stenosis → PMBV is C/I
- Severe MS & MR → PMBV is C/I
- Severe MS & LA clots (appendage) → PMBV is C/I

Prophylaxis H/t

- Inj Benzathine penicillin i.m. every 3 weeks.
  (to prevent future Sore throat)

5yr RHD & MR : life long basis
(RHD & any valvular lesion) ✓ 40 yr ✗ (for example point of view)
10 yr from date of Δ

5yr RHD → life long basis
✓ 21 yr ✗
10 yr from date of Δ

5yr RF → life long basis
✓ 21 yr ✗
5 yr from date of Δ

- If pt/child is allergic to penicillin
  prophylaxis RF = macrolides - Azithromycin
  if macrolide not in choices (M.C.Q.)
  Sulphadiazine

duration of Ab prophylaxis is same

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Updates (2015)

1. Echo ↑
2. monoarthritis
3. minor : polyarthralgia
4. ESR ↑ ≥30 / ↓ <30

M.S. → Echo : Hockey Stick sign

A_2 & open — mitral valve open

↑ Ejection click — Opening snap

(↑ in ECG = dysrhythmia; ↑ in MRI = CSF (more on CT); ↑ in Echo = MS)

S_1 — S_2 — S_3 — S_4 — S_1

← Systole → ← diastole →

High pitch = diaphragm
low pitch = bell (S_3, S_4)

- One systolic ↑ sound → S_2
- S_3 = Ventricular gallop: early diastolic
  S_4 = Atrial gallop: late diastolic

Atrial Myxoma :

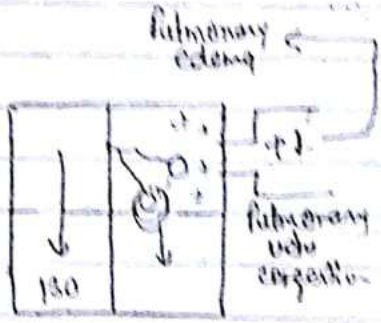
- Young ♀
- Dyspnea (difficulty in breathing in sitting) ↓ Cardiac output
- effort intolerance

Clubbing

- Tumor plop sound ↑
- coincides ε O-snap

TOC = Transesophageal echocardiography (TEE)

Rx : Sx [C.T.V.S] ??
Resection of tumor



Tumor plop sound
Hits an open mitral valve
↓
Coincides ε O-snap

O-snap = high pitch ↑ sound
Tumor plop = low pitch ↑ s

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Low pitch sound (only) = bell

① S_3
② S_4
③ Tumor plop sound

In Adult

Overall m.c. Tumor of Heart = 2^0 (oat cell Ca
Breast Ca
malignant melanoma

m.c. tumor 1^0 malignant = Angiosarcoma (in

m.c. benign tumor = Atrial Myxoma

m.c. tumor originating from heart valve tissue = papillary elastoma

Best test to detect tumor of ♡ = Cardiac MRI

Paediatric ♡

m.c. ① 1^0 malignant = Rhabdomyosarcoma

TB pericarditis (extrapulmonary)

m.c. site extrapul. TB → Cervical lymphadenitis △ FNAC
(gohn focus : Tonsil
gohn complex : LN

TB pericarditis

- chest pain at rest
- ST ↑ concave II+/12 lead.
- IOC = extrapul. TB = ✓ (can disseminated) → 1) gene Xpert → MTB ⊕/⊖
  ↓ → ® to Rifampicin,
  2) TB gold test = Quantiferon test
  ↳ Latent TB (for m.c.)
  (differentiate to Latent & active TB)

®
- INH : inh A gene
- Rifampicin : Rpo B gene

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

O.S. → opening of mitral valve

Rx:

ATT X 6 mnth X



- Calcification
- Constrictive pericarditis

↓

so give

ATT X 6 mnth + Steroids X 6 weeks

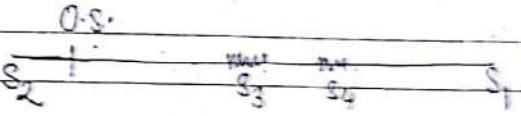
↓

turbulence created

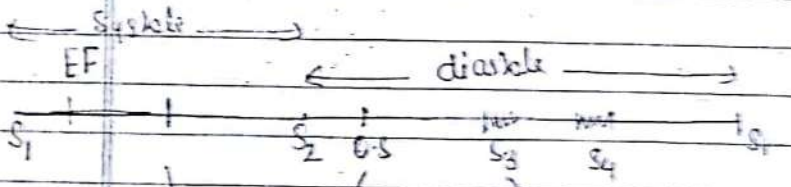
pericardial shudder → diastolic finding ($S_2 - S_1$)

Knock (at some time of S_3)

Shock



pericardial shudder = high pitch M.S.] Can differentiate
S_3 = low pitch M.S.] on the basis of PF



Tumor plop — A. Myxoma

P. shudder — C. pericarditis

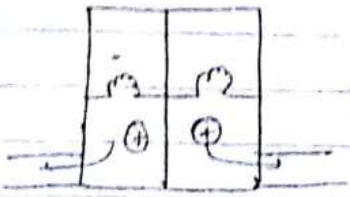
mid systolic click

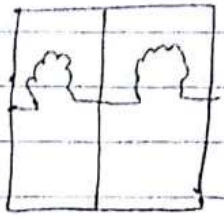
M.V.P

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

M.V.P. :





(MV.P.) ← Post MI : Streptokinase → acute MR

day 2.

asymptomatic

O/E = mid systolic clicks

extra tension → Chordae tendinae

Investigation IOC = echocardiography

Rx = non-selective β-blocker

Propranolol ↓HR

acute MR

day 2.

- Q dependent
- Orthopnea
- Monosyllables

O/E :

- Pan-systolic murmur

Bed side echo : +

Rx : C.T.V.S. (Cardiothoracic Vascular Surgery)

Valvuloplasty

Post MI

MVP → mid systolic click

MR → pansystolic murmur

← echo →

Propranolol

Valvuloplasty +

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

RV | LV

Ischemic heart disease

VSD → Acute complications

↓

Pansystolic Murmur

Ventricular lesion (after M.I.)

pre ventricular lesion → MR

pansystolic seen after MI → MR

pansystolic seen → VSD

Asymptomatic after MI → MVP

128

Large square = 0.2 sec

5 " " = 1 sec

30 " " = 6 sec

Irregular R-R interval

$$\text{80 LS} = \text{QRS complex} (= n)$$

$$n \times 10$$

↳ actual heart Rate of pt.

HR measured by

1. LS
2. 1500/SS
3. 30 LS = n complex × 10

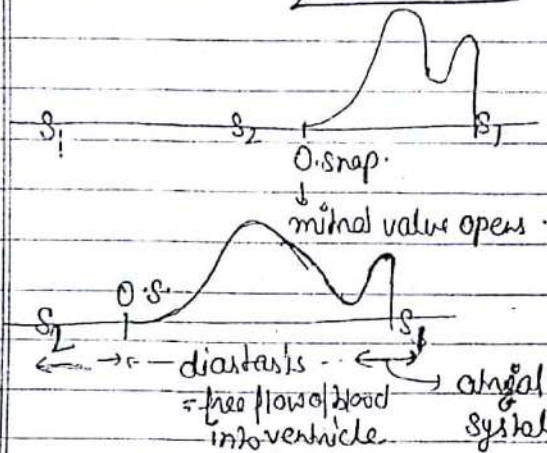
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

T → RAD
R
T
entrem AD
LAD

mycompanion

Murmurs



M.S. = pre-systolic accentuation
disappears ⇒ A. fibrillation.

M.S.
mid diastolic murmur.
Pre-Systolic accentuation
↓
due to progression of M.S.
high pressure generate in LA
result in early opening of mitral valve
↓

Severity of MS decided by
① length of / duration of murmur. (↑ transit time)
↳ not by
loud S_1
loud P_2
intensity of murmur.

M.S. → Left Atrial Pressure ↑
faster opening of M. valve
faster elastic recoil of m. valve
✓ Loud S_1
↑ trans-valvular gradient

Calcification of M.S. = mobility ↓
✓ Soft S_1

S_1 = Mitral valve Tricuspid closure
if not H/t
- narrow split S_1
- Single S_1
- Reverse split S_1.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page
my companion

M.S. symptoms :

- ≥ 18 yrs
- ↓CO → effort intolerance
- dyspea on exertion
- orthopnea
- Paroxysmal nocturnal dyspnea
- Hoarseness of voice (LA↑ → compress → R.L (N))
- palpitation / syncope - A. fibrilla.
- Hemiplegia / Aphasia. - embolic stroke
- PA Hypertension / Ascitis / pedal edema.

O/E

S_1 = Loud S_1
(Soft S_1 = calcified M.S.)

Severity of ds (↑) → narrow split S_1
Single S_1
Reverse split S_1

S_2 = (N) $A_2 P_2$ closure

PAH = Loud P_2

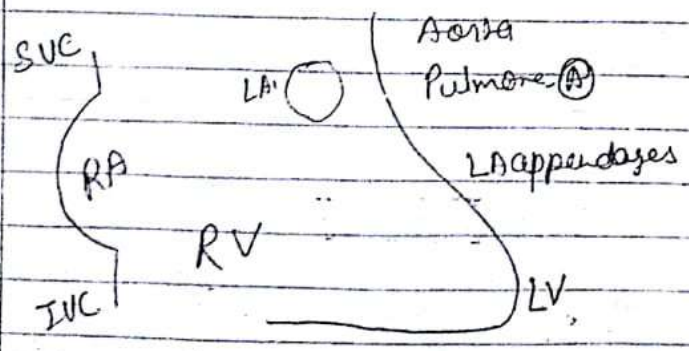
murmur = mid diastolic (M) ± Presystolic (PSA) accentuation

length ↑ / duration ↑ = severity.

PSA disappear = A. fibrillation

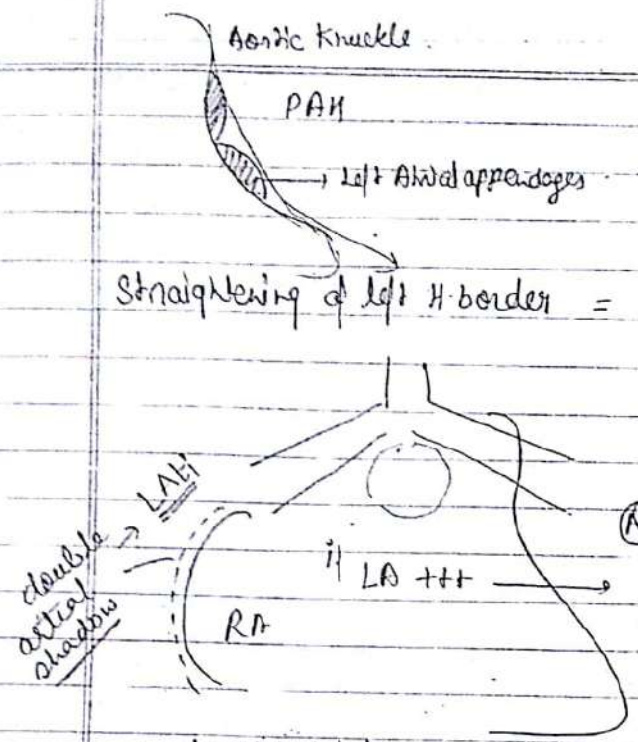
Inv.

CXR = pulmonary edema (+)



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



Straightening of left H border = M.S.

double atrial shadow ⇒ LAE

M.S.

1. Bat wing edema
2. Straightening of (L) H borders
3. Pulmonary (A) fullness

L'A appendages fullness

LA enlargement < cranial angle ↑
double atrial shadow

IOC for M.S. = Echo

Mx.

mild to moderate M.S. = digoxin + spironolactone

Severe M.S. = P.M.B.V. (percutaneous mitral baloon valvuloplasty)

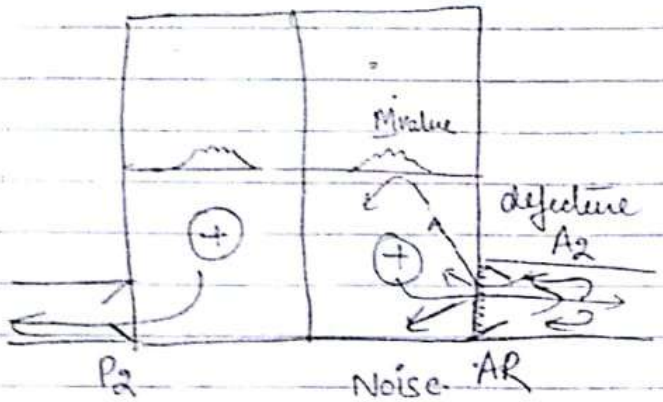
Calcified severe M.S. = Prosthetic valve
- → metallic value (require life time oral warfarin) ← life time standard
- → Biological value
  - no need for warfarin
  - life span = 10-12 yrs.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

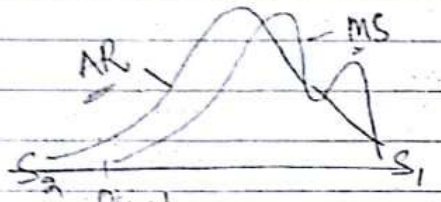
Severe

AR



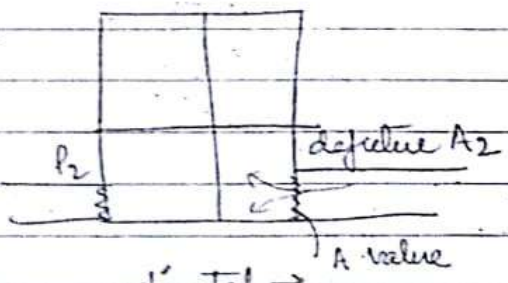
← diastole →

Severe AR = AUSTIN FLINT Murmur

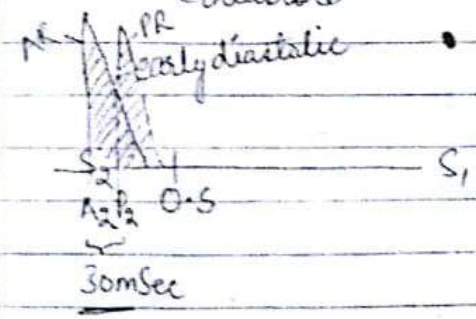


* Mid diastolic murmur

* Mild AR



← diastole →



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

• MildPR : early diastolic Murmur
↓
cause PAH
• GRAHAM Steele Murmur

Diastolic murmur

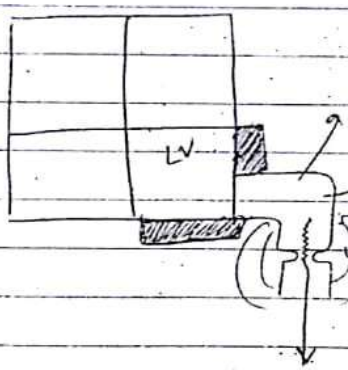
early diastolic
GAP
gram Steele
AR : mild
PR : mild

mid diastolic
• MS
• Austen flint M (severe AR)
• ASD : flow murmur

delayed diastolic
↓
* Carey Coombs (Rheumatic +)

CoA

m/c site
* aortic isthmus distal to origin of Lt. Subclavian Artery



fingertips : Pink
1. claudication
2. Wooden shock ; Same
3. LVH : muscle ↑ demand ↑
Coronary A : (n)
Subendocardial ischemia
angina/chest
4. HTN = daily Headache (+)
Toes : Blue

O/E : Wasting leg muscle
• Radiofemoral delay
• differential cyanosis

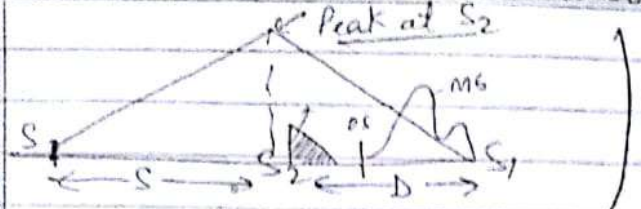
(N) B.P Ulimb 120/80 → Aortic recoil
lower limb 140/80

in ~~ASD~~ * CoA = Ulimb BP = ↑
lower limb BP = ↓

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CoA = continuous murmur (due to collaterals)



- intercostal A. pulsation
  ↓ (lower border Scapula)

INV
1. CXR = Inferior Notching of Ribs
   Ribs
   O = Inferior Notching

2. TOC — MRI / Aortography

3. Ba Swallow = "3" sign

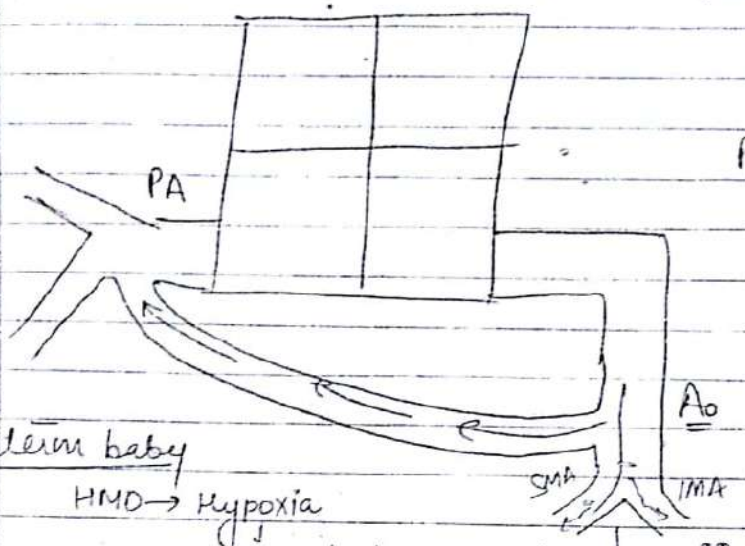
Dx
superior notching of Rib
↓
Hyperparathyroidism

Rx
Ballon dilatation + stenting
↓ Fail
CTVS
artificial blood vessel
↓ Teflon (PTFE)
Dacron (outdate)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

PDA → Left ventrical failure (LVF) - narrow split S2 companion



PA DA Ao
day 0
PA DA Ao

* Closure begins: 10-15 hrs
† functional closure = 7 day
28 day = autonical closure
L. Arteriosum

* Preterm baby
HMD → Hypoxia
↓
* PGE_2 (patency of DA)

gangrene of gut

* Term → Rubella → PDA
(Teratogenic)

C/F symptomatic in Preterm at birth
" " Term at 6 week
① dyspena on exertion → Breast feeding
② diaphoresis ↑
3. irritable

O/E
LVF = narrow split S_2
• crepitation B/L (fine)
• continuous murmur (machinery) **
• Necrotising enterocolitis (NEC) = Hematochezia

IOC → T.T.E

Rx PT = INDOMETHACIN i.v
IBUPROFEN i.v Q

Term = CTVS → Sx banding
* 1yr ē PDA = Sx banding

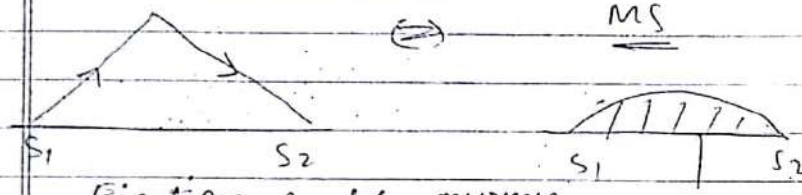
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Continous Murmur

1. CoA
2. PDA
3. Mammary Souffle (↑ flow IMA)
4. Venous Hum (dilated vein)
5. A-V fistula : CIMINO-BRESCIA fistula
   (Radial A – cephalic vein)
   - Hemodialysis
     ↳ @ 3/week
     Session = 4hr
6. Rupture Sinus of Valsava (Aorta → RA)

AS ⟹ MS

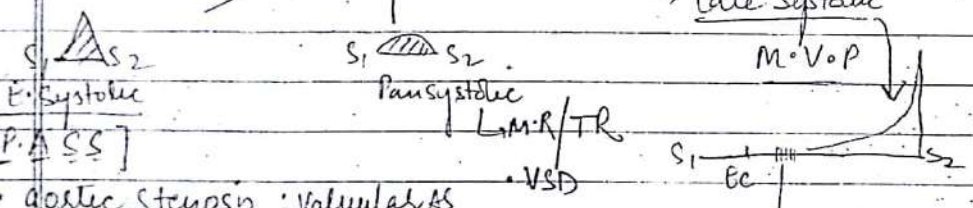


Ejection systolic murmur
intensity ↑/↓

Pansystolic
= intensity = constant

Systolic M

- Aortic Stenosis : Valvular AS
- Pulmonic Stenosis
- HOCM : Sub valvular AS
- Williams Syn : (xx) Supravalvular AS
  Vit D_3 ++ (teratogenic vit)



MVP cause

1. myxomatous degenth of Valve
2. Aschoff : Rheumatic
3. Ischemia : MI
4. infection : SABE
5. Marfans : Tall

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

S. marfan MVP

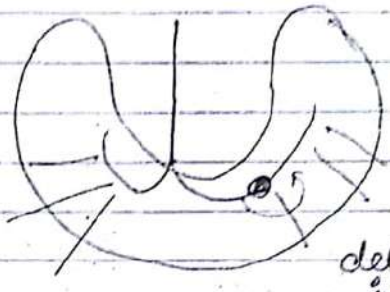
(5) Marfan · Tall arm span > HT
· fibrillin 1, ch 15
· Aortic root dilation
· MVP
· Aortic dissection
· Coronary A · dissection
· Arachnodactyl
· Steinberg sign
· ST · ectopia lentis

mycompanion

LBBB :

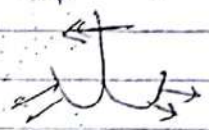
S_1 narrow split S_1 — M_1 — T_1

S_2 narrow split S_2 — A_2 — P_2 — ← 30 msec



delayed information
↓
left side valve close later

depolarization
R → L



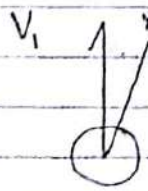
in (N) person
q wave = V_5 | V_6

LBBB

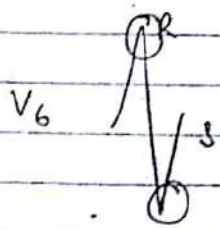
(-) ve q wave due to (R → L) depolarized

Lat (L) with (M) (narrow split) dangerous

- Sequential contraction (1st Rt side → Lft side
- Intermyocyte spread → Broad QRS



tip of the 's' wave
↓
'W' shape



tip of the 'R' wave

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

LBBB

WILLIAM

① V_1 = Broad S : W
② V_6 = Broad R : M
③ absent q (R → L)
④ ST segment elevation.
↳ LBBB.
⑤ more dangerous
b/c sequential contraction of ventricle (not simultaneous)
↓
SCD Concoure

RBBB

MARROW = MNEMONIC

① V_1 = rSR
② V_6 =
③ Broad qRS
④ ST depression
⑤ physiological.

N person

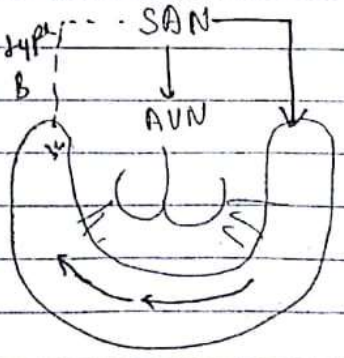
V_1 = q S
V_6 = R S

⑥ S_1 M_1 T_1
wide split S_1

⑦ S_2 A_2 P_2
wide split S_2
delayed closure

WPW synd type A
behave like RBBB.
S_1 wide split S_1 & S_2
S_2

WPW synd type B
like LBBB
S_1 narrow split
S_2



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
Only COMPANION

S_2

Wide split

- Variable split
  - 1) VSD
  - 2) MR
  - Paradoxical motion
- Fixed
  - (1) ASD
  - (2) RBBB
  - (3) WPW type (A)

Narrow split

(1) LVF : myocarditis, ant. wall
PDA
MI

(2) AS
(3) HOCM
(4) LBBB
(5) WPW type (B)

S_3

early diastolic H. sound
- Rapid ventricular filling
- ventricle dilatation
  - ↓ turbulence
  - ventricular gallop

(1) DCM
(2) CHF → CT ratio ↑
(3) cor-pulmonale
  - ↳ RVF (due to COPD) (*)
(4) acute cor pulmonale
  - ↳ RVF (due to PE) (*)

S_4

late diastolic H.S.
- ↓ flow / low inlet obstruction
- LVH
- LAH → Atrial gallop

eg: (1) HOCM | left sided S_4
(2) AS |
(3) PS → Rt. sided S_4
(4) HTN → Lt " "
(5) PAH → Rt " "

PAH

(N) = 25/10 mmHg
mean : 15 mmHg

HTN (PAH) = >25 mm Hg at rest
or
>30 mm Hg at exertion.

CF →

(1) exercise intolerance
(rare → Hemoptysis)
2

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

OG →
- loud P_2
- parasternal heave ⊕

INV → Pulmonary Ⓐ
CXR - PA fullness ⊕
Echo - doppler
IOC → cardiac catheterization

Rx: DOH = PAH → Bosentan
Ambrisentan

NYHA grade I dyspnea → CCB (amlodipine)
" II " → Sildenafil | Tandalafil (PDE-5 ⊖)
" III " → Ambrisentan (ET Ⓐ antagonist)
changing clothes - washroom " IV " → i.v. Epoprostenol (PGI_2)
5 (Rest)
[Inhaled Iloprost]

Systemic HTN :
Ⓝ < 115 | 75
120-139 / 80-89 = Pre-HTN
>140 / 90 = HTN

Stage I HTN = 140-159 | 90-99
II = >160 | 100
HTN emergency | crisis >220/120 + papillary edema (target organ damage)
HTN urgency >180/120 ~~but~~ but target organ damage.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Target → ≤185 / <110

HTNsive emergency →

Rx: aggresive reduction BP

iv. Nicardipine > clevidipine (CCB)

Sodium nitroprusside
C/I → in HTNsive emergency
↓
b/c ↑ IOP

(no neurological deficit) → Target → 160/90 mmHg
HTNsive urgency

Rx: ACE⊖ oral or ARB
(always in low dose → for gradual ↓ of BP
↓
b/c high dose →
Can cause brain damage

Target organ damage in HTN:

1. Heart → LVH : subendocardial ischemia : ST ↓
2. eyes → Hypertensive Retinopathy : earliest finding I Focal Attenuation of Arterioles
   Stage II : I + A-V nipping (Salu sign)
   III : I+II + cotton wool spots (soft exudate)
   IV : I+II+III + papilloedema
3. Kidney → K.F.T.
4. Brain
5. Aorta

1. K.F.T.
   1. Cystatin-C (sensitive test for K. damage)
   2. KIM-I (kidney injury marker)
   3. Neutrophil gelatinase associated lipocalin
   ] Biomarkers of kidney injury
   4. COCKROFT GAULT formula (eGFR)
   5. Creatinine clearance
   6. S. creatinine ↑ = 60-90% damage
      → most specific test for K.F.T.

Brain

Hemorrhagic stroke
m.c. site : putamen (middle cerebral A)

Aorta

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Aorta

- Aortic dissection

(m·c·c·) ① HTN = 70%.
② marfan's syn
③ Syphilis
④ cystic medial necrosis.

C/F

① chest pain at rest (localized at interscapular area) OR
② tear can be spread
retrograde - coronary (A) → MI like symptom - chest pain
anterograde = ICA # (dissection of) ① C/L Hemiplegia ② Horner syndrome

IOC = T·E·E· (transesophageal echo) in hemodynamically unstable pt.
MRI

Aortography → C/I in A. dissection.

TEE:

① intraoperative MI
② Aortic dissection
③ Atrial myxoma
④ IE [both type TEE + Transthoracic echo]

Rx:

TOC = surgical Resection/Repair
DOC = Esmolol (i.v.)
Labetolol [HR ↓ → tear progression relatively slow]
(α+β blocker) ↳ if BP is high (due to reflux (A) of B.F)

- earliest/commonest organ damage in HTN → Heart
- m.c.c. of chronic Renal failure → D. Nephropathy

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx of HTN:

JNC 8 (joint national committee)

- To yr HTN → CCB
- >55 yrs (old) → CCB
- <55 yrs (young) → ACE⊖

Is like Mx of HTN	Young	Old
	$A_{\downarrow}$	$C_{\downarrow}$
	$+C_{\downarrow}$	$+A_{\downarrow}$
	+D	+D

diuretic = thiazide
① HbA1c ↑
① lipid

β-blocker → CSA
Coronary artery indication
UA
PA
Recovery MI
Chronic CCF

Resistant HTN

- uncontrolled HTN inspite of 3 classes of anti HTN drugs (D+)
- m.c.c. of Resistant HTN
  1. non-compliance
  2. Renal (A) stenosis → doppler = IOC
  3. COA → MRI > Aortogram
  4. CONN's synd → plasma renin/aldosterone ratio
  5. Acromegaly → IGF-1 / glucose challenge test
  6. Pheochromocytoma → plasma fractionated metanephrine

HTN

1. m.c.c. → essential HTN / 1° HTN
2. m.c.c. of 2nd HTN → Renal parenchymal disorder = Chronic glomerulonephritis (CGN)
3. m.c.c. of HTN in children = CGN

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

definition 140/90 in Hg (normal)

Oscillometric device

cut-off HTN => ~~≥~~135/85

Syndrome X / metabolic syndromes

(1) centripetal Obesity

(2) waist circumference >102 cm ♂ | >90 cm ♂
>88 cm ♀ | >80 cm ♀

(2) Peripheral Resistance (↑) → HTN

cut off for HTN > 135/85 mm Hg

(3) Insuline Resistance

FBS → 100-125 mg%] impaired glucose tolerance
2 hr → 140-199]

(4) lipids (↑)

Cholesterol (N)

Triglyceride (↑)

LDL (↑)

HDL (↓)

↓

accelerated atherosclerosis →

(↓ 30-40 yrs of age)

(1) DM
(2) Synd X
(3) SLE
(4) nephrotic Syndrome

Coronary Syndrome X

- blockage in very small blood vessels (not main coronary (A))

DIF

Similar to CSA (Chronic Stable Angina)

(1) Treadmill test ST : 80 (+)

angiography = (N)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
mycompanion

#1c

tab ISM
metoprolol
Statin
Ranolazine.

1:500 → familial Hypercholesterolemia
→ AD
Q:→ Tendon xanthoma : achillestendon
(Touton's cells)

-- lipid profile ↑

Cholesterol	↑↑
TG	N
LDL	↑
HDL	N/↓

Rx:
- Statin : Atorvastatin
- (no dietary restriction)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CNS

Headache

① m.c.c. of headache = Tension headache
- Young people
- fronto-occipital
- Dx of exclusion

② m.c.c. of 2° headache = Infection

③ m.c.c. of headache ♂ → tension > migraine > cluster headache
♀ → tension > migraine

m.c.c. of headache frontal : tension > ↑ICP (10-20 mmHg)
temporal : Giant cell Arteritis
occipital : tension > HTN > Basilar migraine

Migraine :

① C.G.R.P. (Calcitonin gene related peptide) → act on ↓ nociceptive Receptors → ↓ Perception of pain
② Cortical spreading depression
③ 5-HT : serotonin
↳ vasoconstriction of intracranial blood vessels
↓
Reflex vasodilation of extracranial blood vessels
↳ duramatter (pain sensitive)
↓
Stretching of dura
↓
Pain

Pulsatile / throbbing headache
Q : sunlight / missed breakfast / nausea : sight/smell of food
Physical exertion +
- Severe photophobia (aversion to light)
- Phonophobia (" " sound)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Pain ⊕ : ① by physical movement of head

- min. duration = 4hr - 24 hr

POUND = Dx of migraine :. (+4/5) should be +ve

P - pulsatile headache — ≥5 attacks/yr

O - one day illness

U - U/L ≫ B/L — Clinical Δ

N - nausea

D - disabling in character

↳ ① pain on head/neck movement

Rx: mild. moderate attack.

① Indomethacin (oral) ... S/E gastritis

② Etoricoxib [COX-2⊖]

③ P.C.M [1gm] [COX-3⊖]
+ Caffeine (V.C.)

Severe migrain

① Triptans

Sumatriptans
- (m.D. tab.) mouth dissa
- nasal spray
- i.m.
- transdermal Patch (Destway)

triptans C/I in

① Prinzmetal Angina

② peripheral Ⓐ ds

③ Pregnancy

④ Basilar migraine

① fastest acting triptans : Rizatriptan (nasal spray)

② longest acting triptans : Frovatriptan

Migrain attack known case
attack lasting >72 hr ⟶ K/A Status Migraniosus

① Sumatriptan nasal spray / i.m.

② Diclofenac i.m.

③ Pentazocine (fortwin)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Status migrainosus
- psychosis

Rx - I.V.F. NS
10% dextros
DOC = Prochlorperazine (i.m.)

migraine variants : (MV)

① cluster headache
∂ : Retroorbital pain
epiphora (tear +ve)
bulbar congestion +
Nasal congestion +
→ Recurrent attacks
multiple attacks of pain / day
duration attack : 1-4 hrs
attack : come during sleep
(migrain attack = never during sleep)
→ awaken the ph.

Rx :
I° line Mx : ① High flow O_2 @ 12L/min
② lignocaine jelly : nasal (trigeminal N ending)
③ Sumatriptan inj (DOC)

Prophylaxis :
① Verapamil
② Gabapentin
③ Valproate
↓
Nerve block (greater occipital N block)
±
Lithium (if self mutilation +ve)

mandatory so severe pain self laceration tendency send to psychiatry if given

DOC for prophylaxis of migrain
↓
Propranolol
if Hypertn/c/o DM
Flunarazine
Lipid
Calcium antagonist

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

01/03/2017
Page 3rd class.

Migrain Variant:

① Cluster headache (DOC) = Triptan, 1° flunarizine

② Opthalmoplegic migrain

P.O.U.N.D. —triptan→ resolution of symptoms

[I/L 3rd Ⓝ palsy] (neurological defect after migrain)

Ⓐ Levator palpebrae superialis : ptosis

Ⓑ MR : divergent squint

- Diplopia Ⓔ (not in 3rd Ⓝ palsy)

for Ⓢ stroke [imaging is done]

ischemic Ⓢ > hemorrhagic Ⓢ

↓ ↓

DW-MRI — NCCT

(diffusion welted-MRI)

③ BASILIAR MIGRAINE :

- Occipital headache (basilar Ⓐ involve)
- Cranial Ⓝ palsy (during headache)

6th Ⓝ → squint/diplopia

8th Ⓝ → Vertigo/Deafness

Stylopharyngeus sensation — 9th Ⓝ → Nasal regurgitation of fluid
Nasal twang

- control of ♡ Rate
- GI tract motility
- Vocal cord

— 10th Ⓝ → palpitation
dysphagia
constipation
dysarthria (unclear speech)

Rule out Stroke R/O = imaging

DW-MRI > NCCT

= gradual improvement of symptoms (in migraine not abrupt)

30yr ♀, headache severe X hrs
nausea / vomiting episodes

O/E

Nuchal Rigidity Ⓐ⁻

DTR = brisk

Babinski sign Ⓐ (upgoing plantar)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Post auricular(N) - Cord like - leprosy.

D/D

1. SAH (subarachanoid hemorrhage)
2. meningitis (①fever ②Altered sensorium ③neural infidility ④seizure (loss → choroid irritation → TCSF flow ⑤Headache (↑ICP → Papilledema) ⑥associated photophobia)
3. migraine.
4. Brain tumor (have long term H/O not short)

Giant cell Arteritis (GCA): (extracranial causes of headache)

- vasculitis (granulomatous) [ICA involve many more]
- Ext. Carotid (A) (ECA) branches involves → Ophthalmic (A) → Blindness (monocular / Binocular)
- Superficial temporal (A) → supply - skin of scalp, - TMJoint → ischemia → develop pain (burning pain) → Jaw claudication (pain in jaw on eating)
- age group >65 yrs
- ① fever (F.U.O.)
  ② temporal headache (non-throbbing - nonpulsatile headache)
  ③ Jaw claudication

O/E:

- Cord like structure (A) (onto images thrombosed Artery)

Inv. ESR (↑) : 100 mm fall/hr.

(N) ♂ [0-20 mm fall/hr], ♀ [0-30 mm fall/hr]

Biopsy: granulomatous vasculitis

Rx : DOC = steroids

(branches) Ext. Carotid (A)

① Sup. thyroid (A)
② Lingual (A)
③ Facial (A)
④ Maxillary (A)
⑤ Superficial temporal (A)
⑥ Post. auricular (A)
⑦ Occipital (A)
⑧ Ascending pharyngeal

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Q. 70yrs ♂ Retired Military Person C/F feel feverish (PCM ↓ab) pain on temples = what is probable Dx:

① GCA
② Fibromyalgia - musculoskeletal pain
③ Intra cranial space occupied lesion (ICSOL) - papilloedema + early morning headache
④ tension headache [fronto occipital pain, relatively young person

[ICSOL]:

- ↑ IOP
- Brain tumor - m.c. tumor of brain = metastasis (Oat cell Ca, Breast Ca, malignant melanoma)

[BBB]
- foot process of protoplasmic Astrocytes

- lobes m.c. involve in metastasis → cortex (MCA) (Parieto-temporo
- m.c. 1° tumor (malignant) of brain - Glioma (Astrocytoma)
- m.c. 1° benign brain tumor - meningioma
  - (Intracalcium calcification
  - visible on X-ray skull
  - on CT = Comet tail sign
  - causing erosion of the skull (damage of inner table of cranium)

Incidence

2°(metastasis) > Meningioma > Astrocytoma (34%)

- brain Tumor ☇ worst prognosis = Glioblastoma multiforme (multicentricity)

IOC for brain Tumor : gadolinium enhanced MRI

DOC for cerebral edema - dexamethasone

DOC for ① ~~ICP~~ ICT : Mannitol

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

C/E: ↑ ICP

1. Frontal headache (early morning)
2. Projectile vomiting
3. 6th (N) palsy = due to pressure ↑
   "(false localizing sign)"
   6th (N) > 7th (N) > 3rd (N) palsy
   - longest intradural course
   - Causes - diplopia (on looking sideways)

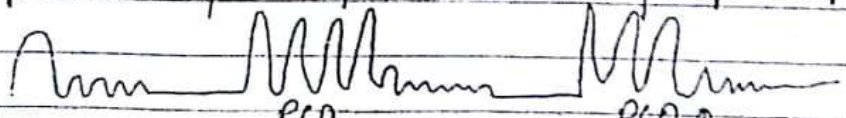
thinnest cranial (N) = 4
thickest " " = 5

4. Reticular Activating System (RAS) affected
   - Stupor → COMA [GCS < 7]
5. Cerebellum (compressed)
   - gait ataxia → Paleocerebellum (GP)
   - truncal ataxia → Archicerebellum
   - limb ataxia → Neocerebellum
     - finger-nose test → Past Pointing

O/E: ↑ ICP

1. HR ↓ <60bpm] Cushing Reflex
2. BP ↑]
3. 

Pre-Botzinger complex = initiation of inspiration

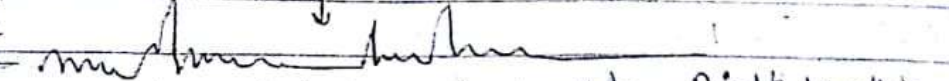


Hypo Apnea Hyper Hypo Apnea Hyper Hypo

↓

Periodic breathing / Cheyne Stokes breathing
[also seen in CHF]

Q. CNS malfunction (Characteristic Pattern of breath)



Irregularly irregular breathing = Biot's breathing

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Apnea : Involuntary cessation of breathing > 20 sec
+
bradycardia

Cushing triad

1. Bradycardia
2. Hypertension
3. Periodic breathing / Cheyne Stokes breathing

CNS examination of pt. of brain Tumor · ↑ICP

4. DTR : Brisk — UMNL
(Loss of Cx control)

Pectoral Jerk	$C_{5/6}$	Brisk Reflex
Biceps (J)	$C_{5/6}$	
Knee (J)	$L_{2/3/4}$	
Ankle (J)	S_1 S_2	

Superficial Reflex = Ont

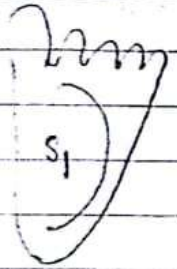
Cremasteric Reflex	L_1 : genitofemoral (N)
Bulbocavernous Reflex	$S_{2/3/4}$
Anal Reflex	$S_{4/5}$
↳ Perianal skin	

Cushing ulcer
= Stress / ↑ ICP
= Stomach.

Cameron ulcer
↳ Wahus hernia
↳ = Stomach.

H. pylori ulcer
↳ 1st part of duodenum

Curling ulcer



Plantar flexion = (N)
UMNL : Dorsiflexion of great toe
+ fanning small toe

Babinski sign +
(NREM Stage III, infant - physiologically)

Hyperkeratosis sole foot :
Tactile stimulus - on lateral malleolus → little toe
↳ same finding (+) → K/a/c **Chaddock sign**

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Spasticity : Some resistance in flexion & extension movements.
Rigidity : Same resistance on flexion & extension movements.

Sign : Tibial tuberosity → downwards
↳ k/a "Oppenheim sign"

Squeeze calf muscle
↳ k/a "Gordon sign"

Reflexes of Upper limb k/a
Hoffman sign +
(terminal phalanx)

✓ tone ↑ : spasticity c/l
↓
Involve antigravity muscles → Biceps
- Hamstring
- Dorsiflexor foot

③ Fundus examination - Papilloedema +

Phenylephrine
- earliest fundus finding - blurring of disc margin
IOC = gadolinium enhanced MRI

Rx :
- Radiotherapy
↳ Sx Radiation reactants.
: PET [18-FDG]

Gamma Knife Sx → for isolated/focal lesion.
(Stereotactic Sx)

Brain tumor in children:
① m.c ⓣ in children → cerebellar Astrocytoma > Medulloblastoma
(Pilocytic)
② m.c tetgn brain ⓣ → craniopharyngioma

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Craniopharyngioma
1. Rathke pouch
2. cystic Tx
3. intracranial calcification
4. visible on X-ray of skull
5. 
Bitemporal Hemianopia
6. Vasopressin ↓ → central diabetic insipidus
Polyuria, polydipsia
7. precocious puberty
- short stature

Brain Tx ∑ worst prognosis in children = Brain stem glioma
- 6th month mortality rate = 100%

Bad prognosis
(Medulloblastoma)
- CSF spread
- cranio-spinal axis spread
IOC:
MRI: CSF cytology
Rx:
DE-BULKING Sx
+ RT
HPE = Chang classification
IOC =

① IOC = gadolinium MRI
↳ for cerebral edema
= dexamethasone

www.FirstRanker.com
Scanned by CamScanner

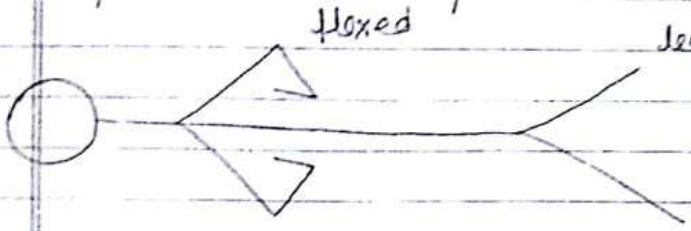
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

mycompanion

↑ ICP

Rx:

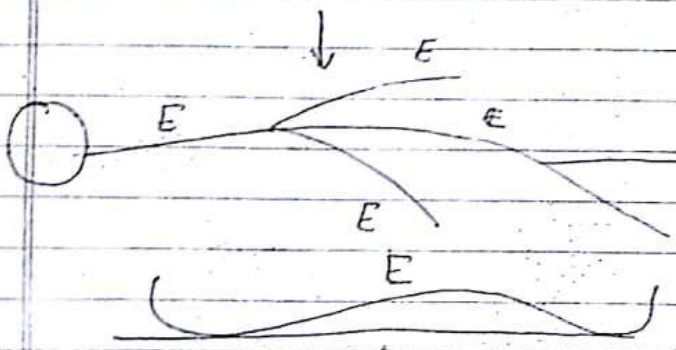
① i.v. 3% saline or mannitol / acetazolamide



decorticate posturing

(mid brain herniation process started)

[Uncal Herniation]



Opisthotonus = total body extension

decerebrate posturing

Brain death = Brain stem death not brain cortex

Spontaneous
- movement of toes/finger
- DTR : elicit

↓

Organ Harvesting = save life
- Heart
- 2 lungs
- 2 kidney
- 1 liver
- 1 Pancreas
- 1 Small intestine

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

② Ventriculostomy

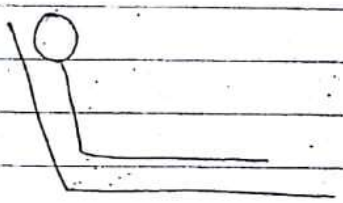
automated ICP monitor catheter : lateral horn ventricle
if Sensor records >20mm Hg
means attached to one way value – Open automatically
drainage of CSF
Sterile container

③ Intubate (Endotracheal tube + IPPV]

Elective hyperventilation R.R ↑
Hyperventilation
CO_2 washout
Chorold plexus : vasoconstriction
↓ CSF production [↑@ 20ml/hr]
lower Raised ICP

Q. most beneficial for pt survival of ↑ ICP
① ↑ PO_2
② ↓ PO_2
③ ↑ PCO_2
④ ↓ PCO_2 → (Hyperventilation)

④ Positioning
- sitting position is beneficial
- "Reverse Trendenburg position"



⑤ Nm blocking Agent → ↓ ICP
↳ Nm paralysis (done)

⑥ Tier II therapy → Pentobarbital coma
Barbiturates : ↓ metabolism of neurons
↑ survival

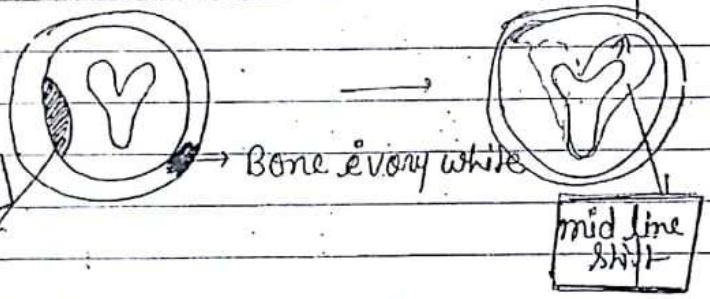
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

⑦ Therapeutic Hypothermia
temp brain = (N) 32°C
if (↓) temp (↓) <32°C
survival (↑)

Head injury : ICH (Intracranial Hemorrhage)
- 20 yrs : Bike accident
- head slammed into road
- Unconcious → Concious → Hospital
lucid interval
- pt. sleep
- COMA / death

NCCT



Ventricular Hyperdensity → extradural Hx
middle meningeal (A) #

↓

Immediate Mx → Burr Hole Sx
or
(8) meds
to reduce (P)
to ↓ ICP.

↓

TOH for ICH → Hemicraniectomy
(EDH)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Peripheral neuropathy
Diabetic neuropathy
↓
High Steppage gait
(Stamping gait)
↓
70 yr ♂ obese T2DM
Slipped in bathroom
↓
Head slammed against wall / floor
↓
- no loss of consciousness
- bump on head
- subsequently develop daily headache
↓
2 wks back develop
- focal weakness arm

O/E
fundus : papilledema ⊕
DTR : brisk
Babinski : ⊕

Inv
- NCCT



Conv-Concave
Chronic subdural Hx
(Cortical bridging vein) #

Rx: ICH Score

-Age	>75 yr	(1)
-BP	>140/90	
-GCS	<7	
-Volume of bleeding	>30 cc	→ Severe condition
-Location of bleeding	Infratentorial	→ Hemicraniectomy

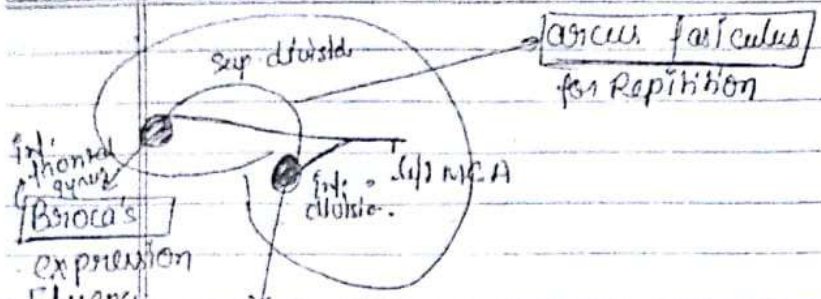
mild cases
↓
Conservative Rx
- glycerol
- acetazolamide

Pt not c late presentation
>4 wks : bleed can be absorbs so (missed)
↓
- Isodense
(Hyperdense converts into isodense)
↓
CT become (N)
(so if symptoms +ve & CT (N) Conservative Mx to be done

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

MCA = Middle Cerebral (B).



Manifestation of blockage of R MCA.

① global Aphasia

Qus:
50 yr ♂ CEO, HTN/smoker
Sales meeting ⊕
C/O sudden onset →
Unability to speak
Unability to move arm
facial assymetry

O/E

STROKE
Can't Smile : deviation
Can't Talk
Can't Raise arm
opthalmoplegia

O/E
OTR: Brisk
Babinski sign ⊕
fundus Ⓝ
↓
MCA Territory Stroke

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CT Scan



Hyperdensity (white)

↓

Intraparenchymal bleeding (m.c. site - putamen) m.c. in HTN)

↓

↑ bleeding
↑ ICP

Rx: HTSive Crisis ↑ICP
IV Nicardipine Ventriculostomy
Clevidipine Hemi craniectomy

Target of Rx: Aggressive reduction of BP ≥ 1h minute.
Target = 185/110mmHg

SubArachnoid Bleeding :

- Causes : Trauma (m.c.c. overall)
  Rupture Berry Aneurysm
  " [Charcot (B)]
  " [Bouchard (A)] → HTN
  " Mycotic (A) → (bacterial inf. = Staph aureus)

C/F - warning symptoms
- Pin point excruciating headache
- for seconds (less)
- ↓ hrs-day

Headache : Worst Headache of life
Thunder Clap headache

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

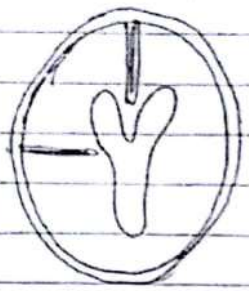
- vomiting projectile
- photo/phonophobia

O/E -

- Nuchal Rigidity ⊕
  (Blood : meningeal irritation)
- DTR Brüsk / babinski ⊕

Inv:

actual bleeding is very less



NCCT : blood in Sylvian fissure / interhemispheric fissure.

Rx:

AIIMS DOC: SAH : Nimodipine (CCB)
(Prevent vasospasm)

Pl. of SAH Cause of death

1. Vasospasm → infraction
2. bleeding
3. Rebleeding
4. Hydrocephalus

Berry Aneurysm

- m.c site → Ant communicating (A) ↔ Ant cerebral (A)
(Ant circulation of brain)

Rare → Vertebral (A) — Body of (A)

- which layer defective = Tunica media
  - neck of berry = elastic lamina
- m.c cranial (N) involve in unruptured Berry = 3rd (N) palsy

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

MRI ≥ 1·5 Tesla
(3-8 Tesla)

Date __/__/__
Page
my companion

3rd (N) palsy - ptosis (I/L)
Squint

- MC cranial (N) involve in ruptured berry (A) = 3rd (N) palsy

IOC:
Unruptured = MRA angiography

TOC for unruptured berry Aneurysm
(1) Cath lab → Thrombosis + fibrosis.
(2)
(1) endovascular coiling
↓
(2) Aneurysmal clip
(MRI = C/I)

MRI = C/I relative.
(1) Pacemaker
(2) Aneurysmal clip
(3) Piston prosthesis

Total Hip Replacement / T. Knee R
non ferromagnetic material
- molybedenum - cobalt alloy
- MRI can be done

I.C.H.
(1) SDH → gradual onset neurological deficit → concavoconcave
(2) EDH → immediate symptoms / Lucid interval → biconvex
(3) SAH → Thunderclap H + nuchal rigidity → whiteness on sylvian fissure.
(4) IPH (m.c. type) = HTN → irregular hyperdensity on putamen.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Boxing / mix marital Art :

- knock-out punch
- unconscious → conscious → Unconscious → Stupor → Hemicraniectomy
- Lucid interval
- Pupil
  1. EDH
  2. SDH

acute subdural Hx (ASDH)

→ Concavo-convex

Boxing → trauma : Basal ganglia trauma → Parkinsonism

1. Akinetic
2. Mutism

Frontal lobe #

- aggressive
- anti-social behaviour

Cortical Atrophy

- dementia

SAH

- NCCT = (N)

1- guarded lumbar puncture = Bloody CSF

	RBC in CSF
(N) Healthy CSF	
- 0-4 lymphocytes/cumm	
- Clear	Red
Sugar - 2/3 blood sugar	↑
Prot - 15-45 mg%	↑
Pressure < 10-20 mm Hg	↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

SAH Pt
Come after
>24 hrs ② NCCT - (+)
gurded L.P. - Xanthochromic CSF
(due to RBC lysis → bilirubin
yellow tinge)

* Pt are under high stress
① Catecholamine ↑
- coronary (+) ischemia
MI : T wave inversion

② B.N.P. level ↑
- natriuresis (+)
Hyponatremia
[seizure if Na < 120 meq]

SAH Pt baseline inv.
① NCCT
② L.P.
③ ECG
④ S. sodium

Intraventricular bleeding (IVB)

① Term Baby
⇒ outlet forceps → Birth trauma
Cry shrill
Bulging Ant. Fontanelle.
DTR Brisk
Moro's exaggerated
Pallor +++ (Pink ⇒ white)

IOC → IVB in term baby/neonate
= USG skull

Rx: i.v. phenobarbitone
i.v. mannitol
Blood clot: < Aqueduct of Sylvius → Obstructive hydrocephalus
foramen of munro

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Obstructive hydrocephalus
- Head circumference ↑ - delayed milestone.

Rx: V-P shunting (ventricular-peritoneal shunt)

Preterm baby / or / term baby → same Mx.

PRION dis

- proteinaceous inf. particle smallest living particle
  NUCLEIC ACID ⊖, Protein coat -
  ® + heat : 121°C
  Spread : cross the species barrier
  • genetic Basis
  ↳ chro. 20 defect

BOVINE SPONGIFORM (Mad Cows.)

Encephalopathy
↓
myoclonus in body
↓
Human consume beef
↓
Prion → cross BBB
(gut)
↓
PrP^{Sc} → "Scrapie"

C/F:
Beef consuming
6-18m
1. myoclonus : few Muscle group involved mouth
2. dementia

AMNESIA

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Short term memory loss
long term memory ; loss

3. Paracentral lobule
↳ control of U. Bladder loss
URGE incontinence

4. APATHY

5. ATAXIA : gait
Bed sore : infection
SEPSIS

Prion ds
- Myoclonus
- Ioc prion = EEG

* variant CREUTZFELT JACOB ds.

inv (1) L-P = CSF protien 14-3-3

(2) EEG
NERM-3 = delta wave (slowest)
(0-4 Hz)

EEG = 20 electrode
periodic sharpwave complexes
CCTV
myoclonus
Jerk

(3) MRI head = *Hockey stick Sign
ecg : digoxin
echo : MS
* cortical ribbioning (grey matter daimage)

classical CJD : same CJF why?
1. corneal transplant : instrument
135° >4Hr
2. cadaveric pituitary : GH extract
3. Dura mattar transplant

KURU (1950) : Cannibalism
↳ Tribal : west indies

- familial fatal insomnia
- Gerstman / Schlaukler Synd. - Gerstman - Straussler - Scheinker syndrome
↳ chr. 20th genetic basis

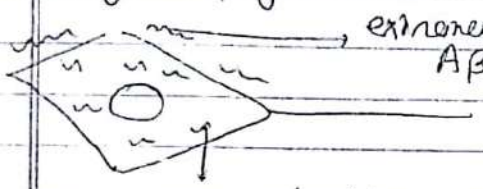
= transmissible spongiform encephalopathy.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ALZEIHMER'S ds :

- ↓ Ach
- nucleus of Meynert Basalis
- damage in grey matter



extraneuronal finding (incidental finding)
Aβ amyloid
↳ not relate to Pathogenesity or severity of ds.

neurofibrillary tangles ∝ dementia severity

- genetic ds chr 1 | chr 14 | chr 19 | 21 | 22
  ↓
  trisomy 21 (if survive)
  > 35 yr : pre-senile dementia

Parietal
Temporal lobe

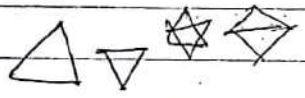
- 4A
  1. short term memory : loss
  2. long term memory : loss

(A) **Amnesia**

2. dominant parietal lobe : Atrophy

(A) **Aphasia**

3. non-dominant parietal lobe : loss of visio-spatial skill



(A) **Apraxia** (constructional)

4. inability to appreciate of force full U. Bladder, self neglect
   force full loaded Rectum.

(A) **Anosoagnosia**

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

21-24 → mild (A)
10-20 → mod (B)
<10 → severe (C)

<24 Kla dementia
30 items.

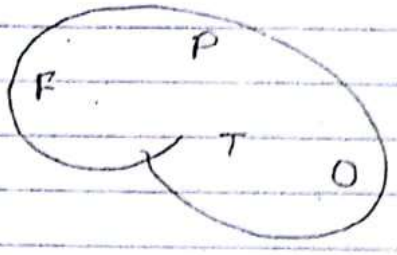
Inv: (1) M.M.S.E. (mini mental score examination)
date | month | time | festival
cell phone, mother's
serial subtraction = (dyscalculia) (not acalculia)
100-5 = 95 000000 -5 = 900000 0

Depression
= pseudo-dementia

(2) IOC (AD) = functional MRI (fMRI)
- metabolism (↓) = (Parietal & Temporal lobe)

(3) MRI = late stage = Cortical atrophy.
pseudoenlargement ventricle +++

DOC (AD) = donepezil / momantine
Rivastigmine
galantamine
Tacrine - hepatotoxicity



Rt. handed person:

Dominant parietal lobe → left
left MCA

(1) MATHS
(2) Understanding written text
(3) Rt - left orientation
(4) speech

MCA block
A Acalculia
A Agraphia
A finger Agnosia
A Aphasia (global)

→ Gerstmann Syndrome

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

non-dominant parietal lobe : #'s
visuo-spatial skills — Apraxia
neglect of non-dominant side of body
(Hemineglect) (not bare half body)

Temporal lobe : ⟶ #

① Short term memory : Hippocampum
long term " : neo-cortex
1) Antegrade Amnesia
short term memory loss

② memory of faces
2) Prosoprognosia
(impaired facial recognition)

3) Complex hallucination
taste : metallic taste
smell : Rotten fish
hearing : Music

④ Deja-vu
familiar & you
(unknown b/t ?)

⑤ Jamais vu
unfamiliar

Frontal lobe #

① Aggressive
Anti-social behaviour
② Personality change
③ Urge incontinence
(Paracentral lobule #
loss of U. bladder)
④ Apathy
⑤ Abulia
(lack of desire to speak)
⑥ Primitive reflexes ⊕
Rooting Reflex persists
grasp reflex ⊕

Ⓝ
Rooting Reflex
= Persist upto 1 mnth
grasp reflex
= persist upto 4 mnth

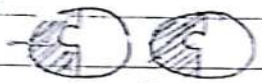
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Memo before → lowest upto 6 m
Naser Raffeal ✡✡

⑦ "Magnetic gait" = gait Apraxia
(programming of gait defective)

Occipital lobe #
① visual hallucinations
② PCA #



Homonymous Hemianopia c macular sparing
(macula ← MCA)

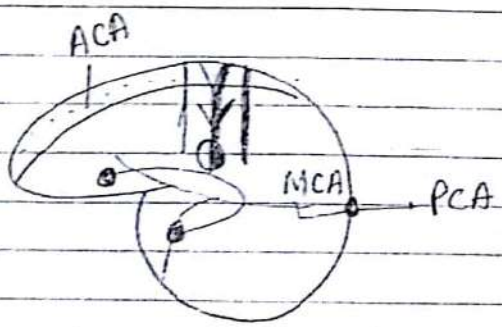
③ B/L PCA #



- Tubular vision
- Bumping into object / falling
- GUN BARREL SIGN

→ ANTON Syndrome (visual Anosognosia)

④ Palinopsia = persistence of image even object remove from field of visi



ACA # = C/L spastic monoplegia
① B/L " paraplegia
② Aggressive / antisocial behaviours
③ Abulia
④ Urge incontinence

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

MCA

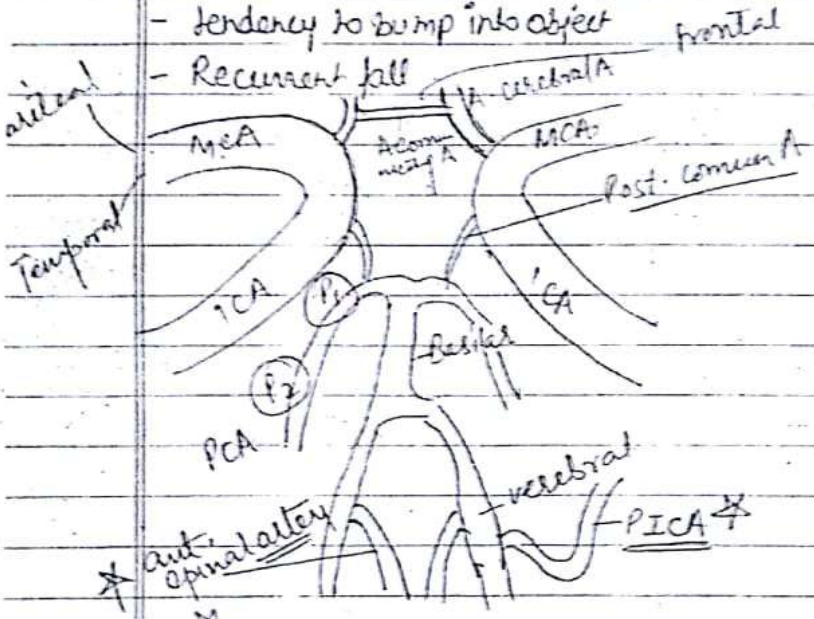
- C/L face weakness
- Inability to raise arm

(L) MCA # - Aphasia
(R) MCA # Apraxia

Complex hallucination
Prosoprognosia.

PCA

- Visual hallucination
- Tendency to bump into object
- Recurrent fall

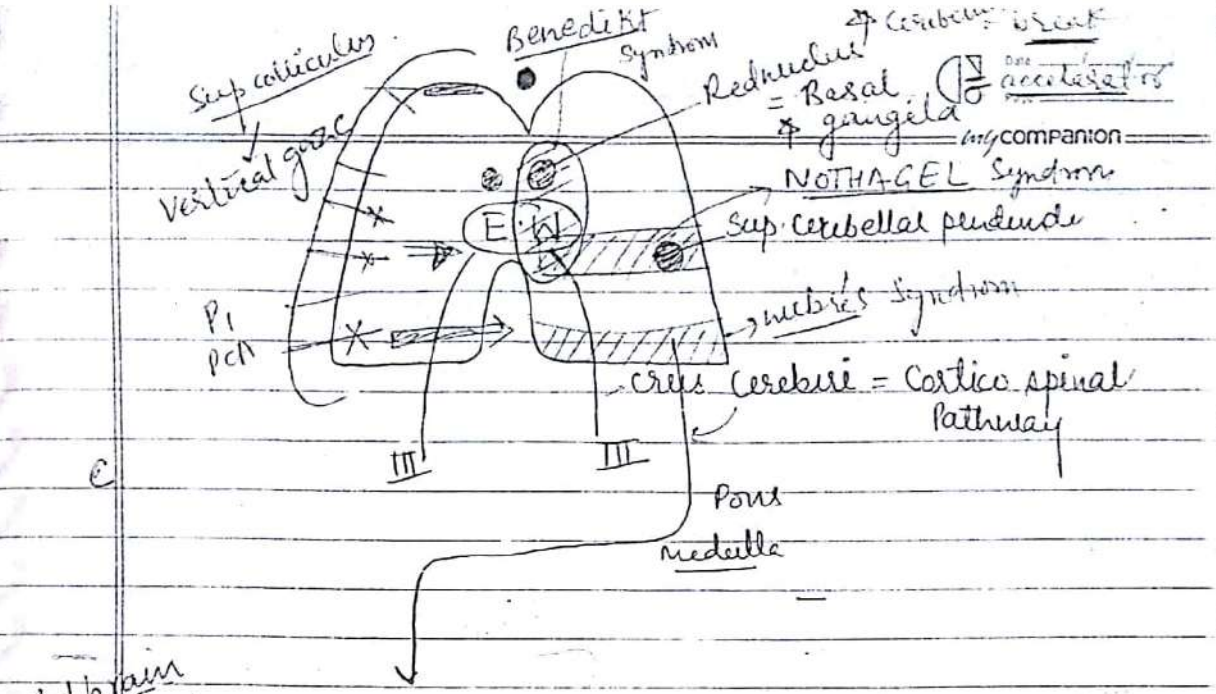


* CIRCLE OF WILLIS
MCA is not a part of

PCA P_1 = midbrain
PCA P_2 = occipital cortex
* Basilar artery = Pons (Pontine stroke)
* Vertebral artery = medulla

www.FirstRanker.com
Scanned by CamScanner

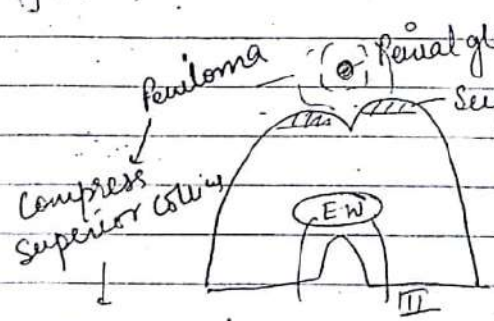
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



Mid brain stroke

- Webers = I/L 3rd N palsy + C/L hemiplegia
- nothagel = I/L 3rd N palsy + I/L gait ataxia (intentional tremor) (Past pointing)
- Benedikt syndrom = I/L 3rd palsy + C/L resting tremors, Bradykinesia, C/L rigidity
  - Basal ganglia damage

single syndrome of mid brain stroke not involve III nucleus



- No vertical gaze
- Recurrent fall
- Spilling of food

} Perinaud Sy.

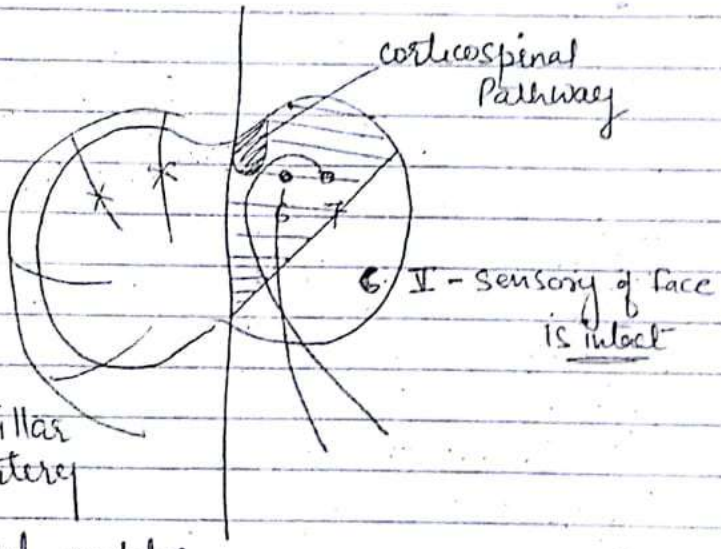
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Mid brain ## : P1 PCA

Perinaud's syn.	Pinealomma : impaired vertical gaze
Claude – features of both	Benedikt + nonthorget → I/L 3rd N palsy + I/L ataxia + C/L Resting tremor
Weber's	I/L 3rd N palsy + C/L Hemiplegia.

PONTINE STROKE



Millard gubler

I/L 6th Palsy
I/L 7th Palsy – motor ## face
C/L Hemiplegia

Sensory face intact

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

MEDULLA shole

Ant Spinal Artery

- Corticospinal pathway
- Reticular body → cerebellum
- Sympathetic tract
- V sensory nucleus
- Lat. Spinothalamic pathway: C/L Pain Temp
- N. tractus solitarius 7/9/10
- N. ambiguus 9/10/11

PICA

Medial medullary syndrome

Lateral medullary Syndrome

(5,9,7,10)

- 12 not involved

vertebral artery

Trigeminal motor (N) — Trigeminal nucleus Sensory

integration fibre

Pons

medulla

C_1-C_2 (lower limit)

Mesencephalic N

- Jaw Jerk (V_s, V_m)
  - Integration at Pons

Lateral medullary syndrome

Vertebral artery occlusion = Wallenberg syndrome

1. Restiform body # → I/L ataxia
2. Sympathetic # → Horner syndrome [P-MEAL]
   - P → Ptosis
   - M → miosis
   - E → Enophthalmos
   - A → Anhidrosis
   - L → loss of ciliospinal Reflex
3. V sensory
   - loss of hot/cold/all kind of sensation
4. Lateral spinothalamic
5. Ageusia

Crossed Hemi-Anaesthesia

Pain, temp loss.

7 | 9

Tongue Pharynx

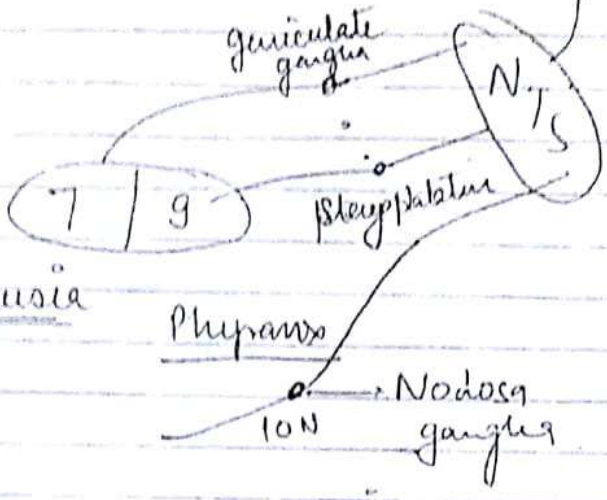
10

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

INSULA
Temporal

(5)



Taste	receptor
• salt	– ENac
• Sugar	– glucidem
• Bitter	
• Sour	
• UMAMI	– mglu-4 rx

ageusia

(6) $9^{th}N$ Nasal Twang
Nasal Reg fluid

(7) $10^{th}N$ Dysarthria
palpitation
gastroparesis
constipation

→ gag reflex ⊖
aspiration

(8) $11^{th}N$ = drooping shoulder

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Medial medullary Syn

I/L 12th N palsy
+ C/L Hemiplegia

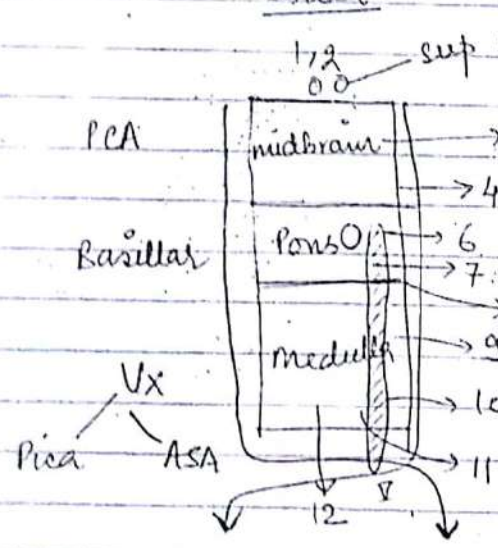
→ Tongue protusion
I/L tounge deviation

Hemiplegia

midbrain	1. MCA #	Brain Stem Stroke	
	2. PCA # P_1 : Weber		3 N
Pons	3. Basilar A # : millard gubler		6/7 N
medulla	4. Ant. spinal A # Medial medullary Syn		12 N

* Hemiplegia not present in PICA #

Cortex



B/L Brain stem STROKE

1. B/L corticospinal # B/L Babanski
Quadriplegia
2. 9, 10, 12th N Palsy : Can't drink
Can't eat
Can't talk
3. 3, 4, 6th N palsy ⇒ eye movts impaired ⇒ B/L Brain Stem stroke
4. CORTEX : RAS : ALERT AWAKE ⇒ LOCKED IN Syndrom

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date
Page
mycompanion

* VERTICAL gaze possible in Locked in Syndrom
(movts)

MULTI INFART dementia

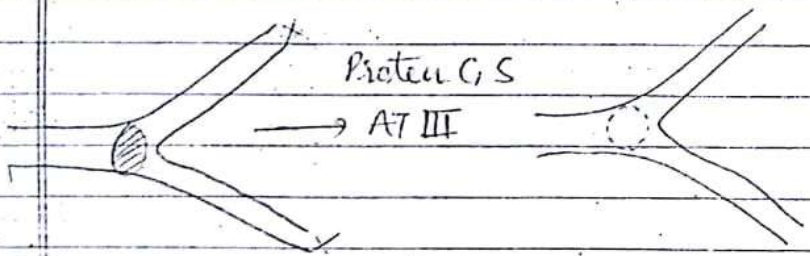
- lipohyalinosis of Perforators
- Risk factors : smoking, DM, HTN

Lacunar Stroke

C/F Progressive ↑ amnesia

grey matter # dementia

* Binswanger's ds ← white matter # spasticity, Brisk DTR, Babinski



Transient Ischemic attack (TIA)
warning symptom for stroke

* Soya smoker

(1.) Ophthalmic A # → minutes

Amaurosis fugax
(Transient blindness) *

ACA II (2.) Paraplegia → spontaneous resolⁿ

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

MCA # (3) Facial asymmetry / sagging inability to protrude tongue
more often
↳ spontaneous resolution

RCA # (4) Palinopsia

VxA # (5) Nasal regurgitation
fluid / Nasal twang
Dysarthria

(6) Pins & needle sensation
Paresthesia (Tingling sen)

Symptoms(s) disappear (< 24 Hr)
CT / DWMRI = (-ve)
TIA

Symptom(s) Persist > (24 hr)
CT / DWMRI = Hypodensity
Hyperdensity
STROKE

TIA —48hr→ STROKE

ABCD2 SCORE

- Age > 65 — 1
- BP > 140/90 — 1
- C/F : facial asymetry + Arm weakness + — 1
- duration : > < 10 min
  > 10 min + High tendency — 1
- DM + - — 1

Score = 5 — 5
Chance ⇒ 22%

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Inv: (1) ECG = r/o atrial fibrillation = (N)
(2) TTE / TEE
↓ → clot/mass/wide ↓ if (N)
r/o Mural Thrombus
(3) Doppler - ICA : Atherosclerosis - if (N)
(4) Lipid profile. : (↑) : type 2A Hypercholesterolemia (FHC, AD,
(5) Homocysteine : (↑) thrombus (+)

Rx: (1) tab Aspirin 300mg ⟹ 75 mg for life long
Clopidogrel 300mg ⟹ 75 mg (dual antiplatelets drug.
(loading dose)
(2) tab. Rosuvastatin — (for atherosclerosis)
(3) Rx/9/12
(4) → if clots (+) : oral dabigatran
" rivaroxaban
" warfarin

depends on report subsequently

50 yrs ♂, HTN / smoker, neglected symptoms of T.I.A before, come. (Rawalpindi)
6 am : morning tea
6:30 am : unconscious, unresponsive sofa.
7:00 am : in hospital.

O/E
(A) GCS = 5, OTA Brisk, Chaddock sign +ve
(1) Eye opening
4 = on commands
4 = spontaneous eye open
3 = on commands
2 = on pain (+) < Knuckles → Sternum
thumb → Supra-orbital margin.
1 = no response.

↓
Commahose pt.

www.FirstRanker.com
Scanned by CamScanner

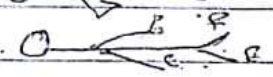
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

(2) Verbal response

5 = Conscious, oriented, time
4 = Conscious, disoriented to time/place/person
3 = inappropriate words
2 = incomprehensible words (mumbling) (Can't understandable)
1 = no response.

(3) Motor Activity

6 = follow commands
5 = localising pain
4 = withdrawal (C/L side, not localising pain)
3 = decorticate 
2 = decerebrate 
1 = no movement

Que: COPDpt.
pt on ventilator, wean off from ventilator
↓ dose sedation, stop sch
evening → spontaneous eye opening (4)
→ follow commands (6)
→ unintubated (ET) ... 1

GCS = 11 ≈ 10ET (If given in data)

Calculate GCS in dead person.
E, V, M, = 3
GCS <7 ≈ Coma
<7 = indication for intubation

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Mx of comatose pt:

(1) Rapid sequence intubation

intubation → ↑ICP

Fentanyl iv.
(blunts the effect of intubation on ↑ICP)

Sellick' maneuver : cricoid pressure

E.T. + IPPV : RR ↑
CO_2 ↓ - Hyperventilation.
V.C. - Capillaries choroid-plexus
Elective Hyperventilation

(2) BP → >220/130 + papilloedema - i.v. nicardipine
→ 160/100 → maintain BP not ↓ (b/c maintain) → i.v. normal saline (5% Dextrose Hypotonic fluids
Cause cerebral edema never given
gives either isotonic (0.9%) or hypertonic

CPP = MAP − ICP
73 93 − 20 mmHg
(N) CPP = 60-80 mmHg

(3) i.v. phenytoin loading

(4) NCCT → Hypodensity (ischemic stroke) m.c. >> Hyperdensity (hemorrhagic stroke)

(5) i.v. Reteplase
(Plasmin : fibrin I → fibrin S)
window in stroke period for thrombolysis < 3 hrs. on onset of symptoms
walk/talk again

(1) thrombolysis - C/I
(2) Manage raised ICP
(3) Warfarin toxicity for
: PT ↑↑
Rx : FFP > Cryoppt
Heparin toxicity : aPTT ↑
Rx : FFP > Cryoppt.
Seek factor (9)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(N) PT = 11-16 sec
APTT = 30-45 sec

Cryo cells = 4
Whole blood cells = 5,8
Richest source of clotting factor = FFP

companion

If transit time >4 hrs from onset (come) of symptoms
↓
Cath. lab : angiography
↓
intra-arterial Reteplase
for thrombosis
(upper limit for t/t of ischemic stroke : 4.5 hrs (4½ hrs)
in MI : ≤ 12 hrs

Antidote for
Heparin = protamine
Warfarin = Vit K (1)
Vit K (2) = gut bacteria (Bacteroides)
STK toxicity = E·A·C·A
(epsilon-amino-caproic acid)
(+) $Tx A_2$

EEG
- Invented by Hansberger
- 20 electrodes

Seizure
↓
ab (N) electrical activity generated from focus

Recording EEG = K/a
montage
focus
↓
record video-EEG
↓
routine EEG

Convulsion
- violent jerking of all muscles
- uprolling of eyeball
- frothing : saliva corners of mouth
- peri-oral cyanosis
- tongue bite (+)
- Urine incontinence
- stool incontinence

30-60 sec
↓
risk of
- Aspiration
- ↑↑ temp >41°C ← (hyperthermia)

brain damage ← due to muscle hyperactivity

Unconcious, DTR Brisk
Corneal Reflex Ont
K/a post-ictal deficit
↓
after min-hrs
↓
Concious, oriented, DTR (N)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

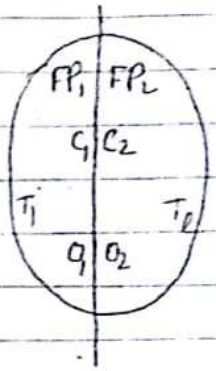
Kia

mycompanion

Epilepsy

≥ 2 consecutive episodes

Montage



α - eye closed : 8-13 Hz

β - eye open : 13-30 Hz

γ = problem solving : 30-100 Hz

NREM

NREM 1, 2, 3

NREM 2 = longest phase
- sleep spindle
- mu-complex

NREM 3 = tone ↓
deep sleep
delta wave = 0-4 Hz
↳ slowest ECG pattern

↳ highest Amplitude
↳ slowest
↳ NREM-3
↳ Delta sleep

REM

25% sleep time
- (60-90 mint)
- 4-6 REM cycle/8hr sleep

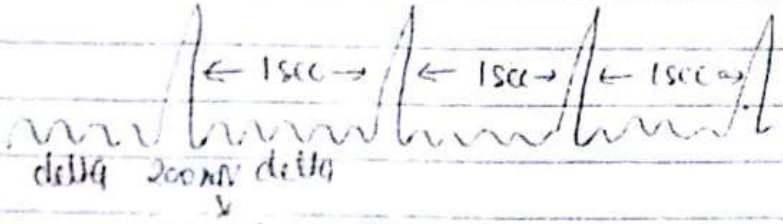
eye closed = β
"paradoxical sleep"

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Variant CJDs:

NREM-3



↳ high voltage Burst (b/w delta wave - NREM-3
Periodic sharp wave complexes
myoclonus ⊕

≠ GTCS
↳ Ab(N) spike : 20/20 leads
↳ Ab(N) spike - T_1, T_2 only
↳ focal seizure

m.c. epilepsy in children - Benign Rolandic epilepsy (BRE)
m.c. seizure in children - Febrile seizure

FS

- 6mnth - 5yr
- Sudden in spike fever
- PCM : 15mg/kg/dose X 2
- sponging ⊂ chilled water
  ↓
  Vasoconstriction
  ↓
  Tonus → clonus (violent shaking)
  peri-oral cyanosis
  (30-60 sec.)

BRE

- 2-13 yr
- focal seizures
- twitching facial muscle ⊕ one side
- saliva drooling
- EEG
- Carbamazepine (DOC)

Crying / Conscious

Post ictal deficit : Absent

family H/o ⊕ - 30%
genetic predisposition ⊕
1° febrile seizure Mx → oral diazepam (for prophylaxis)
(as long as fever +nt)

intermittent prophylaxis

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Mx of an episode of febrile seizure: (at home)

① Intranasal midazolam/
Rectal diazepam

Typical febrile seizure	Atypical febrile seizure
i)- usually on day 1 : fever	
2)- duration : < 15 min	
3)- post ictal deficit ⊖nt	post ictal deficit ⊕nt
	1°P = oral valproate (continuous prophylaxis)

Episodes:
- Hospital : I.V. Lorazepam
- Home : Intranasal midazolam >> Rectal diazepam

Dx: Child c first episode of febrile seizure.
Lumbar puncture ⇒ L3-L4 (to rule out meningitis)
CSF = turbid
>1000 PMN
CSF sugar ↓
Protein ↑
↓
acute bacterial/pyogenic meningitis (ABM) → I.V. Ceftriaxone

ABM
- m.c. cause of bacterial meningitis in neonate (in world) = grp B strept. (strep. agalactiae)
In India = Klebsiella > E. coli >
Rare = Listeria monocytogenes
(Actin Rockets = cell 2 cell spreads
not responsive to → 2gen. cephalosporin
so given Ampicillin

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page

my companion

M.C.C. in child = Strep. pneumoniae
H. influenza type B
↳ Hib vaccine = 2|4|6|18 mnth.
↳ incidence ↓
↳ Pus : B^{in} (N) gliosis → SN clearness

in adult = pneumococcus
meningococcus

Sporadic (m.c.c.) → pneumococcus
epidemics (winter) → meningococcus
↳ early spread w/o droplets

meningitis → meningococcemia
- Sepsis
- DIC
- adrenal hemorrhage
- Addisons
- addisonia crisis
Waterhouse Friedrichsen Syndrome

chemical Prophylaxis (for dr ...)
↓aldosterone
↓Cortisole
Ceftriaxone (i.m.)
Ciprofloxacin
Rifampisin

mask
Ng5 - Respirator
Ng9 - Respirator
H_1N_1
H_5N_1
→ Prevent Person ⇌ Person transmission

Prophylaxis → nasal vaccine
Oseltamivir - 75mg
mask

- Cause of death in swine flu = ARDS

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Absence seizure / Petit mal epilepsy → does not have tonus, clonus → Post ictal deficit

- Vacant staring spells.
- post ictal deficit ⊖

EEG → 3 sec spiked slow wave

α close eye β open eye γ eyes open, → give photic stimulation. (reproduce in laboratory)

Hyperventilation, Photic stimulation → seizure ↑

Rx: DOC for absence seizure = Sod. valproate (C/I in <4 yr age)

Drug for <4 yr age child = Ethosuximide

Age ↑ → severity ↓

Juvenile myoclonic epilepsy: (Janz syndrome)

- 10-19 yr
- early morning myoclonus (Jerks : Hands difficulty in wearing cloths/brushing ....)
- myoclonic jerks
- Persists : in sleep

Janz syndrome

Video EEG

NREM-3 / REM = β wave

- 4-6 Hz variable
- polyspike pattern

Age ↑ → future GTCS (Bad prognosis)

Rx:

DOC for JME = Sod. valproate

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Generalised tonic clonic status epilepticus (GCSE)

- Seizure > 5 min
- i.v. Lorazepam | diazepam i.v. (DOC)
  - i.v. phenytoin : NS over 20 min.
  - i.v. Valproate bolus / [phenobarbitone] → new guideline removed
    - → refractory GCSE
      - i.v. midazolam (DOC)
        - (I.P.P.V. + E. tube
        - General Anesthesia

GTCS :	Atonic seizure
Tone ↑ = tonus	Tone ↓
clonus	clonus

1. Sod. Valproate : GTCS | Atonic | J.M.E | Absence
2. focal seizure : Oxcarbazepine ⊕
   - Carbamazepine
   - lamotrigine
   - Phenytoine
3. Febrile seizure : intranasal midazolam > Rectal diazepam
4. GCSE : lorazepam
5. Infantile spasm : Inj ACTH
   - (WEST syndrome)
   - → myoclonic Jerks Arm (Salam Seizure)
   - EEG → Hypsarrhythmia gross chaotic pattern

Infantile spasm ⊕ ∈ Tuberous sclerosis ⊕
→ Vigabatrin (oral) DOC

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

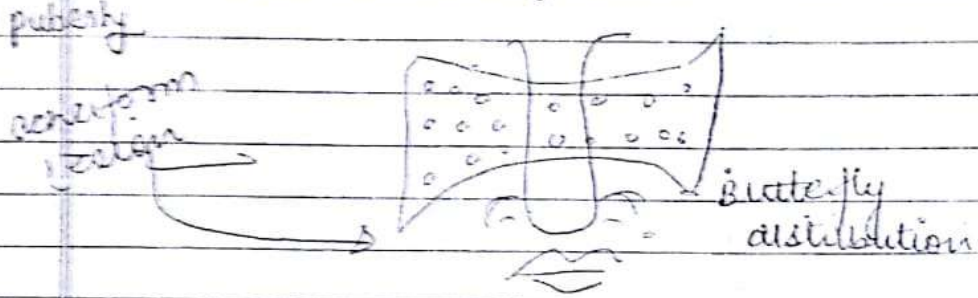
Tuberous Sclerosis : (AD)

Skin

① Ash-leaf macula (Hypopigmented) = trunk
↳ mc. & earliest dermatological manifestation.

② Shagreen patch (orange peel)

③ puberty



"Adenoma Sebaceum"

④



"Subungal fibroma" (Koenen tumors)

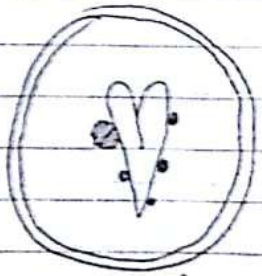
CNS

< 1yr : infantile spasm = Vigabatrin → myoclonic seizures
> 1yr : focal seizures = OXCBZ

Mental Retardation

Tuberous sclerosis

A • Ash leaf spots
S • Shagreen patches
H • Heart Rhabdomyosarcoma
L • Lung Hamartoma
E • Epilepsy from cortical tubers
A • Angiomyolipoma in Kidney *
F • facial Angiofibroma



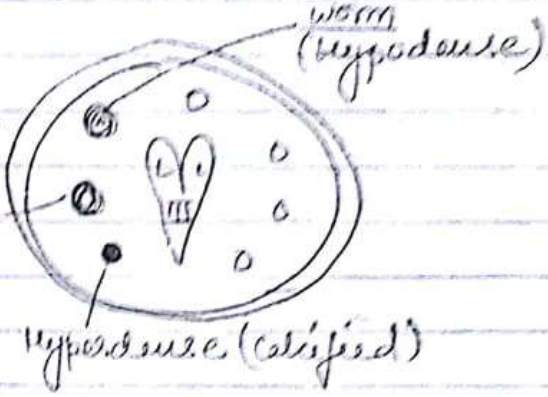
Periventricular lesion
Subependymal Nodule (SEN)
↳ (Astrocytoma)
not ependimoma" ?

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Medically refractory epilepsy (MRE)

1. Ketotic diet
2. Vagus Nerve Stimulation (VNS) → If Vagus ⊕
3. Surgery - most effective



STARRY SKY appearance
MRI / CT → "Neurocysticercosis"
Isodense edema ①

* Imaging modality of choice = ~~MRI~~ ~~CT~~ NCC.
  MRI - Hyperdense lesion
  + ◦ CSF immunoblot
  ◦ neurocysticercosis Ag ⊕
  ◦ CSF ELISA NCC Ag = ✗

C/F
- SEIZURES
  GTCS
- lumps/bumps in muscles.
- low/socio-economic
  non neg/neg = fecally contaminated soil. ✗

Rx
MRI = worm ⊕ : albendazole
- dexamethasone i.V : 48 hrs.
- before anti Helminthic
- albendazole orally ✗ 8 day (neuro) / 28 day (GIT) ✗

* Hyperdense ⊕ lesion = No role of anti Helminthic
  → Valproate

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

STURGE WEBER.

D/D T.S

* Port wine stain : child
* I/L Cavernous angioma
S - SEIZURES : focal
T - Trigeminal N distribution
U - unilateral weakness
R - Mental retardation
G - glaucoma
E - eye : Buphthalmos

X ray Skull = Tram track appearance

* X ray chest = tram track app = Bronchiectasis
* Kidney Biopsy = Tram Track app
MPGN

PHAKOMATOSIS

Neurocutaneous Disorder

1. TS
2. SW Syndrom
3. NF-1 . chr. 17, AD
   - ✓ cafe - au - lait macules (CALM) >6
   - ✓ axillary freckling
   - ✓ sphenoid dysplasia : Pulsating exophthalmos
   - ✓ Iris : lisch nodules
     Hamartoma

* CNS manifestation of NF-1 (Recklinghausen di)
  - neurofibroma : firm
    skin
    mobility : Single direction
    all body *

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

NF-1
- optic glioma : Marcus gunn pupil
- mutation of the "Merlin" gene, Chr 22q 12.2

NF-2 acoustic Neuroma (Cranial (N) 8)

④. ataxia Telangiectasia
- IgA ↓ (e.g. HSP = IgA ↑)
  - ↳ R. infection
- nail ataxia
- dilated BV : Sclera
- chr-11 defect

Friedrich ataxia
- gene = frataxin
- Trinucleotide
- mitochondrial metabolism

CNS c/f
- dorsal column dam: Sensory ataxia ∴ Proprioceptive loss
- corticospinal path # → Babinski ⊕
- P. nerves # : Areflexia (LMN)

CVS c/f
- HOCM

endocrine c/f
- T2 DM

⑤. V.H.L chromosome-3
- RCC = clear cell Ca

CNS
- cerebellar Hemangioblastoma (Pericytes)
- Retinal Hemangioblastoma
- Spinal cord "

All
- Antiepileptic drugs → folic acid ↓

Safest AED in pregnancy = Lamotrigine
- Phenobarbitone = NTD incidence 10%
- valproate = 5%
- lamotrigine = 2-3%
- ordinary pop^{n} = 2%

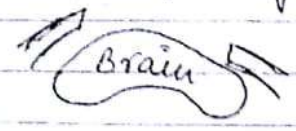
NTD : Mc : spina bifida occulta
- Mc in NTD IDM = "
- most characteristic NTD IDM = Sacral agenesis

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

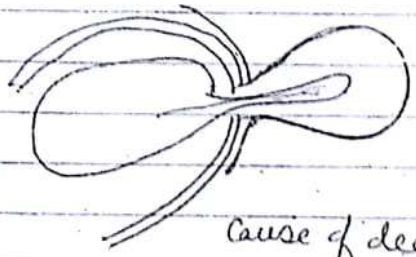
NTD classes - 24 day after fertilization

1° anencephaly



- donot resisate
- cortex, cerebellum is partially develop
- Brain stem only developed
- Swelling (+)
- pit agenesis
- adrenal gland ↓

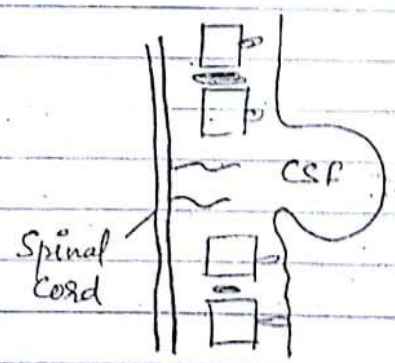
2°



Translumination (+)
Encephalocele

Cause of death = Intracranial Hemorr

3°



myelomeningocele
* flaccid paralysis
* Nursing in prone position
Cover the defect with saline soaked gauze
* Arnold Chiari malformation type II (ass. with it)

ACM
- type I - ass. with syringomelia
- m.c.c of cong. hydrocephalus - aqueduct obstruction/stenosis.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
My COMPANION

④ Meningocele :
- no neurological deficit
- Maxi survival
- mani viability &
- Sx surgery : possible
-

⑤ Anencephaly : severe neural tube defect = Craniorachischisis totalis
Anencephaly + myelomeningocele

⑥ Encephaly :
- Cervical spine/vertebra : agenesis
- "STAR GAZER BABY"

⑦ Spina-bifida occulta :
- Sacral dimple : Tuft of Hair

NTD
IOC ① USG (antenatal) : 100%
Anencephaly : 10 wks (frog eye sign)
lemon | Banana sign : Arnold Chiari Malformation type II

② Amniotic fluid :
♂ - acetylcholinesterase 98%
♀ - S. dFP (mother ↑) - 95%

NTD
to prevent
- 400 mg
If previous H/o
: 4 gm.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

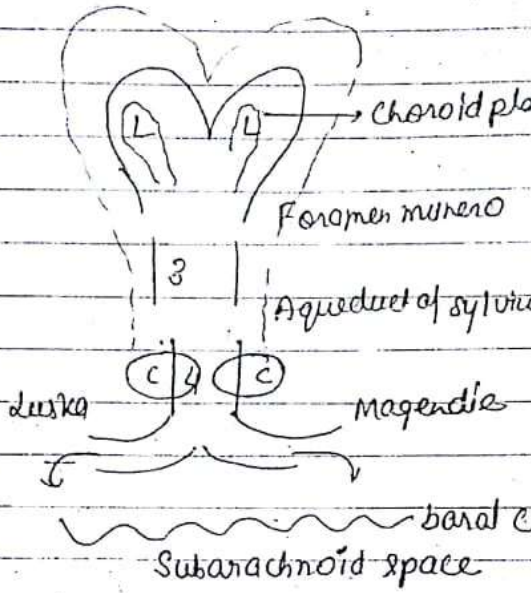
- canon bay app
- Phos eye app
- miliary TB

Date 02/03/2017
Page 4th class

my companion

Arnold Chiari Malformation types:

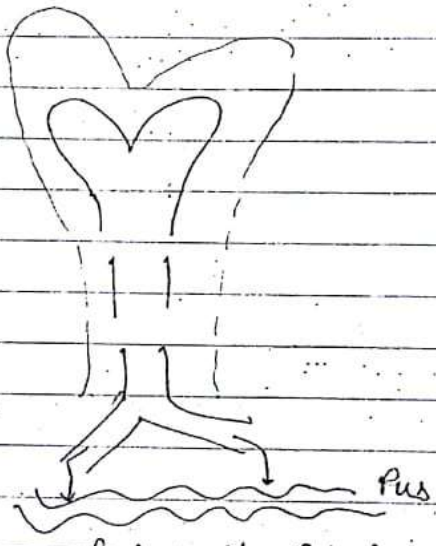
production Rate = 20 ml/hr
reabsorption Rate = 20 ml/hr



Arnold Chiari Malf. type II

- myelomeningocele
- small post. fossa
- herniation of cerebellar tonsils
- IV ventricle ↑
- Congenital Hydrocephalus

℞ : V-P shunt



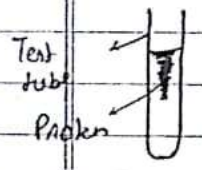
Reabsorption Rate ↓

TBM

- NCCT : Basal exudates
  : dilated ventricles

IOC : PCR of CSF → Mycobacterium TB.

L.P. (Lumbar puncture) →



- Straw colour
- CoB web coagulum (basket ball net like)
  (rich AFB)
- ZN Stain
- LJ media

Path : rich focus

CF : - BCG scar : absent
- PEM grade III - IV
- Contacts ⊂ Koch's

www.FirstRanker.com
Scanned by CamScanner

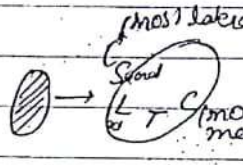
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

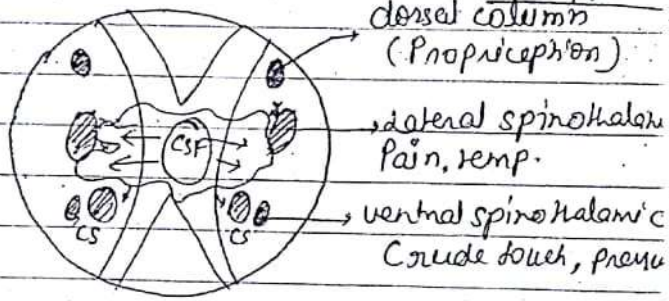
- fever
- altered sensorium] weeks
- Hemiplegia : TB endarteritis

fundus finding :
- Choroid tubercles = disseminated TB
  (most reliable finding)

Rx :
ATT + Steroids (6wks)
(14y)
↳ ① permeability of BBB → then ATT can be reached to brain
② cerebral edema → ↓ seizure risk
thin out consistency of pus → ↓ chances of hydrocephalus

Arnold Chiari Mal. I :
- ass. C syringomyelia.
  dilatation of central canal
  since
  ↓
  Progressive condition
  Sacral sparing (b/c most laterally)
  ↓
  Assymetrical expansion.





C/F 18 yrs ♀/♂
① Painless Burn in Hand ⊛
② non-healing ulcer ⊛ (b/c recurrent burn injury → due to negligency)
③ Charcot joints in hand (in foot : D.M. nephropathy) ⊛
(Painless, paralysed joints)
④ Dissociative Anaesthesia

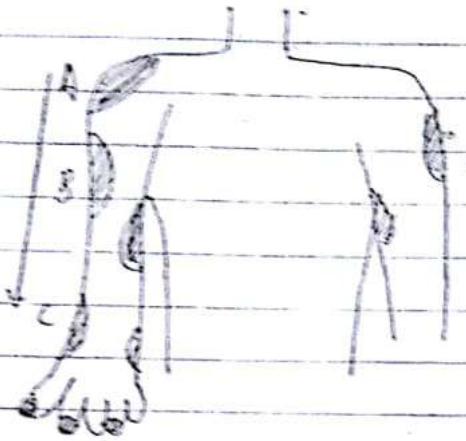
Painless joints
① DM : Foot
② Tabes dorsalis : Ankle
③ Syringomelia : Hands

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Dissociative Anesthesia:

→ progress from proximal to distal



Motor deficit in syringo):

⑤ at the level of lesion : (LMNL)
: Biceps
: Intrinsic muscles etc] wasting, fasciculation, Areflexia.

⑥ below the lesion : (UMNL) = (USB)

⑤: Spasticity → ⑦ tone] I/L ⑥
⑧ Babinski sign ⊕] → B/L
⑨ Brisk DTR ⊕

Investigation

IOC = MRI spine

Rx:

Sx decompression

↳ b/c if not decompressed

% complication Spasis → Syringobulbia ↳ Bulbar palsy

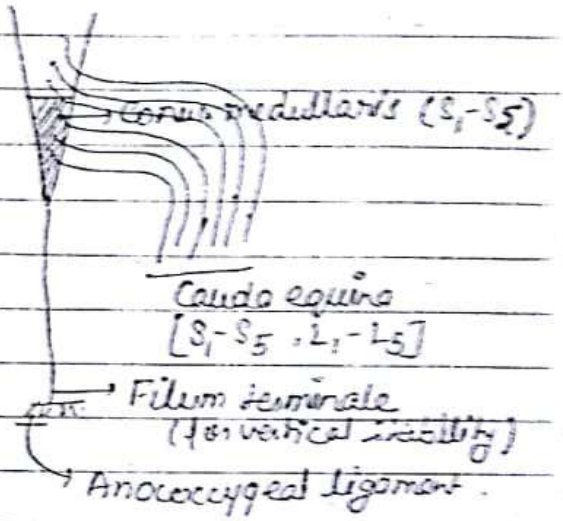
of Sx: Untreated Spasticity → 9|10|11|12th N palsy (swallowing)
- can't drink
- swallow
- talk
- eat

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Spinal Cords

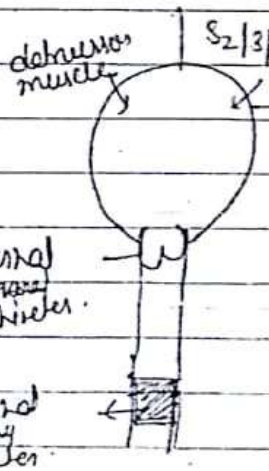
length = 45 cm
neonate = L_3
Adult = L_1
Subarachnoid space = S_2



if filum terminale = small
⇒ tethered cord syndrome
causes neurological deficit

Conus medullaris syndrome: → [S_1-S_5 #]
- m.c.c. of spinal cord = 2°
- m.c.c. of tumor 1°, = glioma
  being tumor = meningioma
  vascular tumor = Hemangioblastoma.

to Δ
① Ankle jerk - S_1S_2 → disappears/-nt
② Knee jerk - $L_{2|3|4}$ → Preserved
③ sensation of perineum - $S_{2|3|4}$ → Saddle anaesthesia
④ Bladder - $S_{2|3|4}$



Ⓢ 50 ml urine - aware → motor
Ⓜ 150 ml " - urge → sensory

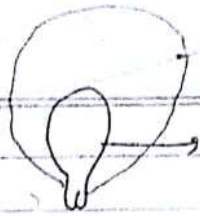
(if $S_{2|3|4}$ damage) = LMN bladder.
- Sensation (no)
- purge (no)
- Flaccid bladder.

Can ↑/↓/⊖ of urine pressure

if denervated bladder → Post void residual urine → UTI (catheterised)
- Overflow incontinence
- ℓ involuntary passage of urine).

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



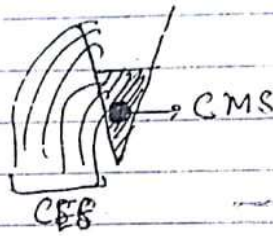
Date / /
Page
my companion

Shock → spastic bladder
↓
urge incontinence
↓
(frequent urge of urin)

Cauda Equina Syndrome: (L_1-L_5, S_2-S_5)

(Same side of damage)
↓ I/L

①	Ankle Jerk (AJ)	→ ⊖
②	Knee Jerk (KJ)	→ ⊖
③	sensation perineum	→ saddle anesthesia
④	Bladder	→ Overflow incontinence



- Best clinical finding to differentiate CMS to CES → Knee Jerk

	CMS	CES
m.c. in	Tumors	Trauma
C/F	Bladder complaints	Radicular pain
	AJ: ⊖	⊖
	KJ: ⊕	⊖ I/L or B/L
	- Saddle Anesthesia	
	- Overflow incontinence	
	- MRI spine	

folic acid ① = 3-5 mnth.

③ Subacute demyelination of spinal cord:

- Vit B_{12} ↓ = veg. diet (even not take milk) = 3-5 yrs.
- impaired myelination of dorsal column
  ↓
  Sensory Ataxia



Position of body information to brain by

① visual input
② dorsal column.
↓
Vit B_{12} ① → ② ✗
only ①

△ of Sensory Ataxia → "Romberg Sign"

[nose and finger test

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

folic acid - FIGLU test
(Jejunum)

my companion

2) impaired myelination of Cortico-spinal pathway
2- spasticity I/L or B/L : cramps (+)
3- B/L OTR
4- Babinski sign (+)

Inv:
(1) MRI Spine → demyelination (b/c it also occur in Cullian B- sy-
(2) B_{12} deficiency test
(a) S. vit B_{12} level (↓)
(b) methyl malonic acid (MMA) (↑)
(c) Homocysteine (↑)
(d) Schilling test (Radioactive dye - so not used after 1960s)

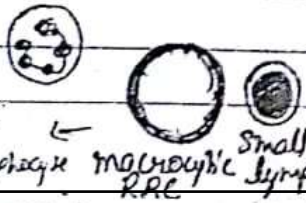
Rx:
inj. vit B_{12} (i.m.) (
Oral vit B_{12} (lifetime)

Cause of B_{12} deficiency
(1) vegan diet
(2) Type A gastritis (Intrinsic factor ↓)
(3) Chr. pancreatitis
(4) ileum ds - Crohn's
✓ Bacterial overgrowth Syndrome

↓

(1) Anemia : Macrocytic (A)
2 Pallor + / Jaundice +
(2) peripheral smear
✓ Hypersegmented neutrophils
✓ RBC size (↑)


Cabot ring


Compare ← Small lymphocyte, macrocytic RBC, Small lymphocyte

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

② Subacute demyelination
spinal cord : sensory Ataxia
spasticity

MRI spine + S. vit B_{12} ①

Rx:
Oral vit. B_{12} + folic acid supplimentation

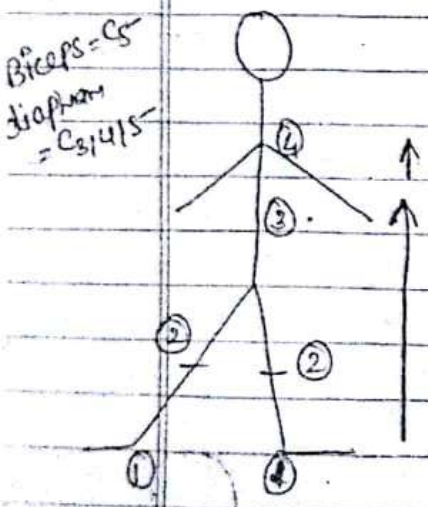
Q: If given folic acid table alone
CNS features worsen
(b/c B_{12} divert to form RBC)

④ G-B-S : involves
- sensory
- motor
- autonomic
- Bladder → usually not involved.

- Campylobacter jejuni (etiology).
- acute dysentry

Antibody against it
Cross react c myelin
↓
demyelination start
segmental demyelination
- take 2 wks approx to appear

Rx
Quinolones : Symptoms ①



① flaccid paraplegia
② Tone ↓
↳ truncal paralysis
③ Quadriplegia
④ diaphragmatic paralysis
⑤ CO_2 ↑ : CO_2 narcosis
↓ pulses Bounding
ET + IPPV Resp. acidosis.
⑤ neck muscle paralysis (neck floppiness)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page

my companion

GBS

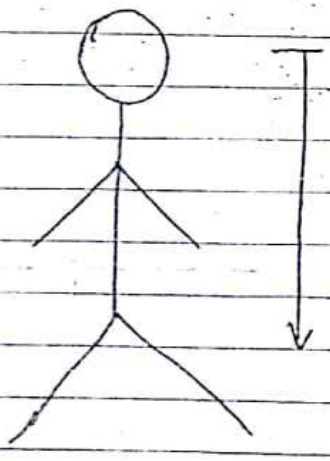
distal arreflexia (earliest symptoms/Manifestation)
Ascending Symmetrical flaccid paralysis.

⑥ 7th (N) (B/L) LMNL
- k/a facial Diplegia
- continuous drooling of saliva

(also seen in
① Sarcoidosis
② Melkerson Rosenthal Syndrome

⑦ paresthesias
⑧ T_4-T_8 → sympathomimetic ♡
→ Bradycardia
Hypotension
Vasoconstriction +++
Hypertension
} labile BP (Autonomic insufficiency

variety
① Acute motor Axonal Neuropathy → AMAN
② Acute motor + sensory " → AMSAN
③ Acute inflammatory demyelinating neuropathy → motor + sensory + Autonomic involvement + peripheral (N) also involve
(AIDP)



④ Miller-Fisher Syndrome
O: Ophthalmoplegia → m.c. (N) = 3rd N palsy
A: Arreflexia
A: Ataxia : sensory

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Inv:

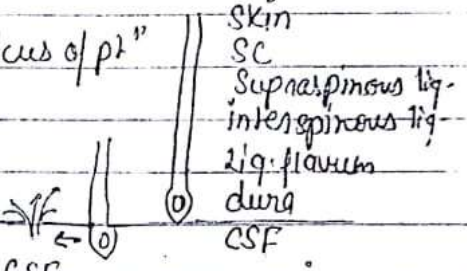
① L.P. = CSF (L_3-L_4)

Quincke / sprotte needle 25G

lateral decubitus position > sitting position.

dirn of needle : cephalad :

"aim for umbilicus of pt"



L.P. = CSF
- clear
- pressure (N)
- Cells (N)
- Blood sugar (N)
- Proteins (↑)

K/a Albumino-Cytological Dissociation
↳ also seen in Froin syndrome

↳ Headache post L.P.
Bed Rest / diclofenac
↓
>12 hrs → Caffine i.v.
Pain.
>24 hrs → low volum blood patch
(self blood inj. in site 5-10 ml)
most effective method for pain control
clot seal the tear in dura

Froin syndrome :
- Spinal cord block
- due to either tumors or TB (pus)
- ⊙

② MRI spine : demyelination

③ Nerve conduction velocity : ↓
↳ H-Reflex latency period ↑

④ HOC for GBS :
Anti-GM_1 A/B titre : GBS
anti GQ, A/B : miller fishes

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Steroids C/I - GBS my companion

Rx: ① IVIg x 7-10 days = TOC
Single day delay in t/t = 10% ↓ chances even of walking again.

② plasmapheresis
(equi-efficacious)

③ Ventilator support
type II R. failure : CO_2 ↑

DD of GBS

① Transverse myelitis
URTI ↓ : Rx : Resolution symptoms.
>2 wks : A/B → inflammation of spinal cord.
① flaccid paraplegia
② Ascending paralysis
③ Resp. insufficiency
④ Sensory : sensory level (below this)
- girdle like pain
- Burning pain
Pain +++
⑤ Bladder - Overflow incontinence (+nl)
S=1|3|4

Inv
MRI spine : inflammation

Rx:
iv methylprednisolone X7 day (7-10d)
↳ Progression in roughly 4 wks.

GBS : paralysis by a day a wk

legs	1	1	1
trunk	2	2	2
Arm	3	3	3
diaphragm	4	4	4

(11) inque.
progression of symptoms >4 wks
↓
CIDP.
Chronic Inflammatory demyelinating polyneuropathy

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CIDP
Rx : DOC = steroids.

Spinal shock :
- Spine #
Rx : iv. methyl prednisolone

Cervical #
(0-7day) ① flaccid quadriplegia ± Resp. insufficiency → Tracheostomy, Portable ventilator
② Areflexia
③ fasciculation
④ Superficial Reflex ⊖nt.
↓
>7day
Bulbocavernous Reflex ⊕
below the level of lesion: spasticity, DTR brisk

Cervical spine # → Resp insufficiency → wheel chair
If spinal cord # $T_1 - L_1$ # → - Arm spares, - autonomic insufficiency → crutch
$> L_1$ # → Cauda equina syndrome → mobility ⊖.

Myasthenia gravis :
- autoimmune
- type 5 > type 2 Hypersensitivity Rxn
→ Anti-Ach ® blocking Ab
- 65% pt. of M.g. → Thymus Hyperplasia
- 10% " " " - Thymoma

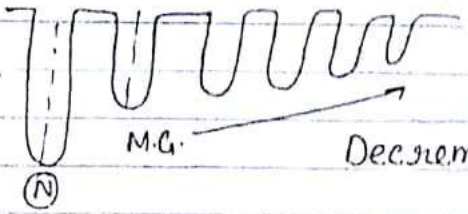
Ca channel open Ach. → skeletal muscle

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

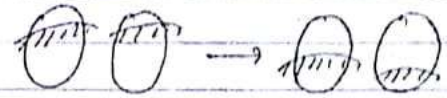
Amplitude of muscle contraction

EMG :



Decremental Response.

- diurnal variation of symptoms



① - ptosis (earliest manifest.)
- B/L
- asymetrical.
- sustained upward gaze > 30 sec ↓ ptosis (induction/ symptoms reproducible)

② - Diplopia

③ - (T-mowering) SNARLING FACIES

④ - Jaw muscle weakness
(Chewing muscle weakness) → dysphasia
oro pharyngeal
genioglossus
stylopharyngeous
cricopharyngeus.

⑤ Shoulder girdle weakness
- difficulty in combing of hair

⑥ Pregnancy : MG worsening → M. Crisis
- diphragmatic paralysis
Rx : IVig (TOC)
↓
if ↓PO2, ↑PCO2 →
Rx : ET + IPPV [earliest Rx]

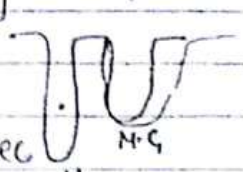
⑦ neonatal M.G.
neonatal
transient M.G. b/c conditions not itself.
b/c Ab disappears 4-6wk → M. crisis.
transplacental spread : IgG
- failure to establish respiration
- Breast feeding problems
↳ Rx : neostigmine drops (4hrly)
- good prognosis

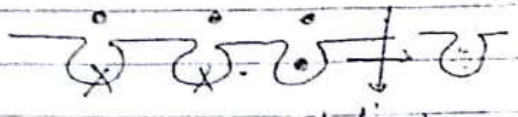
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Inv ① Tensilon test → most sensitive test for M.G.

Edrophonium
onset >30 sec
Peak – 2 min





Ach : ++ duration of action
↑ BOP
↑ twitch duration.
Strength of muscle

Suspected M. gravis (?)
① sustained upward gaze >30 sec
↳ ptosis ⊕ B/L
② I.V. 10 mg edrophonium
(2 mg shot)
Onset : >30 sec. → ptosis ↓
2 min. → ptosis ⊖ n
>10 min → ptosis ⊕

Serious cause sodo OT no nPD ↓

Cholinergic crisis.
S Salivary gland + : Hypersalivation
L Lacrimal : Lacrimation
U U.Bladder : Urination
D
G GIT motility : diarrhoea
E eyes : miosis
SLUDGE symptoms

Rx : I.V. Atropine.
false ⊕ in : motor neurone ds

② Ice-PACK test
– non invasive test
– sensitivity equal to Tensilon test

H (?) → Tensilon test to be done "only in difficult to diagnose cases".

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

75% Thymus defn < 60% ↑ Hyp-
10% Thym-
25% Thymus → Nb - MUSK (RE)

Inv:

1. anti Ach Receptor A/B titre. → most specific (blocking)
2. IOC : Single fibre electromyography (EMG) : JITTER
3. Repetitive Nerve stimulation test :
4. CT chest : Thymoma + - mass effect
5. Hashimoto thyroiditis [coexist c MG (autoimmune d)
   ↳ [anti TPO A/B > anti-thyroglobulin, anti-microsomal A/B-
6. ~~if all test~~ (N)
7. Tensilon test

Rx:

TOC : Thymectomy
DOC : Pyridostigmine (long acting)

Physostigmine → C/I Cross BBB Central Action.

Ocular M.G. :

- Thymus - (N)
- Thymectomy - (C/I)

~~Anti~~ Anti M.U.S.K. A/B
[Muscle specific Kinase Antibody]

TOC : Steroids.

DOC : Pyridostigmine (

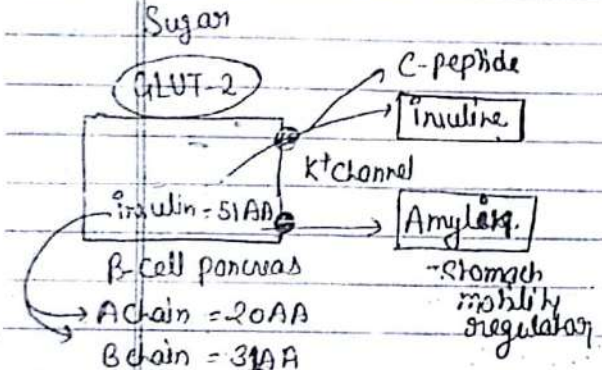
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

GLUT 1-9 ⇒ GANONG

Diabetes Mellitus

type 1
type 1.5 → L.A.D.A. → latent autoimmune Diabetes in adult
type 2 (m.c. type)
MODY (Rare)



↓

type I DM Rx : Insulin

- >90% # of β-cell pancreas
- ↳ C/F to appears (before it k/a honeymoon phase)

Causes:

1. autoimmunity
   HLA DQ2 DR3 DR4
2. Fulminant diabetes
   ↳ Cocksackie B virus
   mumps, Rubella
3. Hemochromatosis : iron ++
   - Bronzing skin
   - Cirrhosis.
   Pancreas # β cell ↓ : Type 1 DM → k/a Bronze Diabetes
4. Tropical diabetes
   PEM grade II/III / starvation ⇒ WASTING
   (extremely poor people)
   Atrophy organs
   ↓ Pancreas
   exocrine > endocrine
   (malabsorption) (type I-DM)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page

my companion

② Type 1.5 (Variant of type 1) — Rx : Insulin
- Latent autoimmune diabetes in young
① - Anti-glutamatic acid decarboxylase A/B ⊕ (GAD)
② - Anti-islet cell A/B (ICA)

③ Type 2 : Insuline Resistance
- polygenic inheritance (due to defective gene)
ⓐ - Apo Adipokines ↑ : fat deposition, obesity ⊕
ⓑ Adiponectin ↓ : guardian angel against obesity
ⓒ Resistin ⊕

Rx : 1) diet control (take Carbohydrate ↓) = low glycemic index → oats, Brown rice, multi-grain atta
2) exercise (Jogging) → GLUT-4 ↑ (muscle) → promotes entry of sugar into muscles
3) OHG (Oral Hypoglycemic drugs) :
4) insulin

④ MODY.
- maturity onset diabetes in young
- peak age of onset = 25 yr
- Autosomal dominance
- MODY 1-6
- m.c variety MODY-3 (India/USA)
  - Chr 12 #
  - HNF-1α gene #

40 yr = DM
father = ⓝ
grandfather = DM
(Skipping of generation)
↓
type-2 DM
(* test of continuation)
RIA (insulin fasting) = ↑

25 yr male
Routine blood screening = ⊕
no symptoms
Father - DM
Grandfather - DM
↓
M.O.D.Y.
RIA (insulin fasting) = ⓝ

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

	Insulin		Rx
Type 1	↓↓	autoimmune	insulin (S.C)
1.5	↓	,,	,, ,,
2	↑	Polygenic	OHG: metformin
MODY	N	AD: ch 12 # HNF 1α # MODY-3	OHG: Sulfonylureas

C/F

① polyurea : osmotic diuresis
RBS > 180 mg : Sugar comes in urine

② Osmoreception = Organum vasculosum Lamina terminalis (OVLT) ⊕ stimulation
= polydipsia

③ Polyphagia

④ T1DM: ⓐ wt loss
Sugar cannot enters in muscle.
↓
burning of subcutaneous fat oxidation
↓
FFA
↓
Ketones → energy
Protein # → AA

ⓑ Children : loose folds of skin (like oldage)
: growth retardation
: Prone to D.Ketoacidosis (D.K.A.)
: pneumonia, UTI

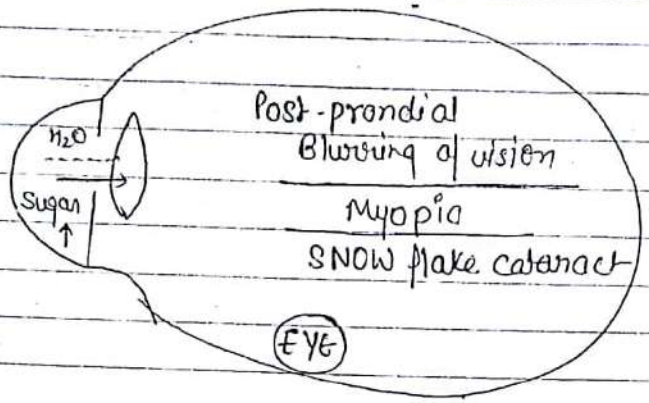
⑤ T2DM:
wt. gain
Obesity BMI > 30
morbid ⓞ > 40
Super ⓞ > 50

⑥ ♀ c DM. : Recurrent vulvovaginitis: Candida ⊕
UTI : E coli : incidence

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

⑦ ♂ ℂDM : Balanitis
UTI



⑧ M·O·D·Y·
- asymptomatic
- by chance ∆

Type 2 DM ♂ / type 2 DM ♀	to child 40% chances
MODY any parents	75% chances

INV:

① HbA1c ≥ 6.5%
(Retrospective test = 8-12 wks sugar profile)

② FBG:

< 100 mg%	100-125	≥ 126 mg%
75 gm glucose		
2 hr value < 140 mg%	140-199	> 200 mg%
	impaired glucose tolerance	D.M.

GTT : 100 gm glucose
0, 1, 2 hr glucose

GCT : 50 gm glucose
0, 1, 2 hr

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Acute Pancreatitis risk factor ← [HyperTG (Triglycerides) / HyperCa+2]

③ lipids ① :		(N) people	target in Δ DM pt	DM
(accelerated atherosclerosis)	Cholesterol	< 200 mg %		(N)
	Triglycerides	< 150 mg %		↑↑↑
	LDL	< 100 mg %	< 70 mg %	(N)
	HDL	♂ 40 / ♀ 30		↓

↓

Rx : Hypertriglyceridemia
↑↑ TG
Cholesterol (N)
↓
Fenofibrate

④ Urine = sugar | ketones | protein
(N) person ⊖ ⊖ ⊖

24 hr
Protein in urine in (N) person
< 150 mg / 24 hr.
[coming from]

Glomerulus	tubules
Albumin	Tamm Horsfall
= < 30 mg / 24 hr	= 120 mg / 24 hr

↓

in DM	S. Creatinine
Glomerulus ↓↓	↓ appears (> 60-90% kidney damage)
↓	
- microalbuminuria 30-300 mg / 24 hr (albumin)	

Screening for D. Nephropathy :
① Urine microalbuminuria ⊕ (Best test) for Δ

Urine pot kit : ⊕ pot > 1 gm / day

Rx :
low dose ACE ⊖
↓
Candace 2.5 mg
↓
slows the progression towards development of E.S.R.D.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

DM → Poor sugar control → HbA1c > 7% → D. Nephropathy → Kidney Shrink
B/L ↑ Kidney

T1 DM = 5yrs
T2 DM = 20yrs

(HPE) Histopathological finding
m.c. - diffuse glomerulosclero
Characteristic - nodular " "
- Armani - Ebstein change
↳ PCT #

Chronic Kidney disease (CKD)

If

GFR	< 60 ml/min/1.73 m² × 3 mnths
Hemodialysis done If	GFR < 30 ml/min/1.73 m²
Transplantation (allogenic) If deg rejection	< 15 ml/min/1.73 m²

Que
(1) polyuria
(2) Polydipsia
(3) wt. loss
(4) polyphagia
} not a classical symptoms of DM

Method of Δ of D.M.

(1) Older
Classical symptoms + RBS ≥ 200 mg%
(2) newer
Asymptomatic FBS > 126 mg%
2hr > 200 mg%
(3)
Asymptomatic HbA1c ≥ 6.5%

Post parandial sugar
↳ never use for Δ of D.M.
↳ use only for follow up.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Phenformin (withdrawl) - Lactic acidosis.

Date / /
Page
my companion

Rx :

① Type 2 DM

① OHG (Oral hypoglycemic drug)

① Biguanide

MOA : ⊖ Hepatic gluconeogenesis.

HbA1c ↓ [1-2% fall]

	HbA1c	10%	9%	8%
Best test for		↓	↓	↓
- long control of DM		X25	X25	X25
- ISI Best test		250	225	200
- Retrospective		[(Av) blood sugar ≈ 8-12 wks]		

test for

Short term Control of DM

↳ S. fructosamine

Retrospective test ≈ 3-4 wks

Long term control of Bronz diabetes

↳ Glycated Albumin

① Metformin : 500 mg | 850 mg ≈ 1 gram

maxi. ≈ 2.5 gm/day

- taken c meal

S/E - N/V

B12 ↓

Lactic acidosis (if pt. have kidney #)

- excreted via kidney.

DOC T2 DM, obese = metformin

DOC T2 DM, obese c nephropathy = Tolbutamide

↳ Gliclazide (compliance better)

↳ Gives metabolites

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

↓ if HbA1C even not ↑

② Sulfonylureas

MOA : Burst of insulin
Receptor sensitivity ↑
↓
HbA1C ↓ [1-2% fall]

S/E
① Hypoglycemia → Palpitation, Anger ↑, Tremor, Coma Span ↓, excessive sweating
(<54 mg %) cut off
Rx : Sugar intake
↓
symptoms ⊕ persist
Silent MI suspect

③ Thiazolidinediones

MOA : GLUT 4 ↑ receptor
↓ ① S. TG
⊖ Hepatic gluconeogenesis
↓
HbA1C ↓ = [1% fall]

ⓐ Rosiglitazone] O.D.
ⓑ Pioglitazone]
↓ P.P. spike post parandial spikes.

④ α-glucosidase ⊖

MOA : ⊖ dietry Obstruction of sugar
HbA1C ↓ = 0.25% fall ⓐ Acarbose
ⓑ Voglibose
ⓒ Miglitol

S/E
Osmotic diarrhea

↓

⑤ Meglitinide

MOA : Burst of insulin
↑ Receptors sensitivity (short acting)
t1/2 ⇒ 1-2 hr only [so for P.P. spike only]
ⓐ Nateglinide
ⓑ Repaglinide

S/E : Hypoglycemia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

⑥ iv glucose 10gm

in (N) person

iv glucose 10gm = Blood sugar ↑↑↑

Oral " " = ↑↑

↓

enterocytes = ileum = 'L' cells

↓ source of

GLP-1

glucose like linked insulino-tropic peptide

↓

1-2 Hr send sugar into muscle

OPP-4 inhibit GLP-1 in 1-2 hr.

⑦ Incretins (S.C.) = Parenteral

MOA: ↑ production of GLP-1

ⓐ Exenatide (S.C.)

ⓑ Liraglutide (S.C.)

Polymer - once a week

(Only antidiabetic approved where drug given once a week polymer of exenatide)

⑧ DPP-4 ⊖

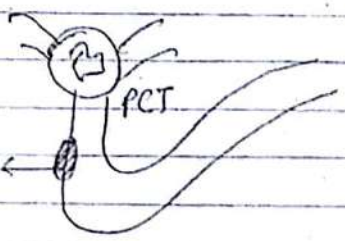
dipeptidyl peptidase 4 ⊖ (oral)

ⓐ Sitagliptin

ⓑ Saxagliptin

ⓒ Valdagliptin

⑧



SGLT-2 ⊖

Promotes urinary loss of sugar

ⓐ Canagliflazin

Flozins like dapagliflozin not Antibiotic

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

drug

Rx: Type 1 & type 2 DM both

① Pramlintide → MOA: Stomach emptying ↓
② insulin (regulating entry of sugar in SI)

Insulin:

① Beef / Pork insulin
- lipodystrophy
- insulin Resistance

② DNA - Recombinant technique

- C-DNA
- 51 AA

			Onset	total Action
ⓐ	insulin Aspart	SC	20 min	4 hr
ⓑ	insulin-Lispro	SC	20 "	"
ⓒ	Glulisine	SC	20 "	"

Regular Ⓘ SC 30' 4-6 hr
↳ I.V. = used in emergency
D.K.A.
Non Ketotic hyperosmolar coma
K⁺ ↑

Lente
Glargine : 24 hr (Bed time insuline)
Detemir >24 hr (longest acting insulin)

site:
1) abd. wall (umbilicus)
Arm / thigh

delivery
① insulin pump (abd wall) = microprocessor : Basal insulin
most effective delivery — Bolus insulin → start eating
Cartridge (pre-filled insulin)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my COMPANION

② insulin pen : 31 G lancet : painless delivery

③ inhaled insulin :
- Afrezza (brand name)

④ multi-dosage vials insulin
+ 1ml syringe

Pre filled syringe = 0.5 ml / 50 U

S/E of insulin :
① wt. gain
② Hypoglycemia (extra I) more dose take
Overall m.c. complication of insulin
Somogyi phenomenon
- early morning hypoglycemia
Sym + : palpitation, tremor, sweating
Mx dose correction
↳ Bed time

less dose take
③ DAWN Phenomenon
(less I) - early morning Hyperglycemia
- Self monitoring Blood glucose : Glucometer
fasting : 300 mg%
P.P. : 200 mg%
Mx : dose regulation
↳ at bed time

Microvascular complications :
① Retinopathy : Blindness X25 ↑
② Neuropathy : non-healing ulcer
③ Nephropathy : CKD → ESRD = < 15 ml/min GFR.

Control of HbA1c <7 HbA1c
↳ ↓ micro ② complication

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Macrovascular Complication:

① CAD : MI x5 ↑
② PAD
↳ Peripheral Arterial ds

Xlor times ↑

① = by strict BP control

Diabetic Retinopathy:

fundus : microaneurysm (earliest)

↳ Outer plexiform
Inner nuclear layer

non-proliferative Retinopathy → m.c.c. of visual loss in D. Retinopathy.
↳ (macular edema) ⊕

Proliferative Retinopathy
↳ Neovascularization
Vitreous hemorrhage
Tractional Retinal detachment → m.c.c. of blindness in Diabetes.

Rx
Pan-Retinal photocoagulation
Nd : YAG LASER
+
Inj Bevacizumab (Intra-vitreal)
[anti V.E.G.F]

- Best way to prevent blindness in Diabetic = HbA_{1c} < 7%

↑ HbA_{1c} > 7%
blindness T1DM = 5yrs
T2DM = 20yrs

↑ incidence of Retinopathy in DM
S. Homocystine = ↑
S. Creatinin = ↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Homocysthere (1)

1. MI
2. Stroke
3. D. retinopathy progression
4. Alzeihmer's severity

↓

Mx: B6/9/12 — food fortification to reduce homocysthere level.

ADRENAL GLAND: - Asymmetrical gland (only endocrine gland)
- One pyramidal, other semilunar.

CRH
↓
ACTH
↓

Cortex: only 2nd layer (Fasciculata) → not 1 or 3rd layer of gland

1. Glomerulosa: aldosterone
   ENaC
   Salt + H_2O
   K^+/H^+
2. Fasciculata: Cortisol
   Sugar/Stress
3. Reticulatas: DHEAS

medulla

epinephrin > Norepinephrin
60% 40%

Pheochromocytoma: NE > E

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Stroke : Hyperosmolar coma

05/03/17
5th class

Possible causes of Unconscious diabetic GCS = 8

1. Hypoglycemia
2. D·K·A·
3. Non-Ketotic Hyperosmolar coma
4. Lactic acidosis

} Possible Causes of Coma

Investigation

A) Blood sugar 45 mg%.
Rx : IV 25-50% Dextrose.

Seizure : I.V. [Failed to get IV access]
(Hypoglycemic) [inj. glucagon (S.C.)]
inj. Adrenaline (S.C.)

} for Rx of hypoglycemia

Only medical condition where glucagon not given is Von Gierke GS (Glucose-6-phosphatase deficiency)
(Hypoglycemia resistant to glucagon)
↑
glycogen act on glucose-6-phosphatase

B) if Blood sugar ≥ 300 mg%.
↓ check

	N	1	2
PH	7.35-7.45	<7.35	<7.35
HCO_3^-	(22-26)	<22	<22
urine Ketone		⊕	⊖
Blood Sugar		300 mg%	300 mg%

Possibility
1 → D·K·A·
2 → lactic acidosis

3)
PH 7.38
HCO_3^- 24
U·Ketone ⊖
Blood Sugar 1000 mg% BBB

cerebral edema
H₂O
sugar
unconsciousness

↓
Non-Ketotic Hyperosmolar coma.

Adrenaline
I.V. : V. fibrillation / Asystole
I.M. : Anaphylaxis
S.C. : Hypoglycemia
Inhaled (racemic) : laryngotracheobronchitis (Croup) Brassy cough

Honey bee sting (5 cases) : IV hydrocortisone, im Avil (Pheniramine)
Bridon ⊕ ↓ iv adrenaline

Angioedema (non-pitting) ← ACE ⊖
Site : lips, tongue, scrotum, abd wall
- Woody induration
- Bradykinin ⊕
Rx : ICATIBANT
DANAZOL

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

↓

Rx: 1) airway control (1st way of MX)
2) IV normal saline
3) insulin drip
↳ ↑ sugar entry into cell
↓
so ketone : production stop

RL
1) Burns
2) Cholera

↓↓

(1) BP ↓↓ (unrecordable BP) ⇒ N. Saline.
(2) DKA ,,
(3) Lactic acidosis. ,, → Ringer lactate
(4) Non-ketotic hypoglycemia (NKHO) ,,

DKA

-insulinopenia
- acidosis : K^+ efflux out of cell
↓
K^+ ↑↑

- insulin drip : K^+ influx into cell
↓ K^+ ↓↓

Complication of H/F DKA

↳ hypokalemia (Resp. paralysis)
1° death : Add KCl + NS drip

Complication of H/F NKHO

NS = 10 L over 48 hrs :
↳ water intoxication.
large amount administration

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Metabolic acidosis :

STROKE : BRAIN DEATH (Criteria of)

① - irreversible Coma (GCS < 7)

② - light Reflex (2,3) (Real value) (midbrain) = pupil dilated
= no Rxn to light

③ - corneal Reflex (5,7) (Pons) = On) Blink B/L

④ - gag Reflex (9,10) (medulla) = On) cough

⑤ - C.O.W.S. → ear canal irrigation ∈ cold water

30°C 44°C

finding of nystagmus

④ Person → tonic deviation = same → Stroke → On)

for tonic deviation
opposite to nystagmus
Cold → same
warm → opposite

⑥ Oculocephalic Reflex ⇒ Absent
(Doll eye reflex)

⑦ Disconnect from ventilator

PCO_2 ↑↑ → stimulate R. centre

b/l even absence of spontaneous breathing effort

⑧ EEG (20 electrodes) = FLAT isoelectric line > 30 min.

MRA ⇒ Brain stem
Blow flow signal On)

for declare pt as brain death → 2 doctor signature

↓

organ transplantation team

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

① Heart : D.C.M/R.C.M./HOCM
② ⑦ Lung : single lung Tx → COPD emphysema
B/L " " → cystic fibrosis
③ Liver : ~~HBV~~ HCV
④ ⑧ Kidney : Diabetic nephropathy
⑤ Pancreas : type 1/1.5 DM.
↳ donar β-cell extract
↓
Recipient-
(Portal vein) → β-cell go in liver (Produces insulin)
⑥ Short bowel : CROHN'S ds

Organ Harvested
↳ Delhi → Ahmedabad
(1½ hr) transported via
↓
UNIVERSITY OF WINCONSON SOLUTION

self life maxi. = liver ≈ 50 hr
mini. = small bowel ≈ 8 hr

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
myCompanion

ADDISON DISEASE

↳ m·c·c· (India) = TB
(world) = Autoimmune

↓

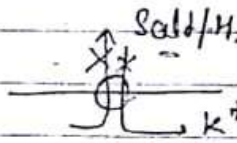
involves only
Cortex layer (1,2,3)
b/t not medulla

↓

① aldosterone
① cortisol
① DHEAS

C/F:

① ① aldosterone



↓

- Salt wasting → salt craving
- polyuria >2 ml/kg/hr ≈ >3L/d
- postural hypotension
  dizziness / vertigo

BP: supine → (3 min) standing
(SBP ↓ > 20 mmHg DBP ↓ > 10

Δ in c/f of Postural hypotension

- inability to excrete K+ → K+
  H+ → Metabolic acidosis

② ① Cortisol

↓

- Hypoglycemia : Sym ⊕
  fine tremors finger
  Diaphoresis, palpitation -

① ACTH ① = partial melanocytes stimulating hormone like action.

↓

- Hyperpigmentation
  - Palm/sole crease
  - areola/groin/axilla/cubital/ossa
  - Previous Sx scar
  - oral mucosa/lips/nails

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

③ Sex steroids ↓

- libido ↓
- pubic hair / axilla hair → fall / loss of

Ix:

① Na^+ / K^+ :

Na^+ ↓
K^+ ↑

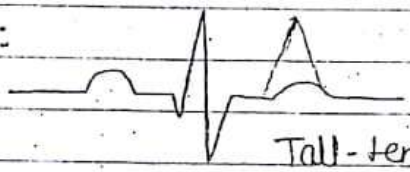
Aldosterone (always)

$Na^+ \propto \frac{1}{K^+}$ opp. dirn

Renal tubular ds

$Na^+ \downarrow \propto K^+ \downarrow$ same dirn

② ECG :



Tall-tented T-wave

[K^+ sample = 23G needle
↓
Cause Hemolysis
K^+ of RBC efflux
↓
← factitious Hyperkalemia
↓
So always take thick bore needle

no ECG changes

③ Imaging : CT abdomen

④ gene expert TB quantification

⑤ IOC : ACTH stimulation test

ACTH (1mg) → Stimulation of 2nd layer of A.G. → Cortisol ↑ → Sugar ↑

If gland damage → Cortisol (not ↑ / or less ↑)
Sugar (" ")

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx: BP (↓) = oral fludrocortisol
Sugar (↓) = oral dexamethasone
DOC = oral hydrocortisone — helps in BP & sugar

Addisonian CRISIS:
1) Sudden stoppage of steroids
2) Waterhouse Friderichsen syndrome
   ↳ Meningococcus / pseudomonas
   ↳ adrenal hemorrhage
   Rx: hydrocortisone + IVF (NS)
   Dengue hemorrhagic fever
3) Adrenal hemorrhage

SECONDARY ADDISON's Ds
(1) Sheehan syndrome:
Q: PPH
Anti pituitary infection
ACTH (↓)
↓
Cortisol (↓) : ↓ sugar
Rx: oral dexamethasone

TERTIARY ADDISON's Ds
Hypothalamus damage (trauma / AV aneurysm / 2° tumor)
↓CRH ↓
ACTH ↓
↓
→ cortisol (↓)
Rx: oral dexamethasone

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

1° addison ds	→ TB	autoimmune (world)
2° " "	→ Sheehan's	Simmonds ds (non obstetric cause of Pituitary ds)
3° " "	→ Hypokalemia damage	
addisonian crisis	→ sudden stoppage of steroids	

1° AD	ACTH ↑	Hyperpigmentation ⊕nt	Hydrocarbone
2° AD	ACTH ↓	⊖nt	dexamethasone
3° AD	ACTH ↓	⊖nt	dexamethasone
Crisis	ACTH (N)	⊖nt	I.V. Hydrocarbisone

HyperALDROSTERONISM :

B/L adrenal Hyperplasia (90%.)	adrenal adenoma (10%.)
(m.c cause)	Conn Syndrome (= adrenal Adenoma)

- m.c.c. of Aldrosteronism → B/L adrenal Hyperplasia.
- m.c.c. of conn syndrome → adrenal adenoma.

↑ Aldosterone.
↓
→ salt/H₂O
→ K⁺/H⁺

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

① gain of salt / H_2O : BP ↑ Systolic (N) ≤ 120/100
diastolic ↑
(isolated diastolic HTN presentation)
└ (IDHTN)

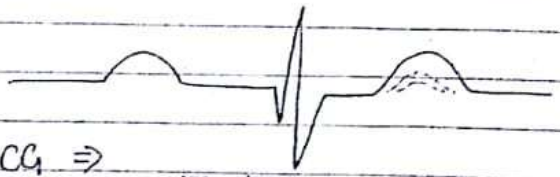
m.c.c of
① essential HTN
② Hypothyroidism
③ Conn's syndrome

② urinary loss of K^+ → K^+↓ → muscle cramp
③ H^+ → H^+↓ → metabolic alkalosis

④ gain of H_2O
↓
Venous Return ↑
Rt atria stretch → A.N.F. ↑
↓
Caniel water gain by
[Loss of water]
(gain of water = loss of water]
(no net gain of water) (counter balance)
↓
Pedal edema absent

3P
⑤ Polyuria
⑥ Polydipsia

INV :
① ① Na^+ ↑
② K^+ ↓

② 
(N) HI of Twave < 10 mm
Hypo K^+ = small / ⊖nt
Hyper K^+ > 10 mm
ECG ⇒
Twave ↓ / absent

③ CT abdomen : imaging modality → Adrenal Adenoma / Conn syndrome
↓
Sx resection
B/L adrenal Hyperplasia → Medical Mx.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

④ Plasma Renin / Plasma Aldosterone Ratio ↓/↑ = ⑥

Tumor (autonomous) - aldosterone ↑
RAAS ⊖ feedback
Renin ↓

Low Renin Hypertension

Renal parenchymal / Arterial ds
B/L Renal Artery stenosis
GFR ↓
Renin ↑
BP ↑

AD-PKD
GFR ↓
Renin ↓
BP ↑

Chronic ds
GFR ↓
Renin ↓
BP ↑
↓
always causes High Renin Hypertension

⑤ IOC conn's / Hyperaldosteronism = Salt loading test

Rx:
: oral spironolactone
eplerenone ♂

B/L adrenal hyperplasia : life long Rx
conn's tumor : electrolytes (N)
to control BP
PAC fitness
↓
Lap adrenalectomy U/L

Addison	Conn
Autoimmune	Tumor of Ist layer of AG.
↓ PBP	↑ P
↑ K+	↓ K+
↑ H+	↓ H+
Hyperpigmentation	Pedal edema ⊖nt
ACTH stimulation test / Cosyntropin test	Salt loading test

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

AD CD

CT-abdomen

destruction → life long Hydrocortisone

Adenoma → spironolactone

1° Hyperaldosteronism : Pedal edema ⊖nt

2° Hyperaldosteronism : Pedal edema ⊕

Cirrhosis of liver | Nephrotic syndrome | Protein deficiency

MI
CHF
COPD

Protein losing enteropathy
eg: Menetrier's ds
Crohn's ds
celiac sprue

massive Ascites
↓ circulating fluid volume
→ ↓ GFR : Renin ↑ : aldosterone ↑
↳ ⊗ low salt diet

- m.c.c. of 2° Hyperaldosterone
  ① Pregnancy induced HTN (PIH)

SEX STEROIDS :

↓
- Hypogonadism
- Cholesterol
  ⊗ 21 hydroxylase
  Aldosterone ← Cortisol
  DHEAS ↑

↑
- Congenital adrenal Hyperplasia
  - AR
  - deficiency of 21 hydroxylase ⊖
  - ↑ DHEAS (due to ...)

  female ♀: clitoromegaly
  intra-labial closed
  at birth ⇒ Ambiguous genitalia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(Anabolic steroid)

fetus ♂ : (N) at birth

Precocious puberty

- Short stature
- Aggressive
- muscular (+) (anabolic steroids)
- phallic ↑
- Pubic hair

HERCULES APPEARANCE

family H/O (+) : CAH

25% Chances Recurrence

Pregnancy ♀ → if 17 Keto-Steroids (↑) in blood of ♀
17 Keto-Steroids (↑) in amniotic fluid.
17 Keto-Steroids (↑) in maternal urine.

↓

Screening : 17 K.S. in maternal urine (+)

IOH CAH : CORDOCENTESIS

↓

if 17 K.S. (+)

Rx:

if ♀ child

↓

Tab : dexamethasone

→ Severity of symptoms (↓)

→ fetal therapy

before birth of child to give to mother

if ♂ child

↓

- (N) genitals - at birth

↓

Precocious puberty

↓

(-) by

- Euprolide (given after birth)

(antigonadotrophin release)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

21-hydroxylase ⊖

- ↓ aldosterone
- ↓ cortisole
- ↑ ACTH (MSH) → Hyperpigmentation around genitals
- ↑ DHEAS

♀ neonate, Home delivery

day 1 : poor cry / low activity
sluggish moro's Reflex
clitoromegaly
hyperpigmentation around genitals
[DHEAS ↑]

Inv

Na = 130
K⁺ = 6 [↓ aldosterone]

dextrostix = 30mg% (↓ cortisol)

↓

Δ of CAH

↓

baby after birth ∈ CAH

Rx:

Hydrocortisone
drops : life long

♀ → clitoro megaly = "SHE"
[46XX]

> puberty : plastic Sx

- Higher mortality in CAH
more in ♂ b/c
due to ⓝ genitals
(undiagnosed) ↓ BP ↓ sugar
not ↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(N) neonate BP : oscillometric device
[65 | 45 mm Hg]

(1) 21 Hydroxylase (-) ♀ : Virilization
Hyperpigmentation
BP (↓)

(2) 11 - hydroxylase (-) ♀ : virilization
Hyperpigmentation
BP = 100/70
(ie Hypertension).

(3) 17 - hydroxylase (-) ♂ : ambiguous genitalia
BP - (↑) (HTN)

(4) 17 - hydroxylase (-) ♂ : ambiguous genitalia
BP (↓).

↓

For prenatal ∆ of these condition
(1) · cardocentesis
(2) · maternal urine

↓

fetal therapy : oral dexamethasone
(severity ↓)

	Glucocorticoids	Mineralo-	Androgen Adrenal	Gene	∆ marker
21 hydroxylase deficiency	deficiency	deficiency	(↑)	CYP-21A2	17-hydroxy progesterone
11-hydroxylase deficiency	"	(↑)	(↑)	CYP-11B1	11 deoxy-cortisol
17-hydroxlase deficiency	"	(↑)	deficiency	CYP-17A1	11-deoxy corticosteron
3-hydroxysteroid dehydrogenase deficiency	"	deficiency	(↑)	HSD3B2	17hydroxy Pregnenolone

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Cushing Syndrome :

Causes (m·c·c·)

① Iatrogenic steroids : Cortisol ↑
ACTH ↓

② Lung cancer (oat cell Ca) → ectopic → ACTH ↑↑ → more than ⓗ stimulation to 2nd layer of Adrenal → hyperpigmentation.
↓
Cortisol ↑

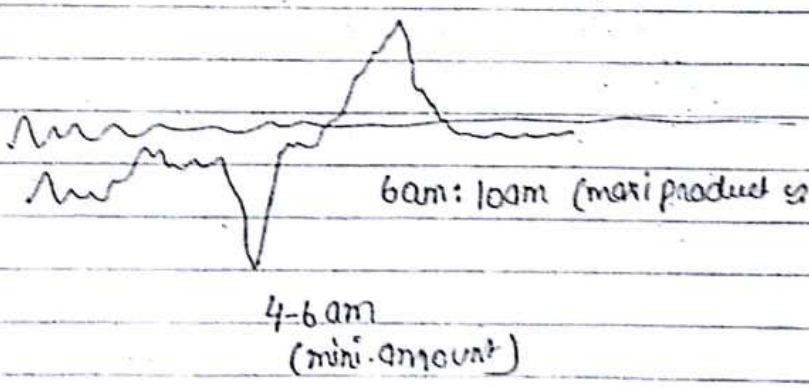
③ pituitary adenoma → ACTH ↑↑
↓
Cortisol ↑
↳ (Cushing ds)
(m·c·c· of cushing ds : pituitary adenoma.
m·c·c· of cushing syndrome : Iatrogenic steroids.

④ Adrenal adenoma



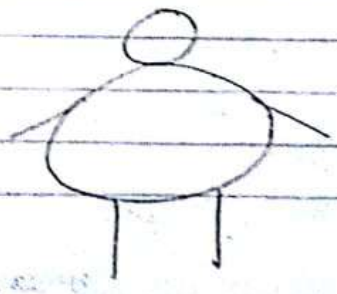
→ Cortisol ↑↑ : ACTH ↓↓

C/F



Q. manifestation
earliest feature of cushing syndrome : Loss of diurnal variation of Cortisol production.

- moon facies
- buffalo hump
- neck circumference ↑ : Obstructive Sleep Apnea (snoring ↑↑)



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

- Striae (purplish) in pregnancy: pink striae
- Thin skin
- Easy bruisability
- proximal weakness
  myopathy
- wasting muscles
  (arm, thigh)
- LEMON ON STICKS appearance)

② wt gain ⊕
peripheral Resistance ↑ = HTN

③ Cortisol ↑ → sugar ↑ } develop 2° D.M.
Insulin Resistance } FBS ⇒ >126 mg%
2hr >200 mg%
Rx: METFORMIN

④ Cortisol ↑
↳ partial aldosterone activity ↑ → ENaC ⊕ activate
Hypokalemic Metabolic Alkalosis
• muscle cramp.

⑤ Cortisol ↑
↳ activates sex steroids Receptors

♀: Hirsutism oligomenorrhoea wt. gain	→	DD ① P.C.O.D ② Cushing syndrome (-ve)

⑥ ACTH ↑
: Hyperpigmentation • ectopic ACTH produc = Oat cell Ca.
• Cushing ds = pituitary adenoma

ACTH ↓ : Hyperpigmentation ⊖nt
1) • Iatrogenic steroids
2) • adrenal adenoma

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / / Page

AnyCompanion

Ix:

① High dose dexamethasone suppression test: Screening test

② low dose dexamethasone suppression test: IOC
0.5mg dexona TDS X 3 days

pt:
ACTH ↑
dexona

ACTH ↑	ACTH ↓ from previous value (not N level)
↓	↓
Oat cell Cancer	Pituitary adenoma

③ Imaging:
MRI head - pituitary adenoma
CT chest - oat cell Ca
CT abd - adrenal adenoma

④ 24 hr. urinary Cortisol ↑
⑤ Salivary cortisol (spot sample) ↑

Rx: depends on causes
① Iatrogenic Steroids →
Ocular M.G. = prednisolone X 5yrs
C/O: post-subcapsular cataract
wt. gain ↑, sugar ↑, BP ↑
↓
- prednisolone ↓↓↓ (gradually taper off)
- Azathioprine (Steroid sparing Agents)

TOC

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx Cushing syndrome ... coin ... hypercortisolism

② Oat cell ca lung ——→ Chemosensitive / Radiosensitive
- microscopic
- Brain > Heart Spine Bone Adrenal

Rx:
Cisplatin / Carboplatin + Irinotecan / Etoposide

③ Pituitary adenoma
≤10mm microadenoma
≥10mm macroadenoma



Bitemporal Hemianopia

Rx:
Trans-sphenoidal surgery

④ Adrenal Adenoma



Rx: medical Adrenalectomy
oral : Ketoconazole (best drug)
I.V. Aminoglutethimide
I.V. mitotane



→ Rx:
B/L adrenal Resection
(I.V. Hydrocortisone) → during Rx
post-op:
oral hydrocortisone
(life long)

Post op visit ↓
ACTH release ↑↑
Hyperpigmentation +++

NELSON syndrome.
Pressure effects.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Hyperpigmentation: ⊕ = [CAN]

C (1) Cushing ds : pituitary adenoma
A (2) Addison ds : 1° ADs = TB
N (3) Nelson syndrome : B/L Adrenal Resection
} ACTH ↑
C (4) CAH (Cong. adrenal Hyperplasia)

Hyperpigmentation ⊖

(1) Iatrogenic steroids : ACTH ↓
(2) Adrenal adenoma ,,
(3) Sheehan/Simmond ds ,, —
(4) 3° addison ds ,,

PHEOCHROMOCYTOMA :

- Adrenal medulla
- Chromaffinoma
  - NE (80%) > Epi (20%) (N) Epi 60% > NE (40%)
  - dopamine : 0.01%
    ↳ pheochromocytoma producing dopamine
    Kla Paraganglioma/ Chemodectoma/ Potato Tumor } ↳ neck area
- 85% benign, 15% malignant → for differentiation
  - FNAC
  - Biopsy (CT) } not possible b/c destroy (N) gland
- 15% Cases : extra adrenal
  85% Cases : adrenal
  → MRI-abdomen
  - sympathetic ganglion/chain

Tx size can be as small as pin b/t high level secretion of EN.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

1st imaging modality : MRI - abdomen

Imaging modality of choice for

adrenal Pheo	Extra adrenal Pheo
↓	↓
MIBG scan	PET-DOPA
[methyl iodo benzyl guanidine scan]	

organs of Zuckerkandl

③ 10% familial

P1 20yr : pheochromocytoma : Sx
40yr :
Kidney stones (Recurrent)
↓
PTH (check)
Parathyroid Adenoma : Sx
60yr : medullary Carcinoma thyroid

K/a
multiple endocrine neoplasia
[MEN : IIA → Sipple syndrome]
↳ chr. 10 defect
↳ RET protooncogene

④ 10% Bilateral

C/F: (triad)
P - Palpitation
H - HTN (episodic)
D - Diaphoresis

- episodic hypertension
- Postural hypotension
- Hypercalcemia
- Cafe-au-lait spot
- diarrhea

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

① α_1 → Vasoconstriction → HTN : m.c. presentation
② β_1 → HR ↑ : palpitation
③ β_2 : muscles
↳ fine tremors fingers
④ Sugar ↑
FBS = 100-125
2hr = 140-200
(Impaired glucose tolerance)

⑤ Catecholamine ↑ : Symptomatic (±)
wt. loss (involuntary)

Anxiety Neurosis
misdiagnosed

Inv

① 24 hr urine : Catecholamines
(Screening) Vanyl mandelic acid level (VMA)
fractionated metanephrine

② IOC :
Plasma fractioned metanephrine levels ↑

③ MRI abdomen

④ If MRI abd → (N)
↓
MIBG Scan (Best) → If (N)
↓
PETScan (1st)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx:

Pheochromocytoma

TOC : Surgery

DOC (HTN) : Oral phenoxybenzamine
(non selective α-blocker)

Palpitation / fine tremor : Propranolol



↓

Oral phenoxybenzamine (early morning)

+

Post breakfast oral propranolol

[α + β = ✓]

↓

Symptoms : Control

PAC fitness ⊕

Lap Bx : Tx resection

[Intra op. HTN]

↓

2 I.V line :

1st for anesthetic drug

2nd → I.V phentolamine
(non-selective α blocker)

↓

If [Intra op HTN Crisis] : LVF

SpO_2 ↓↓ . Crepts ⊕, BP ↓

Rx : iv. NTG drip

If propranolol take 1st

↓

β_2 ✕ → VD ✕

α → VC : unopposed

↓

BP ↑↑

(HTN crisis)

(β + α = ✕)

① HTN crisis / emergency
iv Nicardipine

② HTN urgency
oral ACEI ⊖

③ Intra op HTN crisis
iv NTG drip

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Pheochromocytoma: (Benign)

Rx:

TOC : Sx [Sx C/I in malignant pheochromocytoma]

DOC

↳ α : phenoxybenzamine

β : propranolol

intraop HTN : phentolamine

intraop HTN crisis : iv NTG drip

RAS ⇒ Cause

20yr ♀ : fibromuscular dysplasia

60yr ♂/smoker : Atherosclerosis

in India : ① TAKAYASU Arteritis

② Non specific Arteritis

↓

IOC : Doppler > MRA

DOC : ACE ⊖ / CCB

TOC : P.T.R.A ± stenting

HTN ≤ not used ABCD

Balloon dilatation + stenting

① Coarctation of Aorta

② B/L Renal (A) Stenosis

③ Pheochromocytoma

U/L RAS = ACE ⊖

B/L RAS = C/I ACE ⊖

↓

Percutaneous transluminal Renal angioplasty ± stenting (P.T.R.A ± stenting)

Carcinoid Tumor:

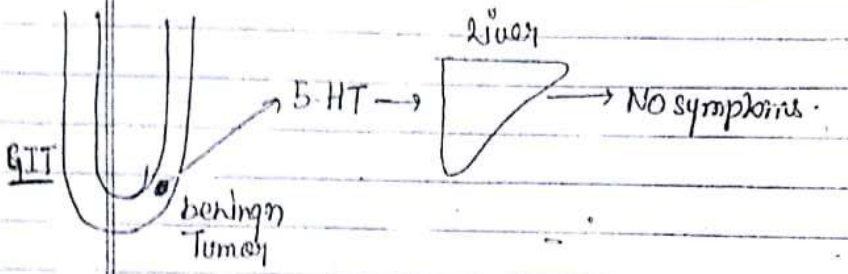
- Argentaffinoma
- 5-HT derivatives : serotonin, Histamine, Bradykinin

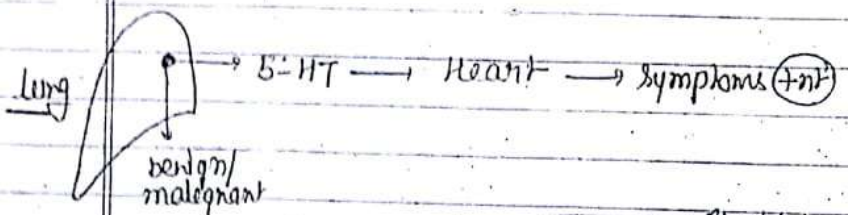
Tryptophan → (↓ availability) Niacin ↓ → Pellagra

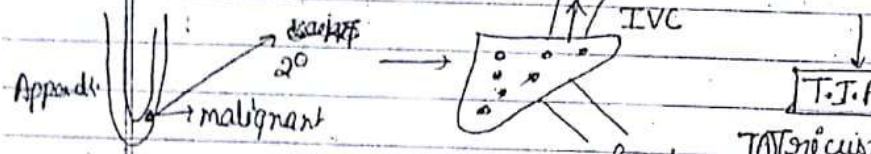
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

• mc site :	GI Tract	28%
	Bronchus	27%
	Ileum	14%
	Rectum	13%
	Appendix	1%







T ① Tricuspid (m.c. valvular lesion)
I insufficiency
P ② Pulmonary
S stenosis

• m.c. valvular lesion in Carcinoid syndrome.
Tricuspid insufficiency : PSM Pan-systolic
Pulmonary stenosis : ESM.
(ejection syst. murm...

Carcinoid syndrome:

① Serotonin : GIT → Secretory diarrhea
② Histamine H_1 → Bronchus
③ H_2 → Acid ① : epigastric pain
④ Smooth muscle airway → Bronchospasm (Rhonchi) → Mistaken as Asthma
Wheeze (when Rhonchi very loud can be out side)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

⑤ TIPS → pulsatile liver (RV → RA)
- exercise intolerance -

Appendix → Acute appendicitis (acute abdomen) → mc complication → perforation → peritonitis

① Rebound tenderness
↳ Blumberg Sign
② Rovsing sign
(LI iliac fossa → RI iliac fossa pain)
③ DUNPHY sign (coughing)
④ Psoas sign: Retrocecal appendix
⑤ Obturator sign: pelvic appendix

IOC of Appendicitis
adult : CT Scan
child/pregnancy = USG

Invs:
① 24 hr : urinary 5HIAA level ↑
(5-hydroxy indole Acetic acid)
② 24 hr : urinary 5-HTP ↑
[5-hydroxy Tryptamine]
[Atypical Carcinoids] HPE feature
③ Imaging modality
whole body PET

Rx:
DOC carcinoid syndrome (drug for carcinoid crisis)
= Octreotide inj
5-HT antagonist : Cyproheptadine
: Phenoxybenzamine H_1 #
: Ranitidine H_2 #
(Autacoids)

≥7 mm dilatation
= : diameter appendix

Stump size <3mm
(to minimize the chances of stump recurrency)

MANTREL SCORE >7 (dig Appendicitis)
M. Migration of pain
A. Anorexia
N. Nausea.
T. temp ↑ >38°C : perforation
R. Rebound tenderness
E. elevated leucocyte count

BALATHAZAR SCORE : CTSI
(Severity of Appendicitis)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

	Carcinoid
	- Serotonin
	- Histamine
	- Bradykinin
	Argentaffin
	Secretory diarrhea
	Asthma like
	Appendicitis.
24 hr. Urine test	
(4) Fractionated metanephrine	5-HIAA
	5-HTP (atypical)
(5) Rx: Phenoxybenzamine	Octreotide

Parathyroid Gland:

1) PTH = 84 amino acid
2) Bone reabsorption = Ca^{+2} ↑
3) PCT. kidney → PO_4 loss → PO_4 ↓
4) Bone turnover = S. Alkaline phosphatase ↑

Osteoblast → Osteoclast

(1) Hyper-parathyroidism:

(a) ↑ PTH:

- Parathyroid Adenoma
- Parathyroid hyperplasia

PTH ↑ ⇒ ↑ Ca^{+2}

Spasm of sphincter Ci t

(1) Refractory Constipation
(2) Nephrocalcinosis
∴ [Calcium] × PO_4 ≥ 55

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Ca

Renewed Abdo Pain → Renal colic / Ureteric colic → Flank pain → w/ companion → Umbilicus → Tip of penis/ vulva

Hematuria

$CaPO_4$ stones

Kidney stone < 2.5 cm : ESWL
> 2.5 cm : PCNL

ESWL C/I
Pregnancy
bleeding diathesis

S. Ca^{+2} 12-15 mg%

③ Hardening blood vessels : P.R. ↑ → HTN

④ Calcinosis cutis : Hard chalky plaque → ulcerate (multiple ulceration on skin)

⑤ 2° parkinsonism → m.c.c. of parkinsonism = parkinsonds (PARK gene #1 Chr 1)

C/F (+2/3)

① Resting tremors
② Bradykinesia (Akinesia mutism)
③ Rigidity

2° parkinsonism m.c.c. = drug induced
↓ dopamine] Haloperidol / Chlorpromazine
↑ Ach]

(PTH ↑) Hyperparathyroidism
Hypoparathyroidism PTH ↓

⑥ Psychosis
⑦

S. Ca^{+2} > 15 mg%

Systolic arrest of Heart

K ↑ diastolic arrest of ♡.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Tx: ① S. calcium : ↑ [Calcium $\propto \frac{1}{PO_4}$]
PO4 ↓
S. AP ↑

② Serum PTH assay : ⇑
③ Tc_{99} scan → imaging modality

Rx:

medical stabilization
① IVF : NS
② Furosemide drip
③ iv IBandronate
④ Calcitonin nasal spray
↳ (send Ca^{+2} into bone)

↓

Parathyroid Sx Resection of Tx

2° Hyper PTH ⇑ :

7 dehydrocholesterol
| (UV-5min)
D_1 Cholecalciferol
↓ liver
D_2 25(OH) "
↓ kidney
D_3 1,25 $(OH)_2$ cholecalciferol
[PCT : site of synthesis]

Erythropoietin: Peritubular cell.
Vit D_3 : PCT
Renin : JG cell / granular cell

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(2°) Hyper PTH = m.c.c. Chronic Renal ds.

@DM → C.R.F.

Vit D_3 synthesis ↓

Hypocalcemia

↓

CaSR ⊕ : PTH release ↑

↓

bone reabsorption ↑

(Ribs / clavicle / vertebra)

OSTEITIS CYSTICA FIBROSA

↓

↓ bleeding ↑ → Hemosiderosis

↓

BROWN TUMOR

Release of Ca^{+2} from bones

$Ca^{+2} \times PO_4$

↓

Calcification of paravertebral ligament

X-ray spine : Rugar Jersey Spine

↓

Azotemic Osteodystrophy

- bone density ↓
- # incidence ↑
- Rugar Jersey Spine
- X-ray hand : sub-periosteal reabsorption Phalanges
- X-ray skull = pepper pot skull

C/F of 2°PTH :

- Bone pain / # bone

Tx

(i) K.F.T. → Cockroft gault formula

(2) S. Calcium = ↓ [Vit D_3 ↓]

S. PO_4 ↑

S. AP

↑ TSH - ESR ↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

③ X-ray spine | Hands | skull

Rx:

Cinacalcet : ⊖ PTH release

RDA
Vit D_3 / Ca → not given as a drug

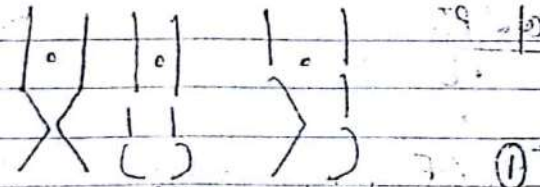
Hypoparathyroidism = ↓ PTH

① autoimmune → Type I / I-5 DM addison ds ↓ PTH
gland

② Thyroid Surgery → total thyroidectomy (Papillary Ca thyroid)
inadvertant Parathyroid resection
Radiation exposure

③ DiGeorge Syndrome
Thymus - Hypolasia
Parathyroid gland hypoplasia
↓ cell mediated immunity
↓ Tetany
Recurrent infection

Acute hypocalcemia	Chronic hypocalcemia
< 7mg% = tetany	① Rickets / osteomalacia
① perioral / ungal paresthesia (earliest manifestation)	↓
	• Craniotabes (flattening of frontal bell)
② BP cuff	• Ping pong skull
SBP +20 mm Hg	• delayed dentition
↓ 3 min	• Wide open Ant. fontanelle
Carpopedal Spasm	
Trosseau sign	
Obstetrician Hand	



③ CHVOSTEK SIGN:
facial (N)
facial grimace

④ Death ⇒ laryngospasm
ECG = QT ↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ECG: QT ↑ [360-440 msec / 9-11 ss]

total Ca ↓
ionized Ca ↓
pH : (N)
albumin (N)

↓ Ca
↑ PO_4

$Ca \times PO_4 > 55$

↓ ↑↑

↓

nephrocalcinosis : (PTH ↓)
(deposited Ca in basal ganglia)
2° parkinsonism
Psychosis.

Rx:
① i.v. 10% Calcium gluconate (slow rate)
(ECG monitoring always)

Ix:
① Ca ↓ PTH ↓
PO_4 ↑↑
SAP (N)

SAP (↓)
Hypophosphatasia
(only one medical condition)

② S. PTH assay : (↓)
③ Tc 99 scan (↓) uptake : autoimmune
(−) uptake Sx removal

Rx:
Inj Teriparitide : DOC for HypoPTH

Pseudo-Hypo PTH: → Rickets like illness | Albright Hereditary Osteodystrophy

- PTH +nt = (↑) (N)
- PTH Receptor #
  GNAS gene defect.

- Craniotabes
- delayed dentition (if death not come upto 13 months)
- Bones short
  metacarpals (3rd & 4th MCarpal relatively short)
- Muscle-muscle - dimple-dimple
  1 2 3 4
  Fist forming

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

C/F
: same as hypoPTH

① Ca ↓
PO4 ↑
S.AP (N)

② PTH Assay ↑
Tc99 scan uptake (N)

Rx:
No H/I Available

Pseudo-pseudo hypo PTH : (PPHP)
PTH
Action of PTH on kidney = (N)
" " " on bone = defective
Rickets like Illness
Albright hereditary (AHO
osteodystrophy

S.PO4 low

PPHP : S.PO4 low → AHO
PHP : S PO4 (↑) → AHO

	1°PTH ↑	2° PTH (↑)	HP	PHP
	Adenoma	CRF	autoimmunity	GNAS gene
PTH	(↑↑↑)	(↑)	(↓)	(↑↑↑)
Ca	↑	(↓)	(↓)	(↓)
PO4	↓	(↓)	(↑)	(↑)
S.AP	↑	(↑)	(N)	(N) (↑)
Rx:				
Sx		Cinacalcet	Teriparatide	NO H/I ??

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Complete Stone : Kidney

envelop shaped

Causes:
① Idiopathic hypercalciuria : Stone former
② RTA type 1

24 hr. Urinary Ca^{2+} ↑
Rx : Thiazide diuretics
↳ May reduce urinary lost of Ca^{2+}

Pregnancy U-loss of Ca^{2+} = Hyperemesis
↓
Given in hypercalcemia

Struvite : proteus : staghorn → Aceto-hydroxamic acid during Rx
Urate - Gout → Rasburicase / allopurinol / probenecid
↳ Cystine - Cystinuria
Xanthine - Xanthinuria
↳ overproduction ↳ Under excretion

24 hr urinary uric acid in differential diagnosis

- d-penicillamine
- Tiopronin

IOC :
Kidney stone - CT abdomen scan
ureteric stone - CT scan

Ureteric stone < 5mm diameter = spontaneous expulsion possible

Bladder stone 1° : oxalate stone / mulberry stone
2° : Infection → Struvite stone.

Rx :

Lithotripsy = TOC

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Thyroid Gland:



Large vascular thyroid → ideally done

Lugol iodine X 4 wks
- gland shrink relatively
- I_2 trapping ①
  - T_4 synthesis ↓
  - T_3 synthesis ↓

Wolf-Chaikoff effect

Then referred to Surgeon

Thyroid Storm

Causes: inadequate preparation of pt.

prevention: Lugol I_2

MOA: Wolf Chaikoff.

C/F: CHF: ↑HR

Rx: DOC: PTU ($T_4 \xrightarrow{X} T_3$)

Thyroid Storm → can death on temp on op. table due to CCF & Hyperthermia

Referred to Surgery

↓

Intra-op

manual pressure Hand

T_4 ↑ ⟶ T_3 ↑ symp ④

General Anesthesia

① HR ↑↑↑ → high output CCF

② temp. ④ >41°C ⟶ HR ↑

Calorigenesis

Rx:

① I.V. Propranolol (β_1 → HR, β_2 - muscle-Heat)

② Ice packs / Air conditioning / remove blankets

③ I.V. Hydrocortisone

④ I.V. soda bicarb

DOC of ⑤ Nano-propyl thiouracil (gastric tube) ↓ Stop conversion of $T_4 \longrightarrow T_3$

⑥ Potassium iodide (NG-tube) / oral

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Thyroid storm
② MI / stroke : innoop.

mcc of Thyrotoxicosis
① 1° causes
Grave's ds :
TSI · thyroid stimulating immunoglobulin
LATS : Long acting thyroid stimulating A/B.
↓
T4↑, T3↑
TSH ↓↓

② 2° causes
Pituitary adenoma: ⟶
TSH ↑
↓
T4↑, T3↑

③ Struma Ovarii (ectopic)
Teratoma

④ Jod Basedow effect
⑤ Thyrotoxicosis factitia

Jod Basedow Effect
↑ any companion Thyrotoxicosis
↑ T4
↑ I2 TRAP
① I2 (salt) ⟶
I2 Replete population

② BEEF (Cattle thyroid)
↓
Human consumption
↓
Thyrotoxicosis
↓
Thyrotoxicosis Factitia
raw sat.

③ Ayurvedic (wt. loss)
↓ Herbs
↓
Levothyroxine extract
↓
BMR ↑ : wt. loss +
↑ O2 consumption
angina
↓
Thyrotoxicosis Factitia

PA > 10mm size
B/L Hemianopia.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

C/F: (grave's ds) : young ♀
- palpitation
- fine tremor
- diaphoresis } sym ⊕
- wt. loss
- HEAT INTOLERANCE (calorigenesis ↑)
- oligomenorrhoea
- infertility

O/E:

1. Sleeping pulse Rate : Resting tachycardia (most Reliable sign)

2. 
retrobulbar fat deposition / inflammation
→ • Proptosis B/L or U/L / assymetrical.
Inf. Rectus (IR) (m.c. involved muscle in eye)
• Diplopia

3. Acropachy



4. Pre-Tibial myxedema ⊕
5. diffuse ⊕ gland
6. CVS
   - loud S_1
   - S_3 ⊕
   - Mean-Lerman Scratch

Inv:

① T.F.T
- total T_4, T_3 ↑
- free T_4, T_3 ↑
- TSH ↓↓

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

② T.S.I. A/B titre ↑

③ To r/o 2° thyrotoxicosis : MRI head.

④ RAIU : uptake ↑

I_{123}	8 hr
I_{131}	8 days
I_{132}	2-3 hr

preffered : $I_{132} > I_{23} > I_{131}$

Rx:

<45 yr :

Anti Thyroid drugs
PTU, carbimazole
↓ dose limiting s/e
(agranulocytosis)
Sub-total thyroidectomy
(6-8 gm gland left behind)

Retrosternal goitre
↳ SVC obstruction, dyspnea
• Pemberton sign
facial congestion.
• CT chest
• Rx : surgery

>45 yr :

Radio-iodine
oral I_{131} (β-Rays)
↳ Thyroid ablation
C/I : pregnancy, Breast feeding

* Propranol : used for symptoms control

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Grave's Opthalmopathy:

① $T_4 \uparrow : T_3 \uparrow$ — D1 deiodinase — $T_4 \longrightarrow T_3$

↓

Sympathetic stimulation

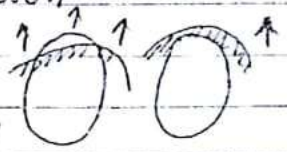
↓

Muller muscle spasm / contraction

↓

STARE SIGN

earliest presentation of grave's opthalmopathy



② Blinking inadequate

↓

exposure Keratitis → Methylcellulose eye drops.

corneal ulcer

ciliary congestion

↓

more severe case

Lateral Tarsorrhaphy

③ fat ↑ in muscles

④ proptosis. U/L / asymmetrical —later→ B/L

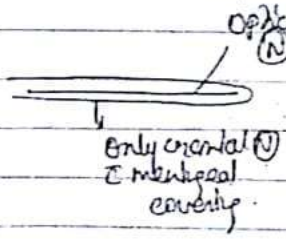
⑤ diplopia

(external opthalmoplegia) = no cranial (N) palsy

Inferior Rectus

⑥ Blindness

Retrobulbar neuritis



↓

Rx: ① DOC : steroids.

(Methyl-prednisolone)

② Orbital Radiation.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Pituitary Hormones

1. GH
2. TSH
3. ACTH
4. LH
5. FSH
6. Prolactin

m.c. Tx of pituitary adenoma :
① non-functional pit Tx
② Prolactinoma

Cabergoline, Bromocriptine → (dopamine) ↓⊖ Prolactin ↓⊖ LH/FSH

♀ 30yr → prolactinoma
① ↓LH = anovulation
② ↓FSH → amenorrhea → 2° infertility
③ galactorrhea
④ B/L Hemianopia (≥10mm, macroadenoma)

Dx:
S. prolactin ↑↑
MRI head = pit. Tx

Rx:
① visual deficit ⊕ → transsphenoidal Sx
② if visual deficit ⊖
- Cabergoline
- Bromocriptine

♂, galactorrhea ⊕
Libido ↓, Erectile dysfunction ⊕
visual deficit ⊕
↓
MRI head
S. prolactin
Rx: transsphenoidal Sx
Cabergoline, Bromocriptin] Medical Mx

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Causes of Galactorrhea:

(1) Prolactinoma : S. prolactin
(2) 1° Hypothyroidism : TFT test
(3) antipsychotic drug TRH
(4) C.R.F. : KFT

↑TSH → Prolactin ↑

I_2 deficient area → goitre : T_4 ↓, T_3 ↓ (Hypothyroidism).
↓
↑ TSH
↓
↑ TRH
↓
↑ Prolactin
Galactorrhea.

Sheehan's syndrome:
[2° Hypothyroidism] TSH ↓, T_4 ↓, T_3 ↓
↓ PRL = failure of lactation.

Panhypopituitarism - all pituitary hormone deficiency
Hypopituitarism - only GH deficiency
↓
GH ↓
- Short stature / dwarfism
- 10 yrs < 100 cm
  ht < 3rd centile
- High pitch voice.
  "Doll like facies"

(N) L = 50 cm at birth
100 cm = 4½ yrs

Doll like facies
Von gierke ds
Hypopituitarism

Tx:
(1) IGF-1 level
(2) Insulin challenge test
(3) Arginine challenge test
→ fail to stimulate gland
IOC.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx:
GH inj DNA recombinant tech
(up to the age of puberty) → then stop.

LARON Syndrome:
- GH Receptor defect

C/F -
Hypopituitarism

Rx: ?

Gigantism / Acromegaly
pituitary Tx

GH ↑	GH ↑
• since birth	• after puberty
Gigantism	Acromegaly
① ht ↑↑↑ (monitor growth)	• ht. same
② wt. ++	
③ Cardiomegaly + : high output CCF	
④ Organomegaly +	
	X-ray : Heel pad thickness ≥30mm (Parameter to maintain Growth)
	② Acral ⊕ Hands ↑ Finger - thicker Foot size ↑ Head circumference ↑ Lower jaw + (Prognathism) macroglossia (Obstructive sleep apnea) Cor pulmonale

Common finding in both
- Coarse facies.
- HTN
- Sebum ⊕ : Acne ⊕
- impaired glucose tolerance : GH ↑ → sugar ↑
- wt. gain ↑↑ : Obesity
- B/L Osteoarthritis - Knee
- X-ray Paranasal sinus ⊕

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Inv:

① IGF-1 level – screening

② Glucose challange test

(Confirmatory test) glucose ⟶ ⊖ GH release from Pituitary

[75 gm glucose — GH < 1 ng/dl]

Tx of pituitary

↓

failure to suppress GH levels so GH > 1 ng/dl

Gigantism

Rx:

Trans-sphenoidal Sx ← Hormonal

if visual deficit even not occur ever

↓

Recurrence : pit. adenoma.

Rx: Pegvisomant (new) → GH ® blocker.

Inj. octreotide (octreotide)

GH ↓ doll like facies Rx: inj GH

IOC Insulin challenge test

GH ↑ gigantism T.S.S.

Pegvisomant.

↳ Acromegaly

arm span > ht

also in marfan synd.

IOC 75 gm glucose challenge test

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Sheehan Syndrome: (Panhypopituitarism)

- all pituitary hormone reduce

GH ↓ → I[st] to reduce → • hypoglycemia symptoms
ACTH ↓ → cortisol ↓ → Hypoglycemic symptoms (11) • anger/Rage attack • fine tremors • palpitations
PRL ↓ → failure of lactation
LH ↓, FSH ↓ → 2° amenorrhea
TSH ↓ → last to fall
→ T4 ↓ T3 ↓ Cold intolerance
— 2° Hypothyroidism

Rx:

Tab dexamethasone
Tab O.C.P. (estrogen) } life long H/
Tab levothyroxine

• imaging modality - MRI head •

Osteoporosis ⇔ ds of bone matrix = (not) a mineralization ds •

Osteoclasts ↑
Osteoblasts (N)

>45 yrs ♀ / 25 yrs ♀ (Hypogonadism) FSH ↓

• low back ache = microscopic # in vertebra
• thigh pain
• tibial pain } Pain Resistant to NSAIDs.

Ix:

DEXA-SCAN (Dual-energy-X-ray Absorptiometry) Bone Scan = for metastasis to Bone
Bone density check
(1) spine
(2) head of femur
(3) Calcaneum

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my COMPANION

Osteoporosis

T score	≤	-2.5 SD
Z score	≤	-2.5 SD

Osteopenia

T score	≤	-1.5 SD
Z score	≤	-1.5 SD

Guide to = (T) score

① Bisphosphonates
Risedronate 35 mg once/wks.
S/E if taken empty stomach
erossive esophagitis
(donot lie for 1hr)

not taken ≥ 5yr
↓
Causes pathological # (Femur)

② Calcitonin nasal spray
(analgesic effect also)

③ Calcium/vit D_3 = R.D.A.

Que:
70 yr ♀ on bisphosphonate × 5 yr
c/o lump, pain in thigh
↓
1st Inv. → X-ray thigh.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

RESPIRATORY SYSTEM

Pulmonary embolism:

1. fat embolism
2. Air ,,
3. Thrombo ,,
4. Amniotic fluid ,,

Fat Embolism:

- 20yr, Bike accident, femur #

spiral # of femur → fat ← Bone marrow

- fat globules come in circulation

C/F GURD Criteria

major criteria

1. cytokines: (small)
   - damage blood supply of lungs
   - Respiratory depression

$$\text{Ventilation/Perfusion} = \frac{3.5\ L/min}{4.5\ L/min} = 0.8$$

cytokines stimulate IL-1 → Hypothalamus → fever

- V/P imbalance
- fast breathing
- intercostal Retraction
- subcostal Retraction
- Central cyanosis

C/F develop after >24 hr of # → no IOC for it → clinical Δ

GURD Criteria for Δ of fat embolism: 1 major + 4 major criteria

major criteria

2. cytokines: damage microvascular of brain → Reticular activating system (RAS)

GCS < 7 → STUPOR Coma

minor criteria

3. Fever (High grade)
4. Rash: axilla → Skin of chest
5. HR ↑
6. petechiae (look like mosquito bite - but not blanching)
7. urine/sputum examination under microscopy → FAT globules → Sudan Black

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(Modifiable Risk = High)

Mx:

1. High flow O_2
2. Vasopressors
3. Heparin (anticlotting drug) + antifibrinolytic effect → decides for globule

2. AIR Embolism:

1. trauma to internal jugular vein (Assault / Robbery)
2. Central line insertion (air seal removal)

Suction can (Yankauer) → ① CVP → early guide to fluid resuscitation; ② Cardiogenic shock = IV F (CI); ③ all can shock = IVF

③ TPN ← ① Air embolism

③ Chemotherapy

3. By causing hypoxia cause to develop air embolism

Cause = vessel biopsy

① trauma internal venous system air entered in

② sitting position (more prone)

4. decompression illness / caisson dx:

deep sea diver → Air tank (compressed air) → rapid ascent → N_2 bubbles in blood stream → blockage of: cerebral circulation → Hemiplegia; coronary ② → MI; ③ → pulmonary infarct

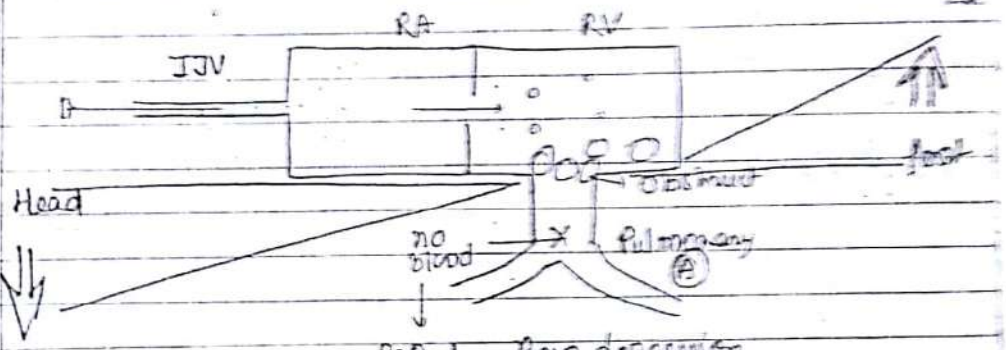
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx:

① Decompression chamber
↓ [X10 atm pressure]
dissolves N_2 bubbles

② Hyperbaric O_2 therapy
↳ also done in
1) gas gangrene
2) high altitude pul. edema
3) Caisson's dis.
4) CO poisoning



Rx: 1st step of Mx: change position of pt.
① Turn pt: left lateral decubitus
(sudden change of bubble site)
Obstruction removed

② Trendelenberg position = Head below foot (up)

③ Cath lab: ② T.E.E. (best test) = IOC
$ET_{CO_2} = 0$ (end tidal $CO_2 = 0$)
$ET_{N_2} = 0$ " " $N_2 = 0$)

③ Q. min. amount of air to cause clinical feature in dog = 0.1 ml/kg
Embolism
④ Q. On auscultation: Mill-wheel murmur
Rx: Aspiration of Air = Rt. H. Catheterisation

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Page / Date
Anesthesia companion

Case old F maingioma schedule for N Surg Sx
intubated in supine position
position shifted to sitting position
ETCO2 = 0
↓
Sx not started
ETCO2 = 0
↓
dislodgment of E Tube

If Sx is doing/done
ETCO2 = 0
↓
Air embolism.

Thromboembolism

Causes
① DVT : immobilization > 5 day
Sx mcc of PE
Stasis in calf veins
↓
thrombus formation
↓
retrograde travel
- towards heart

② iliac vein — ortho surgery / pelvic Sx
↓
trauma
femoral vein
during Total Hip replacement → trauma in vein of femoral vein
↓
clot form
↓
Sx ①
↓
retrograde travel to ♡

Sx
mcc of massive PE
↓
large vein trauma

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

③ Nephrotic Syndrome

proteinuria >3.5 gm/day
↓
urinary loss of protein C/S/Antithrombin III.
↓
Hypercoagulable state

(Arg compression (Rt CCA large) not loose (exception) Fibrinogen X ferritin ↓ ceruloplasmin ↓ all other pr loss)

Que.

Boy of 9 : long distance flight-
known c/o nephrotic syndrome.
↓
collapse at immigration counter
SpO_2 ↓, BP ↓, lung = clear
↓
clinical Dx : pulmonary embolism

④ Factor V Leiden mutation :

factor V activity ⟷ Protein C
check by
↓ Leiden when mutation
binding defect (V → pr C)
unchecked factor V activity
↓
Hypercoagulable state
Clot form (bleeding-ve)

(X/a para-hemophilia
↓ factor V deficiency
↓
bleeding tnt)

⑤ Paroxysmal nocturnal hemoglobinuria (PNH)

: 1st morning sample urine = Black
✓ platelets count = (N)
✓ PIGA gene defect
↓
TxA_2 liberation (low stimulation/trauma)
✓ platelet aggregation.
↓
clots

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

PE : Hypercoagulable state.
medical causes
nephrotic syndrome
factor V Leiden
PNH
APLAS
(anti phospholipid A/B syndrome)
[OCP > 30ug : estrogen]

DVT
LVT
THR = femoral (R)
Pelvic Sx - iliac (L)
TVR - popliteal (L)

Today ♂ : THR (Rt) yesterday morning

Today —

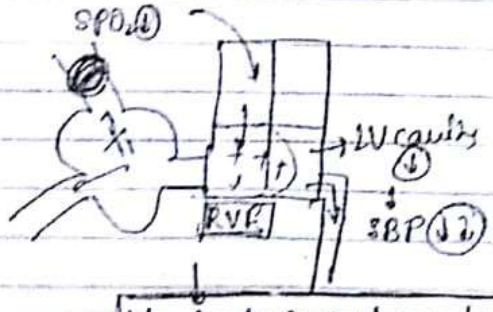
C/O : sudden onset difficulty in breathing, chest pain

O/E : Accessory muscle (+)
R.R = 40/min ((N) 10-16/min)
JVP = neck veins full
S_1 = loud (tachycardia)
S_2 = wide split S_2 : RVF
S_3 = ventricular gallop (+)
lungs - clear (crepitation (-)nt)

↓
not LV involvement
R.V. involve.

normal split in S_2 = LVF

Ix :
(1) ECG : r/o MI
PE = RV strain
• deep S = lead I
deep Q = lead III
inverted T = lead III
$S_1 Q_3 T_3$



r/o Acute corpulmonale
(1) # pulm (-)
(2) PAH
(3) acute RVF
(4) septal deviation Echo ✓ Mcconell sign

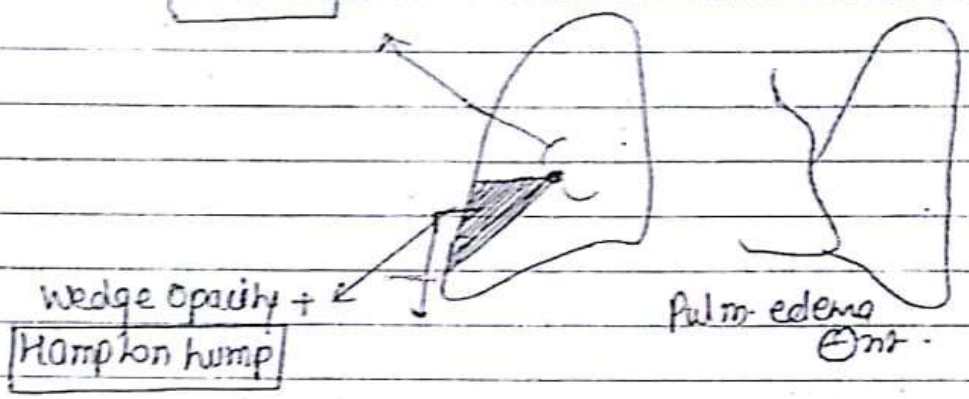
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(5) LV cavity size ↓
(6) EDV ↓ : hemodynamic compromise

(2) CXR:

* PALLA Sign
Rt. descending pulmonary (A)
R.D.P.A

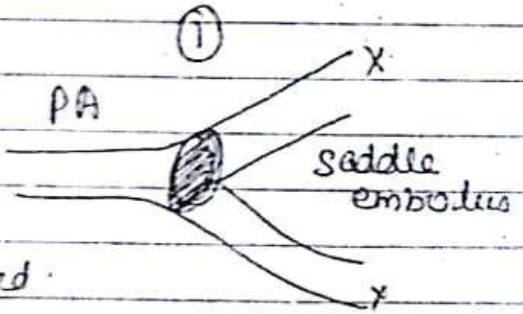


(3) D-dimer assay → Screening test
(4) V/P scan
(5) CT angiography → IOC 1st Δ = CT (A)
(6) pulmonary angiography → Gold standard test

if given atypical
plain CT
V/P scan

name: CT (A) > spiral CT
multidetector CT scan
(B) radio. V/P scan

Rx: (1) Alteplase (iv)
C/I = Recent H/O stroke
≤ 1 (1 in 3 months)



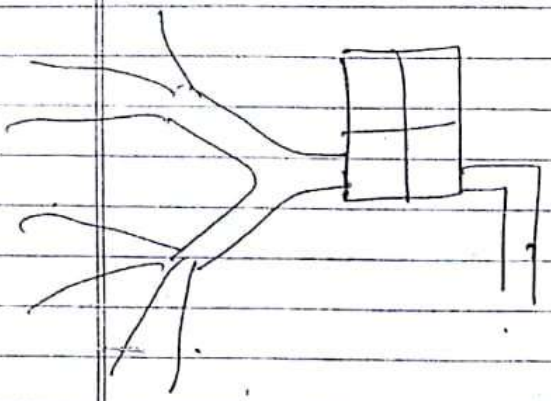
(2) Cath lab: Fogarthy Catheter is used
(3) Cath lab (-)ve
Pulmonary thromboembolectomy

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Thrombolysis

	CI
① STEMI	NSTEMI
② Acute ischemic stroke (AIS)	Hemorrhagic stroke
③ massive P.E.	P.E.



PE
- SBP = (N)/L
- no septal deviation b/c blockage small.

massive PE	PE
• SBP ↓↓	(N)/L
Echo: RV dyskinesia	⊖
functional TR	⊖
Septal deviation (Mcconell sign)	⊖
ECG: $S_1Q_3T_3$	Sinus tachycardia
CXR: Palla sign, Hampton Hump.	(N) (b/c small B/L blockage not seen)

Post-op Case = Pelvic Sx / TKR
day 2: Chest pain + Respiratory distress.
1st D/D : MI >> PE

(anterior wall MI)	LVF: • crepitation (+) • HR ↑	tachycardia, crepts ⊖ ort
(inf. wall MI)	RVF: crep ⊖, Bradycardia	

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

PE >> massive PE
(common)

IOC : A CT angiography
Screening : D-dimer assay

Rx: Alteplase + Heparin

Alteplase (C/I)
Rx: Heparin

Q. b/c PE >> common massive PE

m.c. ECG finding of PE = Sinus tachycardia
m.c. CXR - finding = (N)

Dyspnea = most frequent symptoms of PE
tachypnea = " sign

Pneumonia :

m.c.c. of
CAP Community Acquired (P) = pneumococcus
(VAP Ventilator ass (P) → MDR → pseudomonas
non-MDR → pneumococcus
Hinfluenzae

H.A.P. = S. Aureus
(Pneumatocele)

AIDS = P. Jiroveci

m.c. app. infection in AIDS = TB (Intracellular)

Rifampicin → Protease ⊖ (exchange ⊕ Rifabutin)

CD4 < 500 TB = ATT + cART (4wk gap)
< 200 P. Jiroveci = Co-tromoxazole
< 100 Toxoplasm. = Pyrimethamine + Sulfadoxine combination
< 50 CMV retinitis = Ganciclovir
(*) Myco. Avium Intracellulare (MAI) → Clarithromycin

tomato ketchup - pizza cheese app.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Cryptococcal Meningitis

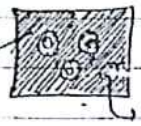
m.c. CNS inf. ⊕ in AIDs.

Cryptococcus neoformans.

LP = Cells count : lympho > 20 cells/cumm.

CSF sugar = (N)

protein = (↑)



↓

IOC : CSF ELISA for cryptococcal Antigen.

Rx :

Amphotericin B

Pneumocystis

P. Jiroveci :

BAL (bronchioalveolar lavage = giemsa

Rx :

Cotrimoxazole

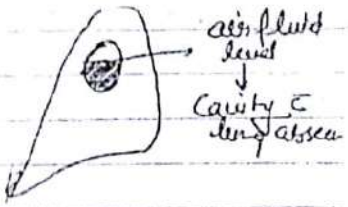
Prophylaxis → " same

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date 04/05/17
Page 6th class
my companion

Alcoholics → pneumonia
① Pneumococcus
② "Red Currant Jelly sputum"
Klebsiella Pneumoniae

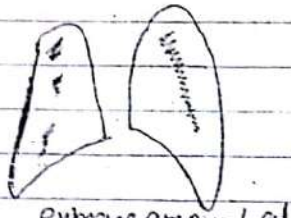


CXR : Bulging fissure sign
-(Rt ④ : 2lobes)
Necrotizing pneumonia
- Cavity / lung Abscess.

Rx:
Cefotaxime + Amikacin (iv)

Bird Handler's pneumonia:
Chylamydia Psittaci
↓
Rx : Azithromycin / doxycycline

Mycoplasma pneumoniae:
Atypical Pneumonia
- minimal Respiratory distress
- CXR



- AC duct / piped water Spply
inhalation aerosol

(Hi) Azithromycin
(Atypical pneumonia)

Mycoplasma — 'P' → RBC — P → Paroxysmal Cold Hemoglobinuria (PCH)

- Autoimmune Hemolytic Anemia
- Hemoglobinuria : Black wine

- mycoplasma
- 'P' antigen
- Donath Landsteiner Ab

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Skin involvement - erythema multiforme.

Rx: Azithromycin

Legionella Pneumophilia : (Atypical pneumonia)
- Legionnaire's ds.
- Pontiac fever

Relative Bradycardia
(Typhoid, Brucella, Legionella) causes [not by leptospirosis]

Step ladder | undulant fever | Pontiac fever.

toxin produced → attack on SA node → SD Bradycardia (relative)

- SIADH

Rx : Azithromycin.

SIADH :

ADH: Hypothalamus form
release from post. pituitary
↓
kidney → H_2O ↑, V_2
↓
CD

Diluted Hyponatremia
Confusion, Stupor
Seizure (due to electrolyte imbalance)

Rx SIADH :

(DOC) Vaptans : V_2 block : Conivaptans
Tolvaptans

demeclocycline

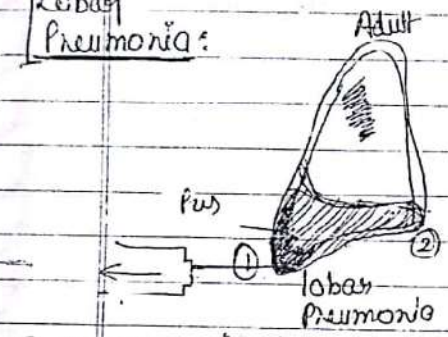
www.FirstRanker.com
Scanned by CamScanner

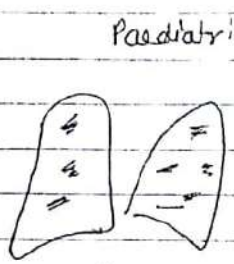
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Atypical Pneumonia:

- Klebsiella → Cefotaxime
- Legionella, Mycoplasma, Chylomydia → Azithromycin → SIADH, PCH [D-LA/B >IgG]

Lobar Pneumonia:





① parapneumonic effusion
② empyema
↓
Cardiophrenic

Pneumococcus
CXR: consolidation (clinical term for solidification into a firm dense mass)

Pleural tab: 7 ICS posterior
If fever not subside ↓
Back – scapular line

Thoracocentesis: 5 ICS
(Empus) mid axillary line

Indication for admission in pneumonia cases

Confusion
RR > 30/min
SBP < 90/60
age > 65 yrs

Staph. Aureus ⇒ Pneumatocele → Rupture → Pneumothorax
Pneumatocele → Lung Abscess

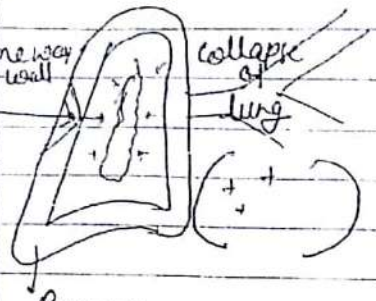
i.v ① cloxacillin ③ linezolide
② vancomycin ④ daptomycin

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Tension Pneumothorax:

- Bullet injury



→ • Central cyanosis
Venous Return
Kinking of SVC / IVC
SBP ↓
Obstructive shock
Tracheal shift c/L
apex beat c/L displaced

Pressure: 2cm – 6cm H_2O

on auscultation = Hamman CRUNCH

✱ walking in Snow leading (Boots)

Diagnostic "Pneumomediastinum" ✱

- Pneumothorax

✱ Air entry → absent
Breath sound → ↑

✱ Rx 2 I/c space = Ⓟ needle (Tension Pneumothorax)
MCL

- I.C.D 5 I/c space MAL
- M.B.T (massive blood transfusion) O-ve

>5L/24HR
≥ 2.5L ~~4hr~~ over 4 hr

→ 4 unit PRBC
4 FFP ✱
2 platelets

✱ new guideline

⇓

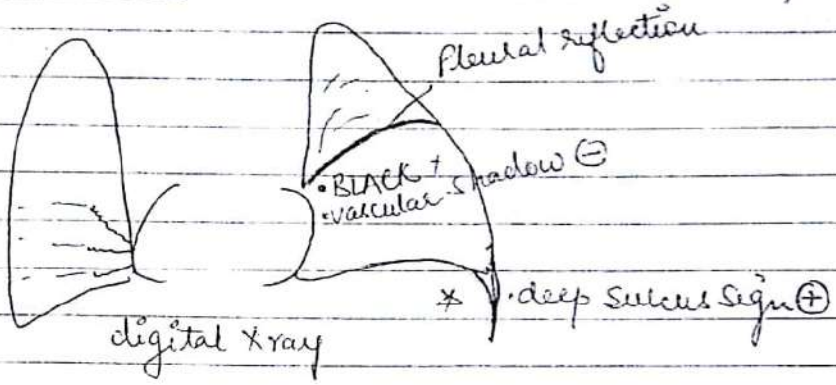
Sx team
emergency thoracotomy
* Hemostasis
* Lobectomy
* Bullet removal

* Hyperbaric O_2 therapy : gas gangrene incidence ↓

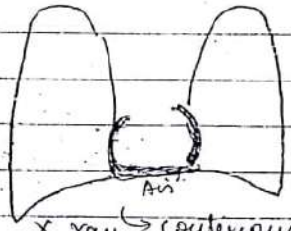
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Pneumothorax XRC



Pneumediastinum



X-ray → continuous diaphragm sign * *

- obstructive shock
  - 1 cardiac Tamponade
  - 2 Tension pneumothrax
  - 3. Budd chiari syndrome

i.v fluid is not recomended

CARDIAC TAMPONADE

CAR crash, Seat belt of
Head on collision
HR = 100/min, BP = ↓↓, i.v.f
death on spot, cause of death

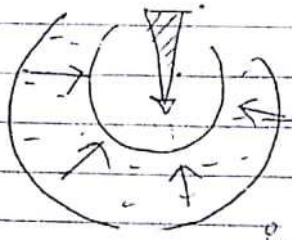
1. Hemopericardium
2. HemoThoraX B/L
3. Hemoperitonium
4. VxA dissection ; Brain stok

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
mycompanion

(n) pericardial fluid = 20-50ml
Pericardial effusion > 50ml
IOC = Echo



EDV ↓
Intrapericardial Pressure >> LVEDP

Cardiac Tamponade
- pulse disappear
- ✱ pulsus pardoxsus
- Beck's Traid
  - muffled S_1, S_2
  - Hypotension
  - JVP ↑↑
- Non pulsation D/P SVC ✱

EDV ↓↓
SV ↓↓
CO ↓↓
SBP ↓↓

✱✱ Echoguided urgent pericardiocentesis
ECG – ST elevation (injury to Heart)

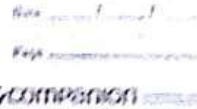
✱ If seat belt · on = Hemoperitoneum
(Seat belt syndrom)
- abdominal distension
- SBP ↓↓ pulse ; Thready / ⊖
- abd · bruising

① FAST - focused assessment Sonographic emulation of Trauma
- epigastrium - Cardiac Tamponade
- L. Hypocondrium - Splenic +
- R. hypocondrium - Liver +
- Suprapubic - bladder +
  cul-de-sac +

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

E-FAST · manubrium → hepatic transition
extended sterni
· I/A → Hemothorax



* not able to detect mesentery rupture
for this
(2) · CT abdomen : Vital stable
(3) · DPL : Hemodynamic compromise (+)

* DOC Hemoperitoneum = CT abdo
Rx · Massive Blood Trans
· Urgent exploratory laparotomy

* Mc complication of BT
Febrile non Hemolytic Tx reaction (FNHTR)
Mc complication of BT leading to death
= TRALI (transfusion related acute lung injury)

Body Trauma Cardiac Tamponade	Tension pneumothorax
· BP ↓↓ · Intrapericardial P >> LVEDP · HR ↑ · Pulse weak · disappear on inspiration · Pulsus paradoxus · Lung : B/L air entery (n)	· BP ↓↓ · Obstructive shock. Kinking SVC/IVC · HR ↑ · pulse weak. * most reliable diagnosis · (-) breath sound (-) Air entery

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

C Tamponade

- myxedema : 2 cause / 1%
  lymphadema — rare
  Tumour
- massive pericardial effusion (serous cavity effusion)
  - A. A. Pulsus paradoxus : absent

Cardiac Tamponade : fluid ++, hours, days, week
↳ out side Tubing, Trauma → not in pass
TB.

Post resuscitation fluid

- Low pressure Cardiac Tamponade
  - collapse of Atria (early part of CT)
  - 20% ↓ in B ventricular filling
    - ↓ 20 ↓ BP
    - Hypotension
  - By Echo guided
  - ECG guided
  - Cardiocentesis
- High Pressure CT
  ↳ Both atria + ventricle collapsed
  Tamponade : P. paradoxus
  Compressive

DOC of CT - Echo

Pulsus Paradoxus absent

Pericardial effusion

IOC : Echo
ECG : low voltage ECG
- RCM
- Hypothyroidism

↓
Electrical alternans

Beck's triad
- pulsus paradoxus
- muffled $S_1 S_2$
- Hypotension
- JVP ↑ : non pulsatile

- KUSSMAUL SIGN is absent

IOC - Echo
ECG - Electric alternans
CXR - money bag / water bottle appearance

By cardiocentesis

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ARDS = damage at level of alveoli and its companion

1. Septicemia (m.c.c.)
2. H_1N_1 / H_5N_1
3. Mendelson syndrome (aspiration of stomach acid)
4. Pulmonary contusion
5. multiple blood transfusion : cytokines
   TRALI : FFP > whole blood
   < 6 hrs of infusion
6. acute pancreatitis
   (m.c.c. gallstone
   - ↑TG, ↑Ca^{++}
7. Toxic gas inhalation

* Asthma is never a cause of ARDS

C/F

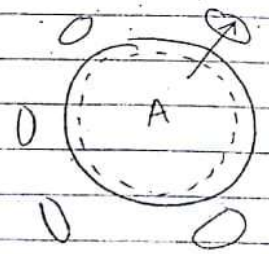
PCWP = 8-12 mmHg

LVF : PCWP ↑
Hydrostatic pressure
Transudation → alveoli
Pulm. edema ⊕

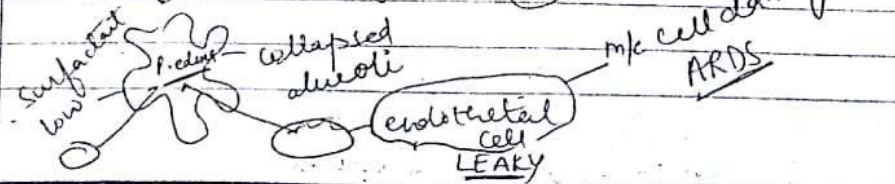
Cardiogenic pulm. edema ⊕

H_1N_1 → lung ↑
Pulm edema ⊕

- Non cardiogenic pulm edema (ARDS)
- PCWP = (N)



H_1N_1 damage
- Typ I pneumo
- Typ II "



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Surface area ↓

Hypoxia

↳ pulm A constrict V/p imbalance

Viral infection

Exudative : pulm edema ⊕

. (High protein pulm edema) in ARDS ✱

ARDS

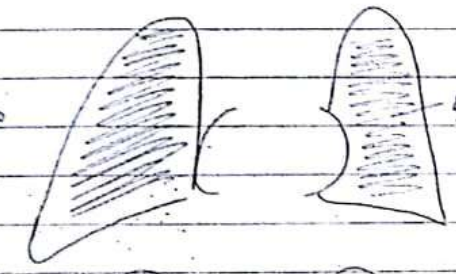
1. Non cardiogenic pul. edema
2. PCWP = Ⓝ
3. Refractory Hypoxia
4. INTRA - pulmonary shunting
5. High protein - pul edema
6. $\frac{PO_2}{FiO_2} = \frac{100\,mmHg}{0.2} = 500$ ✱

FiO_2 → fraction of inspired O_2

room air $21\% O_2 = \frac{20}{100} = 0.2$

$\boxed{ARDS \Rightarrow \frac{PO_2}{FiO_2} < 200}$ ✱

$ALI \Rightarrow \frac{PO_2}{FiO_2} < 300$



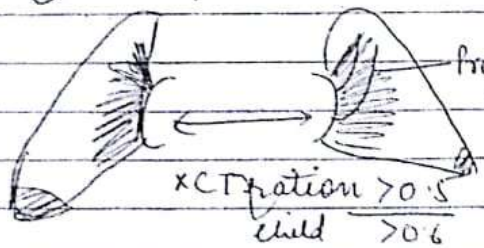
White ✱

ARDS = Photographic negative

CT ratio = Ⓝ

Paracardiac = Ⓝ

CP angle = Ⓝ



Prominent upper lobe vein

↳ Ist sign of Pul edema

× CT ration > 0.5

child > 0.6

✱ CP angle blunting B/L

× Silhoutte Sign

Bat wing pul edema ⊕

✱✱ cardiogenic pul edema

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Rx ARDS

Ventilator modiality → C·P·A·P (I·P·AV·P = C/I)

- Low volume ventilation
- Postive end expiratory pressure (P·E·E·P)

! ° expiratory collapse of alveoli

not given ×
- High frequency Jet
- Steroid
- Surfactal
- NO_2 therapy

A·C·M·V : initiate Assisted controlled mechanical ventilator

RR = 4/min

- GBS
- M. crsis
- KL
- Cobra bite

SIMV : "meaning off"

"Synchronised intermittent mandatory Ventilation"

Respiratory failure:

Type: 4

- Hypoperfusion of Res. muscles
  Shock (distributive shock)
  (Septic / obstructive / cardiogenic)

Rx:

O_2 + treat the cause

Type: 3

- Post-op Atelectasis

Rx: Chest physiotherapy + O_2

Prophylaxis: early ambulation

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
study companion

Type 2

↓pO_2 ↑PCO_2

1) Status epi asthmaticus
2) Obst. sleep Apnea (OSA) episodes
3) F. Body glottis
4) Tension pneumothorax
   Spontaneous " (bulla rupture in emphysema)
5) Neuromuscular paralysis
   GBS / transverse myelitis
   Polio / Botulism / Myasthenic crisis
   cervic disease

Rx:
- ACM

Type - 1

- m.c. type

↓PO_2 PCO_2 ↕ (N)

Hyperventilation

1) ARDS
2) acute asthma
3) Emphysema
4) pneumonia
5) Pleural effusion

Rx:
C.P.A.P.

(N)
PO_2 = 60 - 100 mm Hg
SpO_2 = 95 - 98%
PCO_2 = 35 - 45 mm Hg
HCO_3^- = 22 - 26 meq/
pH = 7.35 - 7.45

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

myCompanion

ABG Analysis

Radial (A) : Modified Allen's test
(check integrity of palmar arch)
Heparinised needle syringe

	1 pH	2 pCO_2	3 HCO_3	
dim same = Neutral	↓	↓	↓	metabolic acidosis
	↑	↑	↑	metabolic alkalosis
	↓	↑	↑ (not imp)	Respiratory acidosis
	↑	↓	↕	Respiratory alkalosis

$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons 2H^+ + HCO_3^-$
(CO_2 ↑, H_2CO_3 ↑, $2H^+$ ↑ → pH = ↓)

(a) Status asthmaticus
(silent chest) = Drowsy
(CO_2 narcosis) bounding pulse
↓
Respiratory Acidosis.
H^+ → BBB → cerebral edema
↓
Compensatory Rxn
HCO_3^- ↑
↓
Metabolic Alkalosis.

Kidney + P.C.T
↓ HCO_3^- reabsorption (↑).

(b) Silent chest → 1hr → 4hr.

		1hr	4hr
pH = 7.2	↓	↓ 7.18	7.35
PCO_2 = 60	↑	↑ 58	55
HCO_3 = 26	N	↑ 28	36 ↑ →

Respiratory acidosis uncompensated
↓
① Nebulized ε salbutamol
→ partially compensated R-Acidosis

fully compensated R-acidosis.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CO_2 : HCO_3
10 mm Hg ↑ 1 mEq ↑

mycomparison

(1) Neb (salbutamol)
↓
SpO_2 ↑
V/P mismatch
(↓) CO_2 drive

(2) parenteral bron-
chodilator
Terbutaline sc/
adrenaline sc/

(3) I.V. Hydrocortisone.
⊖ PLT$_2$ = leuko-
trienes

(4) ipratropium bromide
inhaled (anticholinergic)

(5) iv. aminophylline
(separate drip b/c
drug Interact)
• ↑ Ca^{2+} conc. in diaphragm
• Bronchodilator

Cardio - Respi. ARREST
Cardiac Arrest
Perfusion ↓ = 0
↓
Lactic acid production
slow
↓
metabolic acidosis

Respi arrest ← (no compensation)
CO_2 ↑
H^+ ↑
↓
Respi acidosis

↓
mixed ~~Acidosis~~ disorder

COPD : corpulmonale : RVF
Pedal edema : diuretics ⟶ dehydration (↑)
GFR ↓
aldosterone (↑)
↓
salt + water
↓
H^+ ↑

↓
RR ↑ = Hypoventilation
CO_2 ↑ washout
$CO_2 + H_2O \rightleftharpoons H_2CO_3 \rightleftharpoons 2H^+ + HCO_3^-$
(↓) (↓) (↓)
Resp. alkalosis

kidney
not
working
metabolic Alkalosis
✓ mixed disorder.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CO_2 HCO_3

mixed disorder · 10 : 1 equation not satisfied

Eg: pH = 7.2 ↓
pCO_2 = 60 ↑
HCO_3 = 10 ⇓
↓
R. acidosis mixed M. acidosis
eg: Cardio-Respi arrest

Eg: D.K.A. fruity odour breath
↑ Acetone → excreted in breath
N/↑ Aceto-acetate
↑ β-hydroxy Butyrate : most acidic Ketone body
↓
urine dipstick test : detect acetoacetate
↳ so it is not suitable test b/c AAcetate can be ↑ in DKA-

IOC DKA = plasma β-hydroxybutyrate level

$2H^+ + HCO_3 \rightleftharpoons H_2CO_3 \rightleftharpoons CO_2 + H_2O$
↑ (consumption)
- metabolic acidosis ·

↑ CO_2 + H_2O
↑
⊕ Resp. centre
Hyperventilation ·
Kussmaul breathing = life saving compensatory mechanism in case of D.K.A-
Compensatory ↓
Respiratory alkalosis-

pH = 7.18 ↓.
40 PCO_2 = 30 ↓ → Hyperventilation
HCO_3 = 10 ↓
Compensation
Hyperventilation metabolic acidosis
↓
uncompensated

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

① pH PCO_2 $PHCO_3$

ⓐ pH, PCO_2 dirn
if
same ↓ diff. ↓
then see HCO_3^- ↓ H^+
(metab. (Resp.

ⓑ 10 : 1 rule
Satisfy = compen.
not satisfy = mixed.

6mon child → vomiting/diarrhoea → dehydration → shock
↓ GFR
↑ RAAS
↑ Aldosterone
↓
M. Alkalosis
M. acidosis
↓
pH = (N) (counterbalance)

M. acidosis :
K. U. L. T.

Ⓚ Keto acidosis – Starvation
D. K. A.

Ⓤ Uremia – AKI/CKD
↓ failure of excretion of H^+

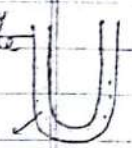
Ⓛ Lactic acidosis – Type A : shock
type B : drug induced (Phenformin)

Ⓣ Toxins – Methyl alcohol
↓ alcohol dehydrogenase
← Formaldehyde
↓
Formic acid = pH = 1 → H^+ ↑ BBB = encephalopathy
Antidote Fomepizol
toxic to Retina
blindness

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Ethylene glycol poisoning: Antidote = Fomepizole



Oxalate crystals blockage → Acute Tubular necrosis → inability to excrete H^+

Rx Metabolic acidosis:

= R.L.

↓

If pH < 7.15 inspite of fluid (vigrous fluid Rx)

↓

$NaHCO_3^-$

b/l D.K.A = Normal saline

↳ insulin deficiency

K^+ Wgn. (R.L. में K^+ होता है)

Some give [R.L = K^+ 4meq/L]

↳ causes diastolic arrest

Metabolic Alkalosis:

↑ Aldosterone

vomiting: dehydration

↓GFR

↑ aldosterone.

neonate = Cong. Hypertrophic Pyloric Stenosis

C.D.D. adult 20yrs = P.U.D. leading

boys → gastric adenocarcinoma

Gastric outlet obstruction.

ex of chloride responsive

M. Alkalosis

endocrinal causes

Rx: spironolactone

Conn's syndrome – adrenal adenoma

2° Hyperaldosteronism

Pregnancy induced HTN

diuretics ← CHF, Nephrotic Cirrhosis

Pat. loosing enteropathy

↓ Asc/its

↑ Aldosterone

ex of chloride non responsive

M. Alkalosis

Rx: Normal saline

↓

If pH = 7.6

- NH_4Cl (ammonium chloride) (I.V.)
- HCl (IV.)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date __/__/__
Page ____

Respiratory Acidosis :

CO_2 ↑
(Hypoventilation) = Neuromuscular ↓
GBS/polio
Status Asthmaticus
type 2 Resp. failure ex.

Rx:
I.P.P.V. / A.C.M.V.

Respiratory Alkalosis :

CO_2 ↓
(Hyperventilation)
= type 1 Resp. failure
ARDS
Pneumonia
Pleural effusion

Rx:
Paper bag Rebreathing

m.c. ABG derrangment

① M. acidosis → K.U.L.T.	RL → SBicarbonate
② M. alkalosis → CT Responsive = GI OO.	NS ± NH_4Cl
③ R. acidosis → type 2 RF	ACMV
④ R. alkalosis → type 1 RF (Hyperventilation)	Paper bag rebreathing

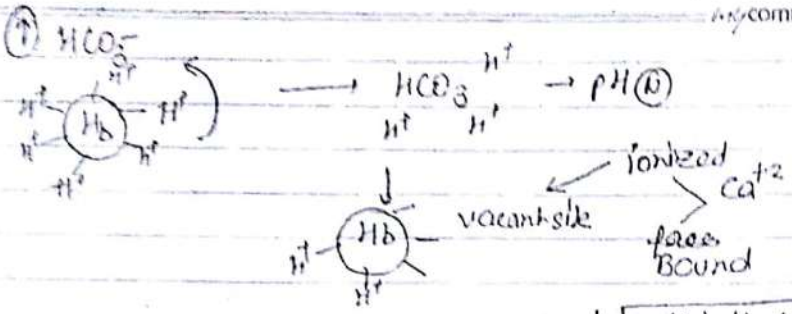
↳ fever + ↓
· Inadequate Analgesia

M. Alkalosis :

HCO_3^- ↑ ——→ alkali ↑.

H^+, H^+ ——→ proton come from buffer base
H^+ — Hemoglobin
H^+
eg: Hb

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



↓ Redistributional Ca^{+2}
Telany

① mobilization of H^+ from Buffer base (BB)
② vacant site on BB
③ Ionized Ca^{+2} occupy these site
④ ↓ Ca^{+2} ⟶ Telany ↓

Rx: N.S ∈ Inpt. of N. alkalosis ∈ Telany

Que: ♀ 2wk old neonate, ☺ case of CHPS scheduled from Romstedt Sx tomorrow.

PAC = fitness → electrolytes
↓ Ca^{++} = 6 meq.
next Best Step.

① postpone Sx.
② I.V. R.L. ⟶ C/I b/c lactate ↓ liver ↓ alkali → Alkalosis worsen
③ I.V. Ca gluconate.
④ I.V. N.S.

R Alkalosis:

To ↓ ⓞ · Sitting in plane (afraid of hr)
Jet off Hyperventilation
↓
CO_2 ⓑ → R Alkalosis
Ionized Ca^{+2} ⓛ → Perioral paresthesia
↳ Stridor ⟶ Rx: Rebreathing in Paper bag.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Anxiety of any kind
Hyperventilation

Anion gap:

$(Na^+) - (Cl^- + HCO_3^-)$

(n) = 8-16 meq/L ≈ 8

cholera
$Na^+ \downarrow - (Cl^- + HCO_3^-) = 8$ (normal anion gap)

DKA ↑ = ⇑ (anion gap)

= ⇑ (anion gap)

(multiple myeloma)
Protein ⊖

Normal anion Gap blood

DR · FUSE

D · Diarrhea
R · Renal Tubular acidosis 1,2,4
F · Fistula
U
S } ureterosigmoidostomy
E

(↑ anion gap) ↓ Anion gap

M. acidosis
- K - Ketoacidosis
- U - uremia
- L - Lactic acidosis
- T - Toxin

- multiple myeloma

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

urinary anion gap = 0

$(Na^+ + K^+) - (HCO_3^-) = 0$

negative = NEGUTIVE = diarrhea

Positive = R·T·A 1, 2, 4

diarrhea

- (N) anion gap ✓
- (−) UAG (urinary anion gap) ✓
- Sever dehydration : SHOCK ; M·acidosis → RL ✓
- RL ✓
- Rotavirus - ROTATEQ PVS 24 week
  oral (2, 4, 6 m) ✓
  ↓
  upper limit 15 week
  ↓ if >6m = intussusception ↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / / Page

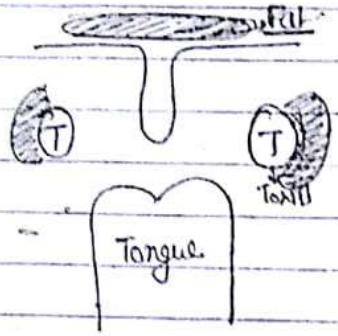
Anycompanion

O.S.A Obstructive sleep Apnea : exp. of type 2 R. Failure
- cut off 10 sec -

- morbid Obesity (adult)
- Craniofacial dysmorphism
  (pierre Robbin syn: mandibular hypoplasia
  Treacher collins syn.

cut off.

① OSA Apnea	: 10 sec.
② Apnea	: 20 sec



Snoring ↑↑ → Apnea
↓
- Sleep interruption
- Position change

Recurrent Hypoxia
↓
Pulm (A) HTN
↓
RV compliance (↓) (exercise intolerance)
↓
Pedal edema (+)

C/F ① ↑ excessive day-time sleepiness
② daily headache
③ pedal edema
④ exercise intolerance
⑤ Snoring : loud

Tx: polysomnography
SpO2 : 85% 75% 82% 74%
ECG : (Hypoxia) HR (↑) → R-R interval ↓
EEG : NREM 3 : delta (0-4 Hz) → α-wave (8-13 Hz)
EMG : chin : (−)
leg : (+)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Polysomnography

↓

if 5-15 apnea episodes/HR

↓

Rx: TOC ⇒ C.P.A.P.
(Positive end expiratory Pressure)
[to prevent expiratory collapse of upper airway]

2- Stop smoking

3- loose wt

ORLISTAT (↓ Pancreatic lipase)
S/E: steatorrhea (not used >6 mnth)
Vit A/D/E/K deficiency
Anxiolytic
↓ Bone pain (Rickets)
↓ bleeding (Purpura)
↓ sensory Ataxia
↳ spiky RBC (Acanthocytes)

if BMI >40
Bariatric Sx
ghrelin ↓
↓
Hunger ↓

• all antiepileptic drug cause wt gain
Exception: Topiramate

Sibutramine : CAD } withdrawn
Fenfluramine : PAH }

early safety { Topiramate-phentermine
Lorcaserin

(2) Epworth Sleepiness Score : (ESS)
- used for evaluation of O.S.A. (not narcolepsy)

Narcolepsy
cataplexy ⇒ Sudden ↓ tone
eye-lid fluttering ↑
↓ Reticular Activating System (RAS)

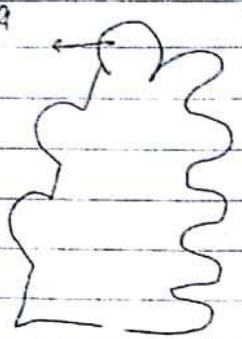
Rx: Modafinil (alert/awake)
b/c ↓ suicidal tende..

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Emphysema :

50 yr ♂ tall thin smoker
pulling on ciggarate
watching T.V.
↓
vigrous coughing ⊕
Sudden onset Resp. depression



Spontaneous Pneumothorax
↓ companion
Marfan syndrome
Ehlers Danlos syndrome
↓
ultra flexible skin
(Rubberman syndrome)
↳ (flexible joints)

O/E

accessory muscle ⊕
R. Rate ↑
SCR ⊕
Breath sounds ⊖
Air entry ⊖
↓ (bulla ruptures)
Spontaneous Pneumothorax

Breath sounds = vesicular (B)
I : E = 1 : 2

Pneumonia = Bronchial (B)
I : E = 1 : 1

CXR : deep sulcus sign ⊕

Rx :
- <25% lung collapse → O_2
- 25-50% lung collapse → needle aspiration
- >50% lung collapse / cyanosis → 5 ICS at MCL (ICD drainage)

Pneumothorax

Tension
Trauma
↓
↓ Resp. depression
Air entry ⊖
⊖ Breath sound
CXR
↓
Rx : Lumbar puncture needle (LP needle)
↓
ICD

Spontaneous
bulla Ruptures
↓
needle aspiration

always 2 ICS

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Que: 6 mnth child c pneumonia is on Vancomycin X 48 hrs.
Sudden onset of R.D.++
SpO_2 ↓, central cyanosis
CXR: Black ++
Vascularity ⊖

Cause
① Rupture of pneumatocele → pneumothorax (ICD) → 5th ICS in MAL
② failure of A/B therapy
③ Aspiration
④ collapse of lung

Asthma

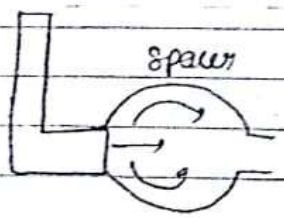
Extrinsic
paediatric onset
IgE ↑
eosinophil ↑
severity ↑ c ↑ age

Intrinsic = nasal polyp incidence
adult onset
IgE N
eosinophil N
[Leukotrienes]

exercised induced (A)
• Cold Air: Bronchospasm
Rx: Inhaled Corticosteroids
Montelukast
ipratropium bromide

drug induced (A)
① Cox-1 ⊖
ibuprofen
Ankle sprain + DIA
↓
Etoricoxib
Cox-2 ⊖
② Propranolol
③ Timolol eyedrops

Acute exacerbation Asthma: type 1 RF
Allergen → Histamine
Rx: M.D.I. salbutamol
<7 yr



www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Sternocleidomastoid (SCM)

Prophylaxis Asthma : ↓ frequency attack
2 nocturnal attack / week

① Fluticasone
Budesonide
(inh steroids)
S/E. Sore throat → Candida ⊕
Rx (rinsing of mouth & the inhaler)

② montelukast + cromoglycate → C/I in Acute Asthma
Can give for prophylaxis

Chronic persistent Asthma :
Inj. Omalizumab (S.C.)
[anti IgE]

Status Asthmaticus : Severe Acute Asthma = Type 2 R.F.
① Drowsy
② Bounding pulses
③ Accessory muscles ⊕ : SCM
④ Rhonchi ⊖ : silent chest
⑤ tachycardia.

Rx :
O₂ + salbutamol
terbutaline / adr
Hydrocortisone
Aminophylline

→ Imp impending Resp failure = Resp Acidosis
① can't speak
② Shallow Rapid breath
③ Central cyanosis.

① ...
...
...

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

④ pulsus paradoxsus
S Bradycardia

Rx:
- ACMV
+CST.
(Continue same H/I)

Brittle Asthma

- extreme variation P.E.F.R
(Peak exp. flow Rate meter)

green (N) orange (A) Red (Emergency)

diurnal PEFR > 40%
K/o brittle Asthma.

Rx:
Epi-Pen epinephrin (sc)
(thigh/arm)

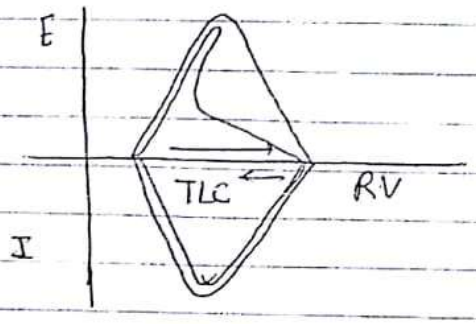
Acute exa. Asthma	Neb Salbutamol
Severe acute (A)	Neb. Salbutamol
Prophyloxis	Inh. Corticosteroid (ICS)
impending R.F.	ACMV
Brittle (A)	epinephrin (sc)
Exercise Induced (A) EIA	ICS

www.FirstRanker.com
Scanned by CamScanner

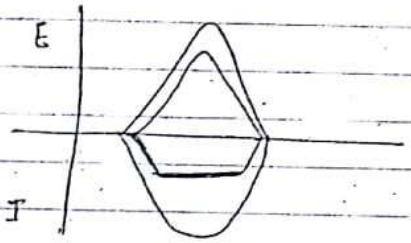
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

② In smoker m.c. Restrictive ds = Desquamative interstitial pneumonitis
③ in ♀ (m.c. Restrictive ds = non-specific interstitial pneumonitis (NSIP)
④ Rheumatoid Arthritis = UIP (Universal interstitial pneumonitis)

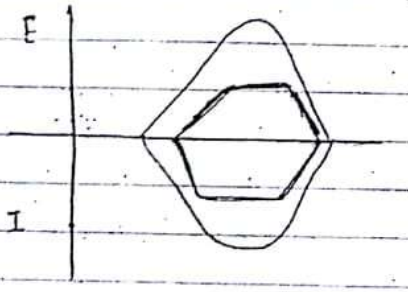
Pulmonary Function Test:
(Flow volume curve)



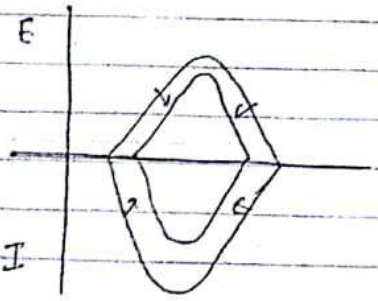
PARENCHYMAL OBSTRUCTION
Asthma / COPD
concavity prolonged Expiration



extrathoracic obstruction
Retrosternal goitre
I = ⊖ve pressure
downward movement of goitre
Press airway
E = goitre go to its original position
airway = N



Tracheal Stenosis
I = ↓ entry
E = ↓ exist

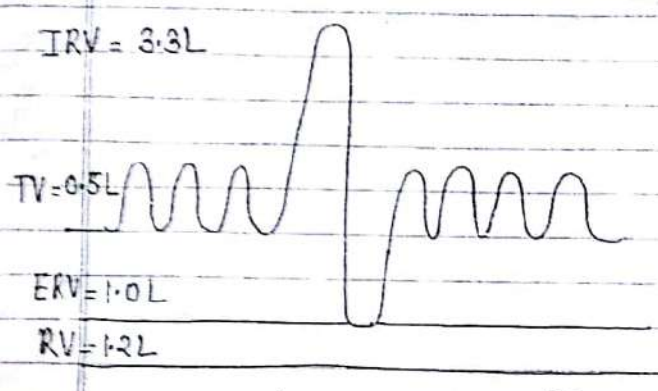


Restrictive Lung Disease
Pulmonary Fibrosis
① m.c.c. I.P.F.
(Idiopathic pul. fibrosis)
⑤ Bronchiolitis obliterans pneumonia (BOOP)
Adenovirus
⑥ Cryptogenic organising Pneumonia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

• muscle of expiration = internal intercostal muscles



TLC = IRV + TV + ERV + (RV)	6L
VC = IRV + TV + ERV	4.8L
IC = IRV + TV	3.8L
FRC = ERV + (RV)	2.2L

Asthma = Air trapping

① RV ↑
② FRC ↑
③ TLC ↑
④ Timed vital capacity $\frac{FEV_1}{FVC/TLC/VC}$ ↓

(N) va
$FEV_1 \geq 80\%$
$FEV_2 > 95\%$
$FEV_3 > 97\%$

Obstructive	Restrictive
Asthma	ILD / BOOP
FEV_1 ↓	FEV_1 ↓
Timed vital capacity → $\frac{FEV_1 \downarrow}{TLC \uparrow}$ = ↓	$\frac{FEV_1 \downarrow}{TLC \downarrow\downarrow}$ = (N)/↑

• mild Asthma FEV_1 – 50-80% → mild
30-50% → mod
<30% → Severe
(cannot talk
monosyllables

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Interstitial lung ds / Interstitial pulmonary fibrosis

① Residual volume ↓
② TLC ↓
③ FRC ↓
④ Timed vital capacity - N/↑

Ankylosing Spondylitis (A.S.)

C/c Boy : 100 backache in morning for
↓
On movement : pain ↓↓
Heel pain : (Ventrosopalky) → common pain ①

Ix:
- HLA B27 ①
(J.R.A./Psoritic ①/Reiter synd)
- X-ray spine : sacroiliitis
AP ↑
lateral → Bamboo spine
(lumbar : kyphosis)

Rx:
Infliximab

Costochondral joint affects

Residual volume ↑ (RV)

extra parenchymal Restrictive lung ds = RV - ①

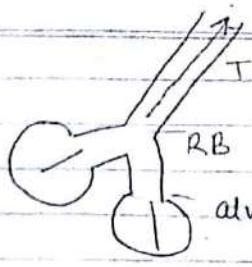
↑
① Asthma
② COPD
③ A.S.
extraparenchymal R.L.D.

Residual Volume

↓
① I.P.D. (Parenchymal R.L.D.)
②
- NSIP
- UIP
- DIP
- Asbestosis
- Silicosis
- Sarcoidosis
- BOOP

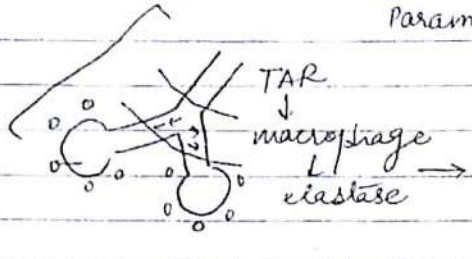
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



$FEF_{25-75\%}$ ⇒ RB + TB
Bronchioles
forced expiratory flow

emphysema
Best Spirometric Parameter = $FEF_{25-75\%}$



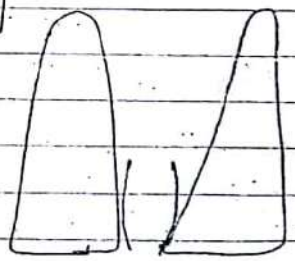
lesser O_2 in alveoli
Hypoxia
V/P mismatch

✡ FEV_1 ↓ —Salbutamol→ FEV_1 ⊕
asthma = RAD

✡ $FEF_{25-75\%}$ ⇓
FEV_1 ⇓

✡ % of chang of FEV_1 befor & after salbutomal >12%
to call it asthma (RAD)
Reversible airway disorder

Emphysema

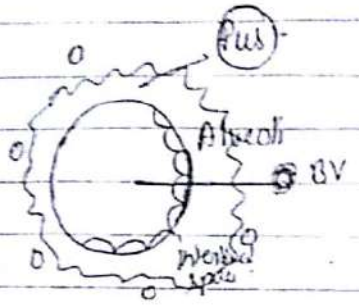


Flattening diaphram ⊕
Tubular heart ✡
Hyperinflation
(wire count > 8 ribs)
Vascular shadow always ⊕

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Diffusion capacity of lung for CO: (DLco)



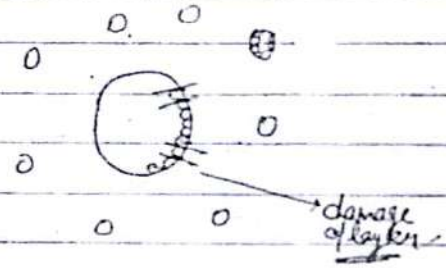
DLco ↓

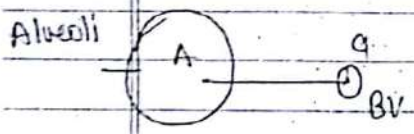
1. Interstitial pneumonia
   - Psittacosis
   - P. Jiroveci
   - mycoplasma
2. Interstitial lung ds
   - Asbestosis
   - DIP
   - BOOP
3. Emphysema

DLco ↑

1. Good-pasture syndrome (type II R.F.)
   - Anti BM Ab
   - Hematuria
   - Hemoptysis
   - Rx: STEROIDS

→ Alveolar Pulmonary Hemorrhage syndrome





$PAO_2 - paO_2$

Alveolar-Arteriolar gradient

= 5-15 mmHg

Type 2 RF
- A-a gradient (N)
- ↓ PO_2
- ↑ PCO_2

Severe Acute Asthma



→ mucus plugs
↓
Curchmann spirals
m/c
Charcot leyden crystals

$PAO_2 - PaO_2$
↓ ↓

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Pulmonary function test (PFT)

1. Flow volume curve
2. Spirometry : Hmedvital asthma $\frac{FEV_1}{FVC}$ ↓ (J)
   capacity
3. DLCO ⟶ (↑) Goodpasture
4. A-a gradient
   ↳ (N) = type II R.F.

S.L.E.

- Type III immune-complex
- ♀ > ♂ = 9:1
- 46XX 46XY

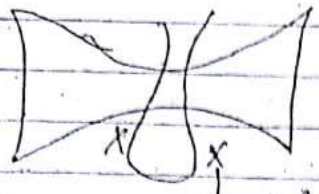
no. of X Chro. ∝ severity SLE

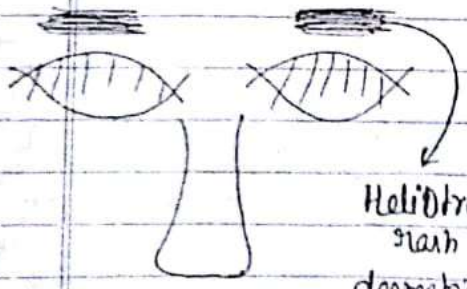
Klinefelter ∈ SLE : ♂ (47XXY)
Turner ∈ SLE : ♀ (45XO)

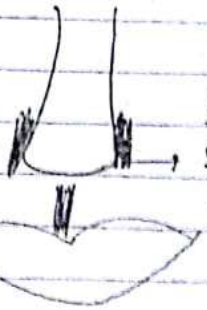
MD SOAP BRAIN

M: malar Rash

malar flush → mitral stenosis (MS)







www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

D : Discoid Rash

hypopigmented macules

S : Serositis

Lung
- mc: Pleurisy
- Least: Shrinking lung syndrome
- Pleural effusion

Heart → T.T.E
- Pericarditis, ST ↑
- Libman Sac endocarditis → (MR)
  - Rx: Valvuloplasty / steroid not given

IOC- (USG chest)

for cases of minimum pl. effusion >50ml (N) 5-15ml

X-ray → lateral decubitus

O : Oral ulcer (Aphthous)

① (N) : Stress / constipation → Lactose
- Buccal
- painful (+)
- spicy food : irritation

Rx:
- Benzocaine Jelly
- Self Resolving

② SLE : multiple crops of ulcers
- painless
- soft palate ulcer

Rx:
- Topical steroids

③ IBD = Crohn's ds > U.C. (Pseudo Polyps)
- Crohn's → anti saccharomyces cerevisae A/B (ASCA)
  - Stricture = colicky pain
  - Rx: Infliximab
- U.C. → p-ANCA
  - painless bloody diarrhoea (10-15 times/day)
  - Anemia
  - Pt looks pedal edema (+)
  - Rx: Sulfasalazine (prodrug) → 5-ASA

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(5) Arthritis :

Hemig : Synovitis ⊛

Joints: Knee

Hands : PIP, MCP

non-erosive Arthritis (SIP) → S · SLE → A·S·
(no-deformity) I · IBD ↳ migratory Polyarthritis
R Rheumatic
↳ migratory Polyarthritis
↳ GrpA β Hemolytic Strep (GABHS)

Que 20yr ♀, PIP, MCP, wrists (B/L) inflammed, Tender → Rheumatoid Arthritis
morning stiffness >30 mint ← Symmetrical involvement

20yr ♀, PIP = 2/3rd finger = Rt
MCP = 3/4th finger = Lt
Knee = (L)
→ Assymmetrical involvement → SLE

(RA)

ANA ⊕/B ker.

erosive deformity
Swan neck
Ulnar deviation hand
Boutainnere's

IOC =
① anti C.C.P. (anti-cyclic citrulline Phospholipid)
② anti mutated citrullinated vimentin ⊕

RA factor
IgM linked to IgG
Biological (BPF) false ⊕
↓
⊕ in 5% ⊖ population
↓
Screening test

(6). Photosensitivity: (Sunlight - UV-B)
• skin burn - I st degree burn (sunexposed part)
Redness, pain ⊕

℞:
• Sun-screen lotion
DOC . Hydroxychloroquine
• Steroids not given

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Main SLE

Date / /
Page
mycompanion

except
Acute intermittent Porphyria ✱✱
where Photosensitivity ⊖nt.

Porphyria
1) Hemi biosynthesis ⊖
2) Porphyrin ⊕
3) m.c. type : Porphyria Cutanea Tarda (PCT)
4) photosensitivity
5) Red-urine
6) Red-teeth
7) depression / psychosis

Dracula Vampire

Rx:
Blood → Haem
⊖ feedback : porphyrias
I.V. Haem
(DNA Recombinant technology)

⊕ BRAIN
CNS involvement
Mc - Cognitive defect
Headace
lupus cerebritis : cerebral edema ⊕
· seizures
→ Anti-neuronal Ab. ✱✱
psychiatry manifestation
↓
Psychosis
→ Anti-Ribosomal-P A/B ✱✱

⑧ Renal : lupus nephritis
Hematuria : "Cola colour urine"
GFR↓ : Renin ↑ ; HTN
inv : → ① RBC
⑤ = < 3 RBC/HPF < 5 RBC/μL ✱
dysmorphic RBC
glomerular bleed ✱

Red urine
· Chloroquine
· beet root
· porphyria
· Rhabdomyolysis myoglobinuria

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

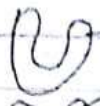
glomerulonephritis

my companion

> 5 RBC/HPF

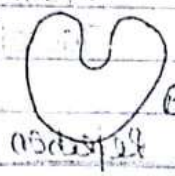
• Asc. LOH - loop of Henle = Tam Horsefall protein

urine m/e









RBC cast = AGN, RPGN, lupus nephritis
WBC cast = A.P.N, A. Interstisal nephritis (AIN)
Broad cast = CRF ✱



(m) / ~~CRF~~ C.GN

(2) C_3 : ↓

(3) KFT
Cockroft gault formula

(4) Kidney biopsy - table from Robbins
wire loop lesion
stage = 6 ; lupus nephritis
m/c stage : IV
most severe = IV

℞ SLE
• STEROIDS
GFR < 15ml/min : ESRD
allogenic kidney Tx
• First degree relative
• HLA matching = chr = 6
• Bld group matching = Bld gp - chr-9
• Donor = HIV/HBV / Renal angiography : LEFT renal vein : longer
• Recipient :→ Right iliac fossa
extra peritonial
1° Rejection episode
↳ cyclosporine C
• azithioprine A
• Prednisolone P

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Sirolimus
Tacrolimus

		HST Rxn
Hyperacute Rejection	minute	type 2
Acute "	<6 mnth	2 3 4 (both)
chronic "	>6 mnth	type 4

SLE ⇒ ds reoccurs in transplanted kidney
(Autoimmune disorder)

New kidney ds (not) recors
ADPKD: kidney Tx
Alport ds: COL A # type 4 collagen
Medullary spongy kidney

Infection after Kidney Tx

<1 mnth : wound infection
Herpes virus

	1-6 mnth :	>6 mnth
①	P. jiroveci	Aspergillus
②	CMV (virus)	BK virus / polyoma
③	Hep B	
④	Hep C	

↳ m.c. viral infection occuring after solid organ Tx = CMV

• m.c. virus related to Tx assn. = EBV lymphoma

	Rejection	Transplantation
(monozygotic twin) DNA 1 = DNA 2	0%	isograft / syngeic
across species		Xenograft

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date / /
Page
my companion

Lupus Nephritis : mortality ↑
m.c.c. of death in SLE
① Horr 19 ⇒ infection : steroids ↓ CMI
② Horr 18 ⇒ Kidney involvement
③ accelerated atherosclerosis

⑨ Autoimmune Hemolytic Anemia : Pancytopenia

RBC → Pallor
Lymphocyte → infections
Platelets → Petechiae
ankle non blanching
↓
Purpura
epistaxis

inv.
① Hb ↓
② Peripheral smear Hemolysis ↑
③ Reticulocyte count - ↑
④ WBC ↓
⑤ platelet ↓
⑥ IOC AIHA = direct coombs test

Rx :
Steroids.

⑩ Immunological
- low C_3 / C_4
- C.R.P.
  Capsular polysaccharide of pneumococcus
- anti smith
- anti cardiolipin

⑪ Antinuclear anti body (ANA)

for ∆ of SLE : +4/11

Malar Rash = Butterfly Rash
discoid Rash
Serositis < lung = Pleuritis
heart = Pericarditis
Accelerated Atherosclerosis
Oral ulcers : crops / painless soft palate (if not +ve in 4 criteria)
Arthritis : knee > PIP, MCP (asymmetrical)
Photosensitivity
CNS : cognition / seizure = Anti neuronal A/B
Psychosis = Anti-ribosomal A/B

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Brain

Brain
Renal ↓ (A) → (I) → (N)
Lupus nephritis — AIHA — Immuno logical — ANA

ESRD : Tx

Tx

1. ANA = most sensitive
2. Anti-Smith = most specific
3. ds-DNA = ds severity
   Waxing & waning course
4. anti-histone A/B : drug induced LE
   SHIP
   S- Sulpha
   H- Hydralazine
   I- INH
   P- Procainamide (m.c drug causes- DLE)

   ← Lupus nephritis not (+)
   Lupus cerebritis not (+)
   so good prognosis

5. anti Ro
   = IgG_1 = neonatal lupus (AV node ↑)
   Complete h block : HR = 40bpm
   Rx : pacemaker

6. anti neuronal A/B ⇒ seizure (+)
   ↑ test for lupus cerebritis
7. anti-Ribosomal-P A/B
   ↳ neuropsychiatric
8. Anti β2 glycoprotein.
   Anti phospholipid A/B ⇒ APLAS
   anti-cardiolipin A/B
   lupus anticoagulant = (la)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

APLAS syndrome :

- SLE association
- Recurrent Abortions (>3 consecutive Abortion)
  (late 1st trimester 10-12 wks
  or
- I.U.D. ⟶ 34 wks

2° Aplas → means associated with SLE

Ix:

① VDRL ⊕ ⟶ false ⊕ } False ⊕ no syphilis
② FTA-ABS ⊖

③ Coagulogram

	(N)	
Bleeding time	2-9 min	↑
PT	11-16 sec	(N)
aPTT	30-45 sec	↑

④ anti β_2 glycoprotein A/B = TOC
↓ ⊕
intrinsic system of clotting (activate)
↓
clots ⊕ : uterine (A) | vein ⟶ Abortion
Coronary A/V → MI
Cerebral A/V → Stroke.

⑤ U.P.T. ⊕
next pregnancy

Rx:

Steroids C/I

Tab. Aspirin 75 mg + inj heparin (s.c) } 1st trimester

tab. Aspirin 75 mg + oral warfarin 2nd trimester

Screening test for APLAS
- dilute Russel Viper venom Time test (dRVVT)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Steroids CI in SLE when

1. photosensitivity → Hydroxychloroquine
2. A·P·L·A·S → Aspirin 75mg
3. Libman Sacks endocarditis = Valvuloplasty
4. Psychosis = CPZ
5. ESRD = Transplant

SCLERODERMA

Q: ESR ↑

fibrosis around the blood vessel : Tip of finger

- cold exposure
- finger Tip : ab(n) vc : white
  deoxy Hb ↑ : Blue
  > 4.0 gm%
  ab(n) Vasodilation : Red

→ Raynaud's phenomenon (RP)

* Scleroderma consist of mc incidence of RP.

RP

Rx

⇒ CCB : amlodipine

2. ⟿ fibrotic band

←←○○ - scar in tip of finger
= sclerodactyly
* (Pitting scar on volar aspect)

3. FLEXION CONTRACTURE
4. LEATHER like skin Gr
5. MICROSTOMIA - (Pinched app" of face) =
   minor salivary glands #
   Saliva ↓ : dysphagia : chips + biscuit *
   : dental caries : Resp. Infections
6. Esophageal dysmotility :
7. LES tone : 25 mm Hg (N) is ↓
   Heart burn
   Sour Brash
   of diffuse esophagus

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(8) Heart : RCM : Kussumal sign
[CP, RCM, inf/wall MI, Scleroderma]
not in C Tamponade

(9) LUNGS : Pulmonary Fibrosis
Timed vital capacity (N)/↑

Pul·A : PAH (DLCO↓) **

(10) Kidney - size ↓ **
· GFR ↓↓↓
· renin ↑↑↑
· BP ↑↑↑ → malignant HTN } scleroderma crisis
DOC : ACE⊖ **
· Ali skiren

ACE⊖ + ARB ⇒ X ↑K

X metroplol + Verapamil = ↓HR
↓Anode ↓Avnode dilay pi long

IOC : anti topoisomerase Ab

Rx scleroderma
d-penicillamine * (C/I - steroid) *
↓ B.P.↑

CREST
↳ limited scleroderma
1. Calcinosis
2. Raynaud's Ph
3. Esophageal dysmotility
4. Sclerodactyl (not syndactyl)
5. Telengiectasia

inv - anti CENTROMERE A/B

Rx : d-penicillamine
· generalised scleroderma = 10
· limited scleroderma = 5
· localised scleroderma = Morpheq
idiopathic scar : dysfigurment

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Mixed connective tissue disorder : MCTD

♀ → ESR ↑

SLE : 11 Butterfly Rash
SCL = 10 Raynaud's pheno.
RA = PIP, MCP, wrist
morning stiffness.

↓

MCTD

IOC : anti U1 RNP A/B
Ribonucleoprotein A/B

Rx : d-penicillamine
Leflunomide
Hydroxychloroquine.

Sjogren / sicca syndrome :

♀ → Dry eyes - mouth

Lacrimal # → ↓ tear (↓)
Schirmer's test
exposure keratitis
Corneal ulcer → Rose bengal dye test
↳ fluorescein dye

Salivary # → ↓ dysphagia - dental hygiene
Halitosis
dental caries (+)

dry vagina → ↓ Bartholin # gland
dyspareunia

Ix : Anti-SSA & SSB A/B (IOC)

Rx :
Symptomatic t/t
Poor hygiene → mouth washes
Saliva ↑ → Cevelimine (cholinergic)
eye → methylcellulose eyedrops

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date: 05/03/17
Day: 7th day

myCOMPANION

Behcet : ORO Oculo-Genital Syndrome

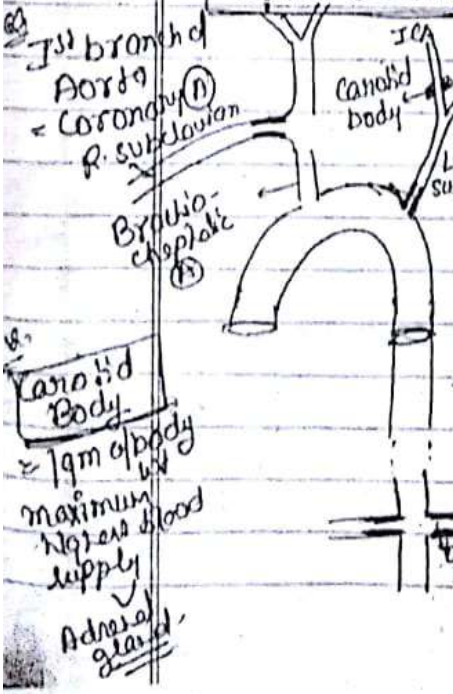
- HLA B_5 > HLA-B_{51}
- ♀: Turkish, China, Mongolia, Egypt } Central asian ascent
- Recurrent Aphthous ulcer (>3/yr)
- Painfull
- Oral cavity, vulva, genitalia
- Red eye B/L
  (Ocular exam → Hypopyon (uveitis)
- Large vessel Vasculitis
  ↳ pulmonary (A) involve : PAH
  Hemorrhage → hemoptysis

Ix:

PATHERGY TEST
Hypodermic needle : Prick forearm
48-72 hr → Sterile Pustule
HLA B5 (+)
ESR (↑)

Rx:

Topical steroids : Oral cavity, Aphthous ulcer, genitalia



Large vessel vasculitis

① Giant cell Arteritis
ESR ↑ ≥ 100mm
temporal headache
Bx : granulomatous vasculitis
Rx : steroids

② Takayasu Arteritis
- mc blood vessels involve
  Lt subclavian (A)
- Arm claudication
  activity (↑) → pain (↑)
  r/o neurogenic claudication
  MRI spine : r/o P.I.V.D.
  (Prolapse of inter V. disc)
- BP Lt arm (↓) < Arm Rt
  Unequal BP b/w 2 arms
- Radio-Radial delay
- Pulseless ds
- B/L Renal (R) stenosis → HTN → Rx Balloon dilatal

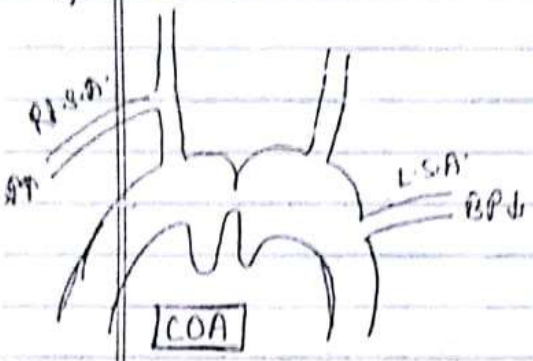
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Contrast nephropathy
- Hydration

Rx: N-acetyl cysteine

✓ IOC for Takayasu : Aortography
✓ Rx : Steroids



Preductal variety

Unequal BP, U/L R/L arm
(1) Takayasu (A)
(2) CoA (preductal)
(3) Obstructive Aorto-arteritis

Unequal BP: U/limb ↑, Lower limb ↓
(1) postductal Co A
- Continuous murmur
- inferior notching Ribs (intercostobrachial A)

Kawasaki ds :
- ECG finding of MI in 4 yr child
- large vessels vasculitis

4 yr: fever >5 days (PCM, amoxyclav)
Cervical lymphadenopathy

Oral exam. :
- STrawberry Tongue

General physical ex. (GPE) → RASH : Trunk → genitals
- Perianal peeling of skin
- Periungal peeling of skin

eye : B/L bulbar congestion (non-purulent)

△ criteria (desquamation, rash)
- Bulbar
- tongue

AHA criteria for K.d:
mucocutaneous lymph node syndrome
- rash
- cervical desquamation

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Thrombocytopenia (not include in D criteria) ~~my~~ companion

Echo : coronary (A) aneurysm

Rx:
Aspirin + IVIG X 7 days

K.D.
(1) M.C. Valvular lesion = MR
(2) maxi damage in myocardium

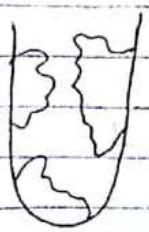
day 14: MI : Large (A) vasculitis
4yr : collapse
Ix ECG ⇒ STEMI

Rx: Thrombolysis + IVIG TOC

4 yr child ; fever 4 days
Rash : Scarlet (Red) → SAND PAPER feel
ext extremities → trunk
Straw berry tongue
Cervical lymphadenopathy

→ Scarlet fever
→ Streptococcus Pyogens
Rx: Ampicillin

Strawberry Tongue :
papillae ↑ (hypertrophy)
White : white papillae projection → K.D.
(tongue Red)
RED : Red → Scarlet-fever



Papillae Atrophy
geographic tongue
* B_{12} deficiency
megaloblastic Anemia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Complete papillae Atrophy
↳ large, beefy tongue.
↳ Iron deficiency Anemia

Magenta tongue : Purple.
↳ Riboflavin (B_2) deficiency



median rhomboid glossitis
↳ Candida infection (+)

Black Hairy tongue
(1) HIV (+) : E.B.V.
(2) Smokers
(3) Bismuth

AIDS defining cancer
(1) Kaposi sarcoma : HHV 8
(2) PCNS lymphoma : NHL
(3) invasive cervical cancer : HPV 16, 18

Malignancy : H. pylori

EBV :
- Burkitt
- HL
- NHL
- Nasopharyngeal Ca

HTLV-1
- Acute leukemia A.L.L.
- Tropical spastic paraplegia

Kaposi Sarcoma
↳ Rx: Radiation ⊕, α-interferon (immunity ↑)
↳ HHV 8
↳ site : legs (skin), oral cavity, all visceral organ except : Brain
↳ vascular tumor
↳ most seen in paediatric AIDS
- Lymphocytic interstitial pneumonitis +nt in paediatric AIDS.
(most +nt in adult AIDS)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

In AIIDs

- m.c. NHL in AIDs : Diffuse large B cell lymphoma (DLBCL)
- m.c. c/o pleural effusion : Karposi sarcoma > DLBCL
- vaccine preventable cancer
  - ① Hep. B : HCC
  - ② HPV 16,18 : Cervical Cancer
    Gardasil / Cervarix (9-26yr)

- Cancer preventable by Antibiotics.
  - ① MALToma : H.pylori

www.FirstRanker.com
Scanned by CamScanner

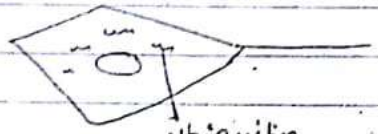
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

KIDNEY

AD polycystic kidney ds :
cyst origin : entire nephron

ARPKD ⇒ cyst origin :
(Collecting duct > DCT)

(AD) : complete penetrance & variable expression
Anticipation : Severity ↑ & successive generation



(involuntary voluntary movement)

Huntington Chorea
: Chr - 4 #
: Huntington gene
: trinucleotide repeates
: CAG > 40
↳ Atypical parkinsonism
b/c Dopamine ↑

Rx : tetrabenazine

Rabbits

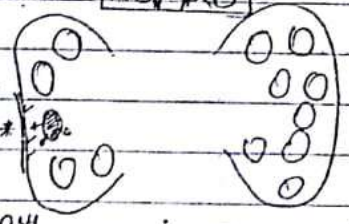
ADPKD

m.c. inherited kidney disorder : ADPKD
incidence : 1-400-1000
familial hypercholesterolemia : type IIA (1:500 pt)

PKD1 85% more severe ↑ - chr 16
PKD2 15% less severe - chr - 4

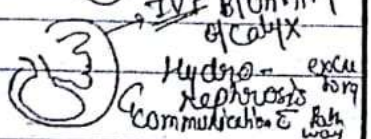
ADPKD

CF
(1) Flank pain
(2) Hematuria
(3) GFR ↓↓ → renin ↑
HTN :
Headach
(4) Subendocardial ischemia
(5) Infection ↑
Pyelonephritis



medullary sponge
Cortico medullary differential (+)
medullo diff. (+)
not AD

IVP
Paint Brush appearance



IVP Blunting of Calyx
Hydro-Nephrosis
excretory
Communication
Both way

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



Acute pyelonephritis

culture : $>10^4$ CFU/ml
⑤ WBC cast

⑥ Kidney stones ①
Struvite stone (due to infection)
(mc stone in ADPKD)

⑦ R.C.C. = ① incidence
aggressive

⑧ death
mc cause of death in PKD : Coronary ⑥ disease (CAD)

Tx: → RRT : · S. creatinine ↑
· USG : > 2 cyst / kidney ##
30 - 59 years of age
≥ 60 yrs → > 4 cyst / kidney

Rx : ACE ⊖ control HTN
Slow - progression To ESRD
CRF : management
GFR < 15 ml/min/1.73 m²
allogenic kidney Tx
1° rejection drug C A P
mTOR ⊖
↳ Tacrolimus
SIROLIMUS ## - non nephrotoxic
· Barrier nursing
· CMV ± >> BK virus
· Mc Cancer seen after administration of anti ~~Cancer~~ rejection
drug in kidney Tx = SCUN Ca

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ADPKD

1. Liver : polycystic
2. Pancreas "
3. Spleen " "

Lung - unlikely seen

* never seen in Brain *

Extra renal manifestation of ADPKD

- Liver cyst

CNS ⇒ Berry aneurysm
(Endovascular coiling

CVS → Mitral valve prolapse
Mid systolic clicks.

GIT → • Late Systolic murmur
• Colonic diverticulosis
Ba enema ⇒ saw-tooth

ARPKD

< 20 yr

- Flank pain 1 Mc
- Hematuria 2
- HTN 3

Mc Extra-renal manifestation

Congenital Hepatic fibrosis
- Portal HTN
- Esophageal Varies
- Hematemesis (R)

℞ ACE⊖, GFR < 15ml : Transplant

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date
Page

TUBEROUS SCLEROSIS

- AD
- TSC 1 gene = ch 9
- TSC 2 gene = ch 16
- Ash leaf Macule
- infantile Spasm → Seizure

Q Kidney : angiomyolipoma
* angiomyolipoma : Bleeding spontaneous *
WUNDERLICH Synd
conservative Mx

CVS : Rhabdomyoma *
CNS : Subependymal Nodules
↓
Astrocytoma

CKD

Q calculate GFR of 40yr, ♀, Type 1.5 DM

weight = 40 Kg
S. creatin = 1 mg (N = 0.8 - 1.5 mg) *

@GFR = $\frac{(140 - Age) \times wt}{72 \times S.creatine}$ * for female × 0.8

* Cockroft formula

= $\frac{(140-40) \times 40}{72 \times 1} = \frac{4000}{72} = 55 \times 0.8 = 40 ml/min/1.73m^2$

♀

↓ require dialysis

KFT. 1. Cystatin-C (AIIMS)
2. Cockroft formula * *
3. Creatine clearance
4. BUN : creatine clearance
5. S. creatinin

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date
Page

CKD

Stage I

I GFR < 90 ml/min/1.73 m² + Protein urea
II GFR < 60-89 ml/min " + "
Hemodialysis ← III GFR 30-59 " " "
<30 IV 15-29 " "
ESRD V <15 ml " "
Transplant

definition → < 60 ml/min/1.73 m² + Proteinurea × 3 months (2 week) *

Cause

1. diabetic Nephropathy → diffuse glomerular sclerosis (Kimmelstein wilson) (m.c.)
2. Analgesic "
3. Polycystic kidney ds. — nodular glomerulosclerosis (Charaven's HC)
4. medullary sponge kid.
5. C. GN - (chronic) BURNT OUT

Rx: CKD = ABCDE

(A) ① HbA1c <7%
Stop metformin
Start insulin : Kidney excretion
↓
0.8 × Calculate dose [i.e. 80% of calculated dose; less dose of insulin as calculated b/c kidney dysfunction]

(B) ② BP ⇑ : ACE ⊖ : K ↑ = stage I, II, III
stage IV
V : K ↑ = CCB

* ESRD → CCB (preffered b/c ACE⊖ cause ↑K⁺)

(C) Cholesterol ↑ : accelerated atherosclerosis
** Target cholesterol <100 mg%
'STATIN' : Bed time
- DM
- Syndrome X
- SLE
- Nephrotic
- CKD

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(Target cholesterol < 70mg%)

D. nephropathy

4. Vit D/calcium = RDA
Vit D3 ↓ - PTH ↑ : Ribs #
Vx. #
SINACALCET
(manage 2° PTH ↑ effects

Doping
- Epo → Blood Tx
- insulin
- GH

5. erythropoietin ↓ = inj Epo sc
CRF : Hb : 7gm%
Rx → Inj Epo S.C S/E → HTN

6. K⁺ ↑ (chronic)
K⁺ binding resin oral (K-bind)/enema

7. PO_4 ↑ (2° PTH ↑) ↓ Ca^{++}
↑ PO_4^-
$Ca^{++} \times PO_4 \geq 55$
kidney stone

Ye/

Calcium acetate ✗.
SEVELEMER
LANTHUM Carbonate

C.K.D.
CF urea ①
① Hiccoughs / vomiting
② Chest pain (Pericarditis)
③ GFR ↓ : HTN
(HTNsive encephalopathy → ~~loss of consciousness~~ papilloedema
nodeficit : Hemiplegia ⊖ⁿᵗ
Nicardipine = regain consciousness

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

④ Urea ↑ → uremic encephalopathy
Urea cross BBB
cerebral edema ⊕

⑤ Uremic fetor

⑥ Uremic melena
(bleeding)

⑦ K ↑↑ : diastolic arrest
1° = Rein enema

⑧ Oliguria

⑨ input > output.
(Periorbital edema) ⊕
Scrotal edema / vulva
Pedal edema
volume expansion
pulmonary edema (dyspnea on exertion)

⑩ Uremic Frost (more sweating)
urea
forehead / armpit / axilla.

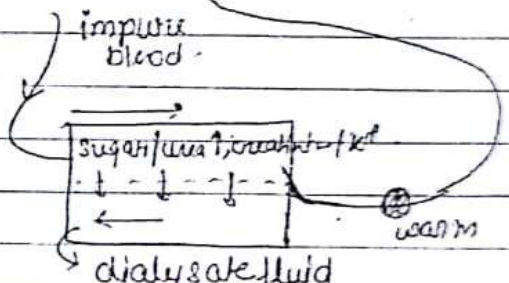
Q. Absolute indication for dialysis → ① pericarditis
Pericarditis ② K ↑ refractory to medical t/t
K ↑ ③ acidosis " " "
uremic encephalopathy ④ Uremic encephalopathy " " "
uremic melena.

Dialysis :
- 3/week, session = 4 hr.
- permanent access
  - Radial (A) ⟷ cephalic vein (anatomical snuff box)
  - Harvest : 4 weeks
  - Arterialization of vein (thrombophlebitis incidence ↓)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Central vein : thrombophlebitis Risk
↳ not used as a conduit for dialysis.
↓
Peripheral vein used
↓
Cimino Brescia fistula (double lumen catheter)



Countercurrent mechanism
Filter : harmful product cross
not necessary product
↓
facilitated diffusion

Complication of hemodialysis :
(2) bleeding
(1) hypotension (mc complication) early come.
(3) dialysis dysequilibrium
↓
Osmolality ↓ : seizure
(4) dialysis dementia : $A\beta_2$ amyloid
↳ β_2 microglobulin (size small → not filtered)
↓
accumulate
deposited in brain
↓
$A\beta_2$ Amyloid → (5) Carpal tunnel syndrome

Alzheimer's dz
Aβ myloid

Vit deficiency
(6) Peripheral neuropathy
(7) myopathy
(8) Adynamic osteomalacia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Recurrent hemodialysis.
CVS : Accelerated atherosclerosis

H.O. complication
= HTN

GFR < 15 ml/min → Transplant

Cholera :——→ A.K.I.
urea output = 0
S. creatinine = 10 mg %
K↑ : failure to excrete K^+
Na↓ (dilutional)
encephalopathy
↓
furosemide drip = urobag empty
urine output = 0/L
↓
double lumen catheter
Q. Jugular vein = preffered site for H.D. in A.K.I.

RIFLE criteria ↔ AKI
(N) urine output = 1 ml/kg/hr

		S. Creatinine	U.O.	HR
R	Risk	1.5 x	< 0.5 ml/kg/hr	6 hr
I	injured	2 x	< 0.5 ml/kg/hr	12 hr
F	failure	3 x	< 0.3 ml/kg/hr	24 hr
L	loss of function	= GFR	< 60 ml/min/1.73 m^2	X 4 week
E	End stage renal ds	GFR	< 15 ml/min/1.73 m^2	

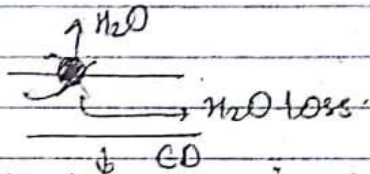
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

m.c.c. of ICU admission → AKI (30%)

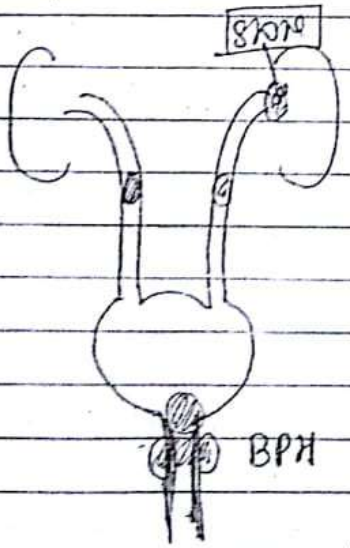
C/F:
- urine output ↓
- oliguria < 400ml/day , < 0.3 ml/kg/hr
- Anuria < 100ml/day :
- Periorbital edema / Sacral edema
- Pulmonary edema + → grade III/IV dyspnoea.

(Polyuria)
non-oliguric Renal failure:
Due to
Aminoglycoside



AKI: ① pre-renal
② Renal
③ Post-renal

Post-renal AKI:



Bil ureteric fibrosis
sclerodema, Bleomycin

Bladder outlet obstruction
- Vesical Calculus
- Tumor (TCC)

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
uroflowmetry Report → Flow Rate
obstructive symptoms decide
Sx not size of BPH
(medial lobe) BPH
urethra
low urinary stream
straining (+) nt : stream weakens
obstructive symptoms.
Bladder trabeculations (+)
wire → Blood passage per urethra
Congested bladder veins
Rx: Holmium laser / TUR P / Tamsulosin

Carcinoma prostate
(Peripheral enlargement) lobe
urethra
Paravertebral veins.
↓
Lumbosacral : low back ache
spine
P/R : Stony hard prostate (+)
PSA velocity ↑↑↑

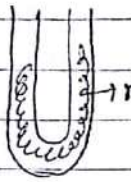
② Renal AKI : variety
• Acute tubular necrosis (ATN)

ischemia	toxins
1) prolonged anesthesia (drug : Vasodilation	1) Rhabdomyolysis (Crush Injury)
2) Cardiogenic shock (Post MI	

Rx: NE/dopamine/ Refractory Cardiogenic shock
dobutamine ✗

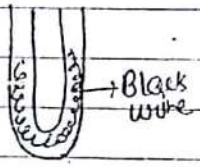
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

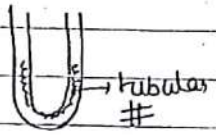


① Rhabdomyolysis
(crush injury)

② Recurrent falciparum malaria
↓
Black water fever
↓
massive hemolysis
↓
Hemoglobinuria



② multiple myeloma
① Mu-chains
↓
• Bence-Jones protein



③ multiple myeloma
• incomplete light chains production ↑
↑ viscosity of blood
sluggish circulation
• lytic bone lesion ✓ Hypercalcemia
$Ca^{+2} \uparrow \rightarrow PO_4$
nephrolithiasis ✗
• tubular damage

↳ m.c.c.o Renal damage in MM

Rx:
① dexamethasone
lenalidomide
↓
± Bortezomib

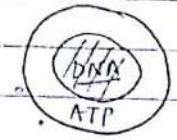
④ Ethylene glycol poisoning
Ca oxalate crystals : ppt.

⑤ Tumor lysis syndrome
⑥ Hemolytic uremic syndrome
⑦ CIN
(contrast induced nephropathy.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Anaplasia : N:C Ratio ↑



Tumor lysis Synd" (TLS)

1. PO_4 ↑
2. Ca ↓ ✱ ≤
3. K ↑ (cell death)
4. DNA turn Over ↑ = Uric acid ↑

URATE Nephropathy ✱

A.T.N

1° TLS = adequate hydration : Normal Saline
U.O >1 ml/kg/hr

TLS Rx : IV fluid
RASBURICASE i.v
i.v allopurinol
watch for $K^{\oplus}$ ↑ ecg : ∧∧∧∧ Sequiwave

m/c Cancer causing TLS
↳ Burkitt lymphoma
· A.L.L

Burkitt : t(8;14), t(8;22), t(2;8)] c-myc ↓ ⊖ apoptosis

Pre Renal AKI

- Blood supply ↓↓
- BURNS, septic shock
- distributive shock
- massive ascitis : 3rd Space loss
- dengue S.S : capillaritis
- acute pancreatitis : Multi Organ dysfunction
- ✱✱ B/L RAS
- nephrotoxic drug = Cyclosporin A
- Hepato-renal Syndrome

Blood supply

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

MODS : > 2 organ malfuction

- 1st : lungs : ARDS
  liver : Jaundice SGPT↑
  pancrease : Bld sugar ↑
  kidney : anuria

morbid pt.

S.I.R.S (systemic inflalamatory respons syn^e)

2+/4
- Fever / Hypothermia
- R. Rate
- Tachycardia
- T.L.C ↑ / TLCI

S.I.R.S + blood culture : ⊕ ⇒ sepsis

Sepsis ⊕ → B.P↓ > Ihr persist inspite of vasopressin agent] septic shock → MODS

Pre renal PKI	Renal AKI
• low urinary Na^+	• High urinary Na^+
• FeNa < 1%	• FeNa > 1%

	Prerenal AKI	Renal AKI
*	U Osm > 500	U.osm = 300
*	Urinary Na^+ < 10mg/L	U.Na^+ > 40meq
*	FeNa < 1%	FeNa > 1%

INV
1. S. cystatin
2. KIM-1
3. NGAL (Neutrophile assosiated gelatenase lipocalin)

Biomarker of kidney injury

4. S. creatine — most specific * test

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Dehydration : BUN ↑

(1) BUN ↑
(2) Imaging : USG : Kidney size
URO PATHY
(3) Na ↓ , K ↑
(4) Urine Sample Osmolality / Na

℞
A.K.I

fluid : Input = output + insensible losses (400 - 800 ml/day
- Sweat
- Water vapour - breathing
- Stool

Maintainence fluid : adult

4 ml/kg/hr = 0 - 10 kg
2 ml/kg/hr = 10 - 20 kg
1 ml/kg/hr = > 20 kg

for 2 of 30
(65) 70 ml/24
= 2100 ml

A.K.I.
1. fluid 10% dextrose, output + 500 ml
2. Furosemide inj
3. B.P ↑↑ = CCB derivatives
4. Na < 120 meq ; seizure
℞ ↓
3% saline
Correction = 4-8 meq ↑ / day
fast correction : Osmotic demyelination Syndrome (ODS)
↓ Cortical → Pontine myelinosis
- Quadriplegia
- Respiratory

Correction $\left(\frac{\text{desired value}}{\text{Na}^+} - \frac{\text{actual value}}{\text{Na}^+}\right) \times$ TBody water

TBW = ♂ : wt × 0.6
♀ : wt × 0.5

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Calculate Na^+ correction : 70kg, ♀

$Na^+ = 110 \times f$

$= (115 - 110) \times 70 \times 0.5$

$= (5) \times 70 \times 0.5$

$= 5 \times 35 = 250 meq$ Na^+/24 HR ≈ 500 meq

3% saline = 514 meq in 1000ml

3% saline = 500ml / 24hrs infusion pump

(9). K↑ : insulin drip
salbutamol neb
> 5.0 : Cal gluconate
[Sine wave pattern] Doxylthen (T)

(5). metabolic acidosis : Sodabicarbonate

(6). UREA ↑ encephalopathy
↳ Hemodialysis : Jugular vein double lumen catheter

(4). Na > 145 hypernatremia
Na > 160meq : seizure !
Na = 155
Reduction = 4-8meq/day

℞ · free-water intake
~~Obtunted:~~
Obtunded : IVF - 5% dx hose

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

$K^+ \uparrow$ — acute : Ca gluconate
chronic : Resin, caeuna,

classmate Date Page

- Tall tented Twave
- ST ↑

$K^+ \downarrow$ → (N) (3.5-5.5) meq/dl

(3.0-3.5) meq/dl = no iv but oral potassium chloride

if < 3.0 meq/dl = iv correction required.

200 meq KCL = blood level ↑ by 1 meq/dl
target K^+ = 3 meq

pt. on Ampho. B, muscle cramps.
Respiratory insufficiency, Serum K^+ = 2.3 meq.
Calculate 24 hr requirement of K^+ ??

target K^+ = 3.0 meq/dl
Current K^+ = 2.3 meq/dl
0.7 meq/dl required

∵ 1 meq/dl ↑ = 200 meq. KCl
0.7 " " = 200 × 0.7
= 140 meq. KCl Ans

first 24 hr i/v

>24 hr ⇒ oral KCL

Na ↓	seizure	Na < 120 := 3% saline
Na ↑		> 160 [seizure + = 5 d/s; seizure ⊖ = water intake
$K^+ \downarrow$	Resp. insufficiency	KCl + NF
$K^+ \uparrow$	diabetic arrest	Cal. gluconate

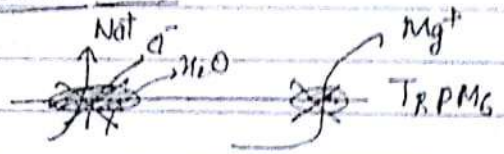
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

6 causes of 2° Hyperaldosteronism

GITELMAN Syndrome: (AR)

DCT:



- Salt wasting → fetus
- Poly.uria
- obstetric H/O: polyhydramnios

CF:

① Salt wasting, Polyuria → dehydration
- Shrunken Ant. fontanelle/eyeballs
- skin pinch delayed

② Diaper/nappy change frequency ↑

③ Salt ↓ : aldosterone ↑

Hypokalemic M.alkalosis

↳ flaccid : tone ↓
lethargic
Neonatal Reflex sluggish

④ Hypomagnesemia → Hypocalcemia

Sx: Carpopedal spasm
Stridor

Ix:

① Na ↓ K ↓

② 24 hr urinary chloride ↑

③ S.Mg ↓

(N) S.Mg = 1.7 mg – 2.5 mg %

Rx:

- Salt | K+ supplement

DOC = ?? (note)

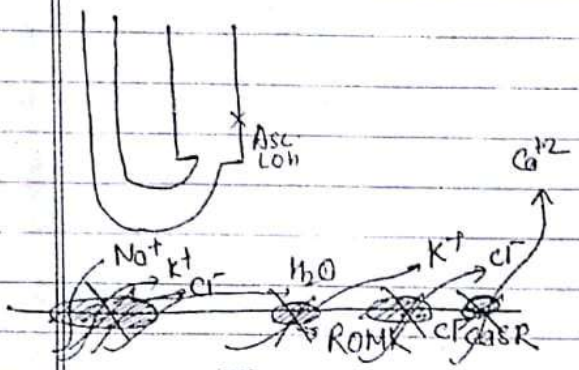
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

= 2° aldosteronism.

BARTER Syndrome (AR)

Ascending LOH defect



ClC-Kb + barttin
- Cl⁻ channel = Organ of corti
so defect here also

↓

Severe neuronal deafness

- Salt wasting } fetus
- Polyuria
- Obstetric H/O = polyhydramnios

CF: ① Salt wasting, Polyuria } dehydration : Shrunken AF/eyeball, delayed skin pinch

② Nappy / diaper change frequency ↑

③ ↑ aldosterone

Hypokalemic M. alkalosis

④ ROMK channel defect = K⁺ wasting (more severe b/c K⁺ loss by 2 method: aldosterone, ROMK channel)

⑤ Hypercalciuria / nephrocalcinosis / nephrolithiasis = $CaPO_4$

⑥ Calcium wasting : Renal Rickets
- Short stature
- delayed dentition
- wide open AF

adult → osteomalacia

- Stones
- Ca oxalate : envelop shape
- triple PO_4 : coffin lid
- Cystine : Hexagonal
- $CaPO_4$: Rosette
- uric : needle

Ix:
① Na ↓
K⁺ ↓
② 24 hr urinary chloride : ↑
③ 24 hr urinary Ca ↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

④ pH = alkalosis

Rx:

DOC : indomethacin

Na⁺/K⁺ supplement

indomethacin

① PDA
② acute migrain
③ acute gout
④ Barrter syndrome

Gitelman	Barrter
• DCT #	Asc. LOH #
• AR	AR
• OBS H/O Polyhydramnios	polyhydramnios
• —	deafness (SN)
failure to thrive	failure to thrive
dehydration	dehydration
↑ urine frequency	↑ urine frequency
• tetany	nephrocalcinosis
	Rickets Renal -
X'	
24hr. Urine Chloride	24hr urine chloride
S. Mg ↓	24hr urinary calcium ↑
M. alkalosis	
Na↓, K↓	

DOC

① indomethacin.

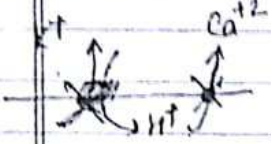
www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Renal tubular Acidosis : ① ② ③ ④

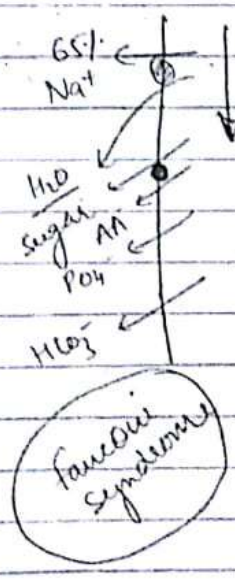
Mg imp for : PTH release
↓ Mg : PTH release #
↓ calcium
Tetany

RTA type 1 : DCT # : intercalated cell
K^+-H^+ antiporter



① K^+ wasting : muscle cramps (Hypokalemia) ✱
② inability to excrete H^+ : H^+ ↑
③ Urinary Ca^{++} ↑ : nephrocalcinosis
④ Renal Rickets / osteomalacia

RTA type 2 PCT #



urinary copper ↑ (WILSON DS.)
↓
• Salt wasting : Tubular # (Hallmark) of ~~glomerular~~ damage
• Polyuria
• glucosuria Renal
• aminoacid urea
• phosphaturia
✱ Bicarbonaturia (Hallmark) metabolic acidosis
• Hypokalemia ✱

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

RTA 4

- DCT ↓
- CNac resistance
- Aldosterone ⊕

Salt / H₂O

↑

→ K⁺ / H⁺

- Hyperkalemia ↓

1. Salt wasting / Atrophia
2. K⁺ ↑
3. Inability to excrete H⁺ (↓ acidosis)

Summary

RTA 1	2	4
Intercalated cells : DCT	Bicarbonate absorbtion ↓ PCT	ENac resistance
K⁺ – H⁺ autoantibody ↓		
K⁺ ↓	K⁺ ↓	K⁺ ↑
acidosis	acidosis	acidosis
Kidney stone	amino-aciduria	Loop-addition

↓ Normal anion gap

↓ urinary anion gap ⊕ in RTA

↓ " " " ⊖ in diarrhea

Nephrocalcinosis

Barter	RTA 1	↑ PTH	↓ PTH

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date
Page

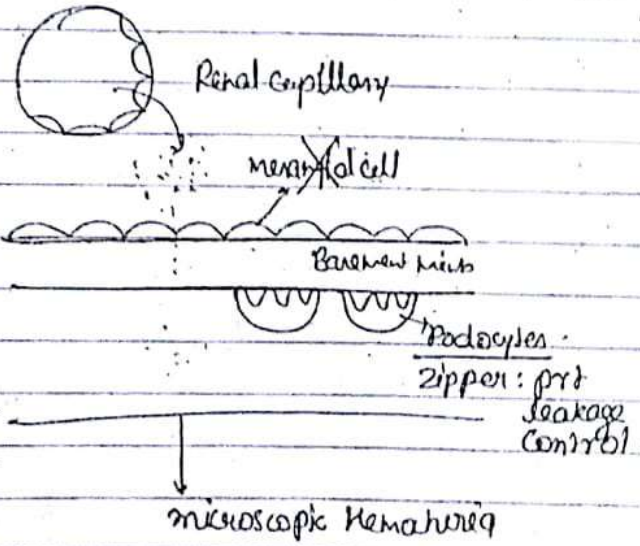
Idopathic Hypercalciuria

Ca oxalate stone
Stone farmer
Inv • 24hr urinary calcium ↑
PH - (N) [2/o Barrler) alk
Sulcous | RTA - Acidosis
℞ THIAZIDE (to Ca excretion ↓)
Furosemide (C/I)

Hematuria

- Berger ✓ m/c cause - microscopic / macroscopic (gross Hematuria)
- AGN / PSGN 2
- stone kidney 2
- ALPORT 4

IgA nephropathy



microscopic Hematuria

URTinfection → IgA1↑ complement (+) mesangial cell ↑↑ → Spontaneous resolution

- Gross Hematuria
- COLA COLOUR URINE
- BP (N)

www.FirstRanker.com
Scanned by CamScanner

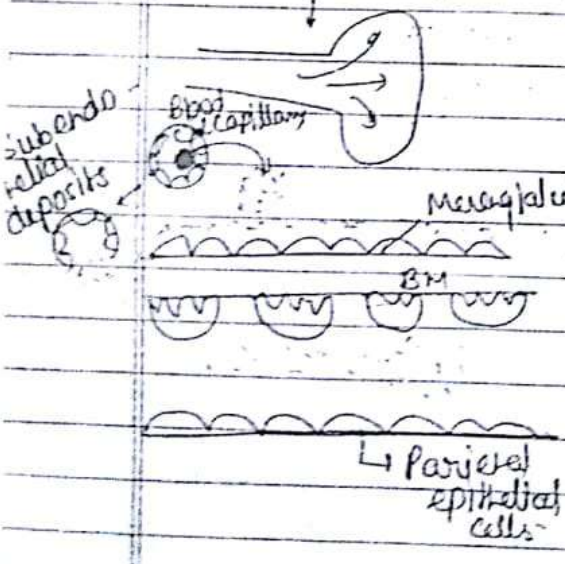
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Ix: Urine M/E : >3 RBC/HPF
① dysmorphic RBC
RBC casts
② C_3 ↓/N
③ KFT = N good prognosis.

<30% cases: vasculitis
GFR ↓ : CKD
Renin ↑ = HTN

Rx: ?? (steroids)
CKD = ABCDE, PO_4↑ Mx, K^+↑ Mx.

P.S.G.N:
: GABHS (grp A β hemolytic Streptococcus)
pyoderma → pustules ⊕
↓
immune complexes
deposited in kidney parenchyma.



Kidney Bx
STARRY SKY kidney.

Manifestations of key symptoms
① Hematuria
Cola colour urine
② GFR ↓ : renin ↑
HTN (BP↑) (acute)
LVF → pul. edema ⊕
③ difficulty in breathing
④ periorbital edema +
⑤ oliguria → anuria

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Ix: Urine M/E
> 3 RBC
RBC Cast
dysmorphic RBC
(2) C_3 ↓ : complement consumption
(3) ASO titre
anti DNAase B Antibody (↑)
(4) KFT
: S creatinine (↑)
(5) Renal variety AKI
glomerular # urinary sodium (↓)

Rx:
AKI : Hemodialysis
BP ↑ : CCB
ACE ⊖
Inj. Benzathine penicillin (i.m.) = not given
b/c not useful
kidney symptoms comes after
> 3 wks Inf.

Hematuria

URTinf.
↓
48 hr (adult)
Cola colour urine
BP (N)
Recurrent H/O episodes
↓
Burger ds
• C_3 ↓/N
• Rx : Steroids

Pyoderma : GABHS
Sore throat
↓ 3 wks (child)
Cola colour urine
BP ↑↑
LUF : edema +
deranged KFT
↓
P.S.G.N.
• C_3 (↓)
• anti DNAase-B A/B (↑)
BP • antihypertensive drug
CKD • ABCD / Hemodialysis

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Date
Page

mesangioproliferative GN

Type 1 : mc → HepC + cryoglobinemia
Ca lung

Type 2 → dens deposit ds. ↓

Type 3 → Rare

Partial lipodystrophy

- HepC → chr hepatitis C ; cirrhosis
Hematuria + HTN + subnephrotic proteinuria
- progression to CKD ↑ proteinuria
- INV → Biopsy : Tram Track appn
Rx = cyclophosphamide + ACE ⊖
- Protein intake = (n)
- Liver / kidney disease
kidney ↓↓ GFR ↓ = 0.8gm/kg

Nephrotic Syndrom

(1) Proteinuria ≥ 3.5 gm/day adult-
child ≥ 40 mg/m² /day

(2) Hypoalbuminemia < 2.5 gm%
(3) edema : Periorbital → Vulvar
→ Pedal

} essential feature for DS :

(4) Lipiduria : fat globule +
(5) ↑ cholesterol : accelerated atherosclerosis
(6) loss of protein C, S and anti thrombin III
fibrinogen : (+)

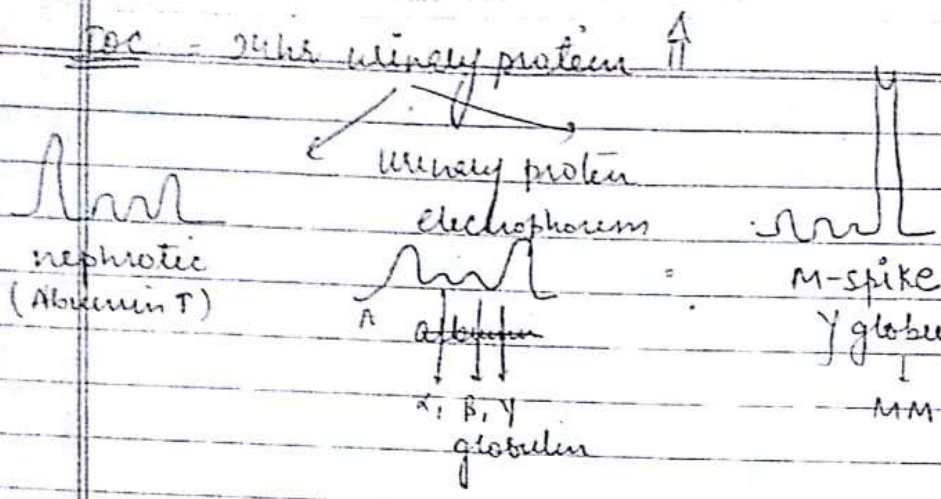
- Hypercoagulable state
- Ferritin ↓ = IDA
- ceruloplasmin ↓ = CuD

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

TOC - 24hr urinary protein



Congenital nephrotic syndrom

- NPHS 1 gene # → nephrin ↓ — Zipper mechanism
- NPHS 2 gene # → Podocin ↓ (sensin) [Finnish variety]

C/F : neonate : Hydrops fetalis
Foamy urine ⊕ - Proteinuria

inv : UROBAG
24hr urine > 40mg/m²
C_3 levels = (n)

Rx STEROIDS : CMI ↓

2-8yr : Periobital edema ⊕
genitals edema ⊕
pedal edema ⊕
weight gain + +
Ascites
Pleural effusion] Transudative

- 24 urin protein ↓ ↑
- U dip stick
- U sulfosalicylic acid spot
- KFT - (n)

Rx - Prednisolone 4 mg/kg daily × 8 weeks ∠ alternate

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

• STEROIDS Responsive NS
minimal change ds.

• Relapse : ≥ 72 hr : recurrence of symptoms
stopping steroid

Rx : STEROIDS

STEROID dependant nephrotic syndrome : SDNS: steroid

Steroid Resistant
nephrotic syndrome
SRNS
→ Cyclosporine
Tacrolimus

SDNS : Cataract
muscle wasting ⊕
Cushingoid facies
Q → steroid toxicity ✗

Rx • cyclophosphomide
Levamisole

Lipoid nephrosis (minimal change ds)
LM = ⊖
EM = foot processes effacement
IgM
Rx : steroids : excellent prognosis
Ascites massive variety

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

CLASSMATE
Date
Page

Ascites massive = Salt free albumen + Large Volume Parecentisis (LVP)

Abdominal paracentisis

Ascites : Salt low diet
Spironolactone

⊖ DEHYDRATION
NH_3↑ : ASTERIXIS

Salt free albumin i.v
Oncotic pressure ↑
Third space fluid = intravascular compartment

adult : nephrotic
m/c → FSGS : HIVANephropathy
: Reflux nephropathy
: Heroin (drugs)

- non selective proteinuria (LMW + HMW protein loss)
- Rx : cyclophosphamide
- Congenital NS → Prednisolone
MCD / lipoid nephrosis
- SRNS → cyclosporin/tacrolimus
- SDNS → Prednisolone
- SDNS & Toxicity steroid
- FSGS

Spironolactone
(n) protein diet : GFR↓ protein loss

cyclophospho

>6 yrs → NS = MGN * HBV
(geriatric) * RVT
[Painless enlarge kidney]
∴ cyclophosphamide

HPGN — HCV
MGN — HBV
FSGS — HIV

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

Hemolytic Uremic Syndrom

E.coli 0157 : acute dysentry
fever + blood/mucus stool

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Base Deficit

$0.4 \times wt \times (24 - HCO_3^- \text{ value})$

75 kg wt, $HCO_3^- = 6$

Methods: Calculate

Base deficit

$= 75 \times 0.4 \times (24-6)$

$= 180$ meq.

Hepatitis:

A. fecoral
B. sexual contact
C. Blood transfusion
D. Parenteral
E. feco-oral

- m.c.c of viral hepatitis = Hep. B
- m.c.c of chronic hepatitis = Hep. C
- m.c.c of viral hepatitis in india = hep A

Start.

not transmitted by breast feeding : hep. C
not transmitted by sexual contact : Hep E
fulminant hepatic failure = < 8 weeks
subfulminant hepatic failure = 8-26 wks
Superinfection : Hep D

Fulminant h. failure m.c.c. = toxin (PCM, halothane, ATT, Amanita poisoning (mushroom)) >> hep. D

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

fulminant H failure +ve in = Hep A, B, C, D, E

Ch. Hepatitis / Carrier +ve in = B C D

" -ve in = A, E

Hep B

- Partial ds DNA
- IP : 30-180 days
- Route of spread : (1) sexual contact
  (2) B Transfusion. : HBV, HCV, HIV, Syphilis, malaria
  (3) Vertical transmission

HBsAg + ——90 %——→ baby
Trime 3 pregnancy
Commercial sex worker

Rx:
elective C.S.
HBIg im (passive immunity)
<24 hrs
(reduces transfer to baby ↓ 6%)

Breast feeding
HBV + active immunity
Hep B vaccine = day 0
recombinant Vaccine
Paediatric
antigenic = 10 µgm dose
adult " = 20 µgm

Hep B = 0, 6 wks, 10 wk / 14 wk.
(3 doses)

HBsAg · anti HCV Ab · PCR HCV RNA
S. ELISA ⊖ve
window Period ~ 6 wks
P-24 Antigen
Real time RT-PCR HIV DNA
for viral load
PCR-HIV RNA

FTA-ABS
VDRL
neuro-syphilis → CSF-VDRL
Response to the H/t
Cong. Syphilis → IgM-FTA-ABS
Snuffles

malaria
P. malariae
P. ovale, P. vivax
P. falciparum
P. knowlesi = Vietnam.

P. falciparum
HRP-2 dipstick
(Histidine-Arch protein)
· P. smear
· 2 DH cord tot.

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

HBsAg ⊕ : pt

(4) accidental needle stick injury

Chances = 30%

Rx:

HBIg iv. (<6hr of exposure)

(anti HBsAg titer

Ig <10 IU/ml → HBIg

≥10 IU/ml → not given HBIg

adult Vaccine = 0, 1, 6 month
0, 1, 12
0, 1, 2

Protection = 15 year

HIV:

Vertical transmission ⇒ 30% → CART (2nd trime) = mother

breast feeding ⇒ 45% oral zidovudine (to baby till breast feeding continue)

accidental needle stick injury

Chances = 0.3 %

Rx:

Post exposure Px : (new guidline)

Zido: Tenofovir Zidovudin

Raltregavir > Lamivudin

Emtricitabine Indinavir

↓

X 6 weeks

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

India = HIV-1 —10-12yr→ AIDS
Africa = HIV-2 —15yr→ AIDS

classmate
Date
Page

	HIV	HBV	HCV
Vertical	30%	90%	5%
needle stick injury	0.3%	30%	3%

↓ ↓

URTI.

Persistent generalised lymphadenopathy (PGL) LN >1 cm >2 sites

Inguinal site not considered in (PGL)

ARC : wt loss, Chr. diarrhoea, oral thrush

AIDs related Complication

CD_4 (N) ↓

AIDs : P. Jiroveci

CD_4 ↓

HBs Ag : Ist to appears in blood.

HBc Ag : never appears in blood

HBe Ag : Replication / highly infectious

HBx Ag : HCC (Hep B > HCV)

PCR : HBV DNA > 10^5 viral copies DNA + SGPT X2 / ml

Rx: Harr. ≥ 2×10^4 IU/mL + SGPT X2

DOC

① Tab. Entecavir | Tinofovir

② α-interferon i.m. | sc (Booster for immunity)

Tinofovir active against both HIV & Hep B

Anti Body :

anti HBs Ag = Seroconversion

anti HBc Ag / IgM = acute Hep B / window period

IgG = Chr. hepatitis B

anti HBe Ag = Replication ↓ Infectivity ↓

			baby
HBs Ag +	HBe Ag +	: T_3	→ 90%
HBs Ag +	HBe Ag −	T_3	→ 20%

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Pre-core mutant : Europe
↓
HBeAg = not expressed
↓
Solution: HBV DNA : replication (PCR) ← marker in pre core mutant.

25 yr young ♂ : nausea X 7 days
sight / smell ↓ food
: Vomiting episodes ↑ X 1 day

O/E
- Icterus +
- ✓ S. bilirubin > 2mg %
- ✓ Tender Rt. upper quadrant
- ✓ Hepatomegaly (liver span N = 12-15 cm)
- ✓ Sexual contact ⊕
- ✓ iv drugs ⊕

?? viral Hepatitis.

Tx.

LFT :
S. bilirubin : ↑ unconjugated
S.GOT : ↑ (mitochondria : alcoholic liver ds
SGPT ↑↑ (cytosol) : viral hepatitis

S. Alkaline phosphatase N
if SAP ↑ = Obstructive Jaundice / cholestasis.
Conj. bilirubin ↑
>15% total S. bilirubin

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

[liver span ↓↓ / Fulminant hepatic failure]

classmate
Date
Page

(2) USG liver : Starry sky appearance.
↓
liver span ↓

↳ (1) burkitt lymphoma : LN Bx
(2) Neurocysticercosis : CT/MRI
(3) PSGN : Kidney Bx
(4) viral hepatitis : USG

(3)

	anti HBsAg	anti HBc Ag	HBeAg	
HBsAg				
+	−	IgM	−+	acute Hep B (highly infectious, Recent infection) ↓ IVF : NS, 10% dextrose. domperidone / prokinetic Metoprolide / drug. Carbohydrate Rich diet
⊖	−	IgM	⊖	window Period
⊕	⊕	IgG	⊕	chr. active hepatitis
⊖	⊕	IgG	⊖	Recovery
−	⊕	⊖	⊖	Vaccine

Carrier
HBsAg + > 6 mnth

HBsAg
IgM anti HBc Ag } (come 1st) acute Hep B

↓ ↘ ↘ anti HBsAg = 0
fulminant Hepatic failure

anti HBsAg ⊕
HBsAg ⊖
HBeAg ⊖
Spontaneous Recovery

anti HBsAg ⊕
HBsAg ↑
HBeAg +
IgG anti HBeAg
α-Interferon

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

Chr Hepatitis

Chronic active Hepatitis → Chr. persistan Hepatitis → Chr. lobular Hepatitis
(Piece meal (el necrosis) — bridging necrosis



Fulminant Hepatic failure (FHF)

- Jaundice ↑
- Liver span ↓
- clotting factor ↓ : bleeding

all clotting factor produced in liver except = Calcium (factor 4)

Internal GI bleed

		Blood	
GI Tract	anaerobes	++	→ ppt. hepatic encephalopathy → Rx: FFP
	NH_3 +	↑↑	

C/F
- altered sleep pattern
- euphoria
- slurring speech, scanning speech
- Asterexis : flapping tremor
  - (1) metabolic encephalopathy
  - (2) uremic "
  - (3) CO narcosis
- psychiatric Abnormality

Ix: EEG (awake) ⇒ delta wave → H. encephalopathy
S. ammonia: ↑
LFT: S. bilirubin ↑, SGPT ↑↑

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Longest half life overall : pachon(13)
(2,4,7,9 " " " = factor (2) Assmate

Parkinsonism : Resting tremors
Parkinson
micrographia
low frequency tremor
(< 8 Hz) ① parkinsonism
② intentional tremor
cerebellar tr.
(5 Hz)

Anxiety neurosis
: Sympathetic stimuli
High frequency tremor
① thyrotoxicosis
② pheochromocytoma
③ Anxiety neurosis

Ix ↑ encephalopathy
:
• LFT. S. bilirubin ↑, SGPT ↑↑
PT ↑ : factor 7, (shortest $T_{1/2}$)
aPTT ↑ : factor 8
Coagulogram

• K.F.T : hepato-renal syndrome
NH_3 ↑ - Renal circulation ↓
(Pre-renal AKI)
↓
DOC : Midodrine

• Blood sugar ↓

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

MELD score : Model for End stage liver ds : FHF

1. S. bilirubin
2. S. creatinine
3. INR (PT)

↓

i) MELD score > 14.

↓

liver transplant indicated

- HLA matching not mandatory

↓

1. Corneal Tx
2. Heart Tx
3. Liver Tx

ii) 2pt → MELD score = 20 (more severe) (complication)
↳ MELD score = 30

↓

given liver to high score MELD ∵ d/c less complication.

medical Rx : FHF

1. Lactulose : ammonia binder (NG tube)

↓

2. Rifaximin / neomycin (Bactericidal A/B)
↳ Colonic perforation.

3. FFP = PT (11-15 sec.) (N)
4. LOLA
   - L-ornithine
   - L-Aspartic Acid
   → (+) O.T.C. → clearance of ammonia

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

(5) I.V.F. = 10% dextrose

(6) " Bed sore / DVT / PE / UTI
Prevention of

Self Regeneration
(so give Conservative Rx)
↓
If deteriorate then give
ORthoptic Liver Tx
(same size)

Hep C :

- Chr. Hepatitis : Cirrhosis
  ESLD
- anti HCV A/B : Enzyme immuno Assay (EIA)
  PCR HCV RNA (gold standard)
- DOC Hep C : Lepsidavir (new)
  Sofosbuvir : 7500 x 27 lac. (19 lac)
  (expansive)
  Pegylated interferon + Ribavirin
- M.C. genotype HCV = (1)
- duration : 24 week T/t
- extrahepatic manifestation of

	HBV	HCV
(1)	membranous Glomerulo nephropathy (MGN)	MPGN type 1
(2)	Aplastic Anemia	Aplastic (A)
(3)	Polyarteritis Nodosa (PAN)	⊖
(4)	Serum Sickness → rash, fever, myalgia	essential cryoglobulinemia → rash, fever, myalgia (stroke ischemic)
(5)	GBS	

www.FirstRanker.com
Scanned by CamScanner

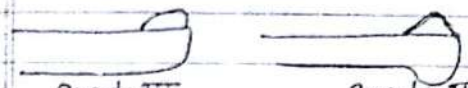
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

classmate
Date
Page

Cirrhosis / Chr. liver ds (compensated)

① Dupuytren's contracture

②



grade III — Parrot beak

grade III — = drum stick

③ Palmar erythema

④ ♂ : testicular atrophy
gynaecomastia

Compensated Cirrhosis :

Portal HTN

- m.c.c of portal HTN : N.C.P.F
(non-cirrhotic portal fibrosis)
- " " paediatric = extra hepatic Portal vein obstruction
(EHPVO)

↓

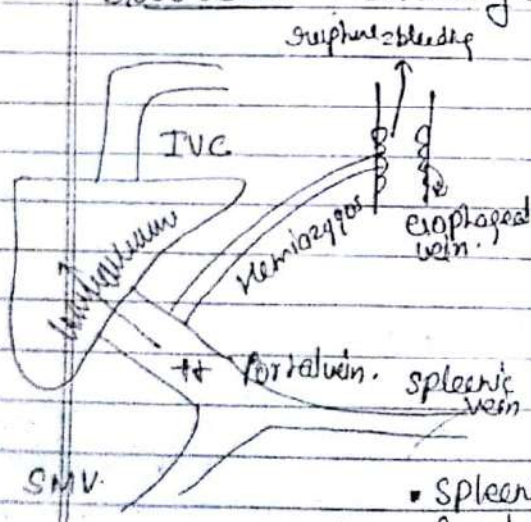
esophageal varices

Blood vessels : coronary vein — Bleeding

Gastric ulcer = left gastric (A)

mallory vein = left gastric (A)

D-ulcer = gastroduodenal



- Splenomegaly
- Rectal hemorrhoids

www.FirstRanker.com
Scanned by CamScanner

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

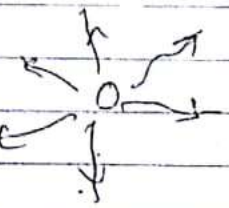
classmate
Date
Page

- non bleeding esophageal varices = Propranolol
  Bleeding " = Octreotide

↓

Porto systemic collaterals

1. esophageal varices (most vulnerable for rupture)
2. Rectal hemorrhoids
3. Bare area of liver
4. caput medusae
5. Retroperitoneal vein
6. lumbar veins.
7. Omental vein.



away from umbilicus = caput medusae



IVC syndrome

SVC syndrome

Dx: IOC for PHT : Doppler (Portal HTN)

Rx:

- Hematemesis
  m.c.c. = peptic ulcer.
- Hematemesis + Splenomegaly
  ↓
  Portal HTN

www.FirstRanker.com
Scanned by CamScanner