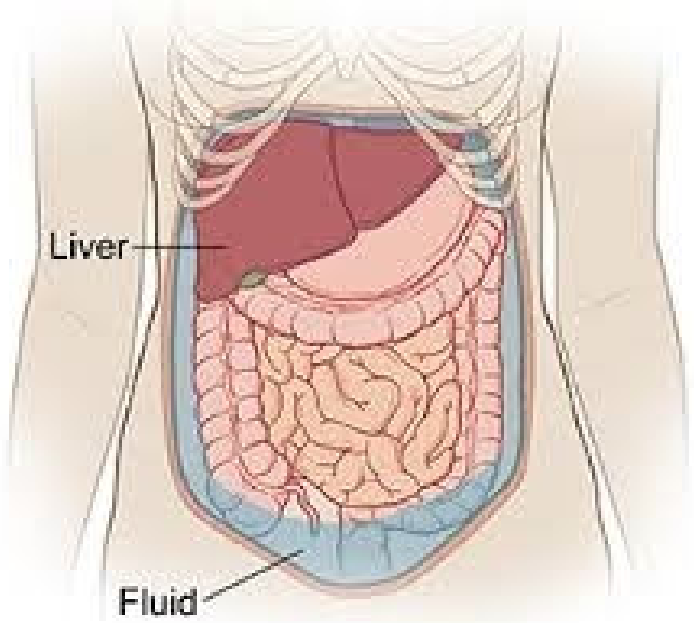
Definition

- Accumulation of excess or free fluid within peritoneal cavity.
- Small amounts – asymptomatic
- Larger amount (> 1L) ---
  - ✓ *Abdominal distension*
  - ✓ *Fullness in flanks*
  - ✓ *Shifting dullness on percussion*
- Marked ascites : fluid thrill/wave
- Other features
  - ✓ *Eversion of umbilicus*
  - ✓ *Herniae*
  - ✓ *Abdominal striae*
  - ✓ *Dilated superficial abdominal veins ..etc*



PATHOPHYSIOLOGY

A state of total-body sodium and water excess.

Portal hypertension

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Nitric oxide mediated splanchnic arteriolar vasodilation

↓

Systemic arterial pressure falls → Baroreceptor mediated RAAS activation

Secondary aldosteronism

Increased sympathetic activity

Increased atrial natriuretic hormone secretion

Altered activity of kallikrein-kinin system

← Normalise arterial P

Na and water retention

Alters intestinal capillary permeability

↓

Fluid accumulation in peritoneum

Aetiology

- Types :
  - TRANSUDATIVE
    - generally, - low protein concentration(<2.5g/dL)
    - serum ascites albumin gradient >1.1 g/dL
    - typical in cirrhosis – portal hypertension
    - relatively few cells
  - EXUDATIVE
    - generally, - high protein ascites (>2.5g/dL)
    - SAAG < 1.1 g/dL
    - in inflammation or malignancy
    - malignant cells/ PMNL

Causes

Low SAAG (exudative)	High SAAG (transudative)
Common causes	
Malignant disease: Hepatic Peritoneal	Cardiac failure Hepatic cirrhosis
Other causes	
Acute pancreatitis Lymphatic obstruction Infection: Tuberculosis Nephrotic syndrome	Hypoproteinaemia: Protein-losing enteropathy Malnutrition Hepatic venous occlusion: Budd–Chiari syndrome Sinusoidal obstruction syndrome (Veno-occlusive disease)
Rare causes	
Hypothyroidism	Meigs' syndrome* Constrictive pericarditis

CLINICAL CASE TAKING

History

- Children- nephrotic syndrome
- Middle age-liver cirrhosis
- Old age- malignancies, cirrhosis

ORDER OF DEVELOPMENT

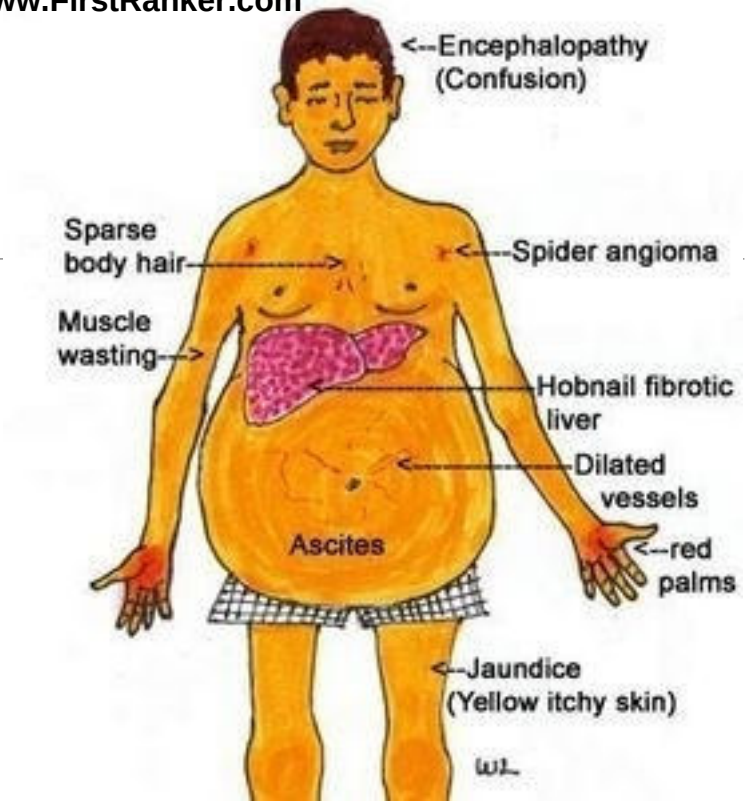
- Cirrhosis –first feature
- Cardiac- pedel edema precedes ascites
- Kidney-puffiness of the face before ascites
- Ascites praecox –ascites appears disproportionately as well as before oedema

== seen in – constrictive pericarditis, a/c budd chiari syndrome, tb peritonitis, malignant peritonitis

Onset

ACUTE	INSIDIOUS
a/c Budd chiari	liver cirrhosis
a/c right heart failure	tb ascites
Pancreatic ascites	nephrotic syndrome
	constrictive pericarditis

General examination

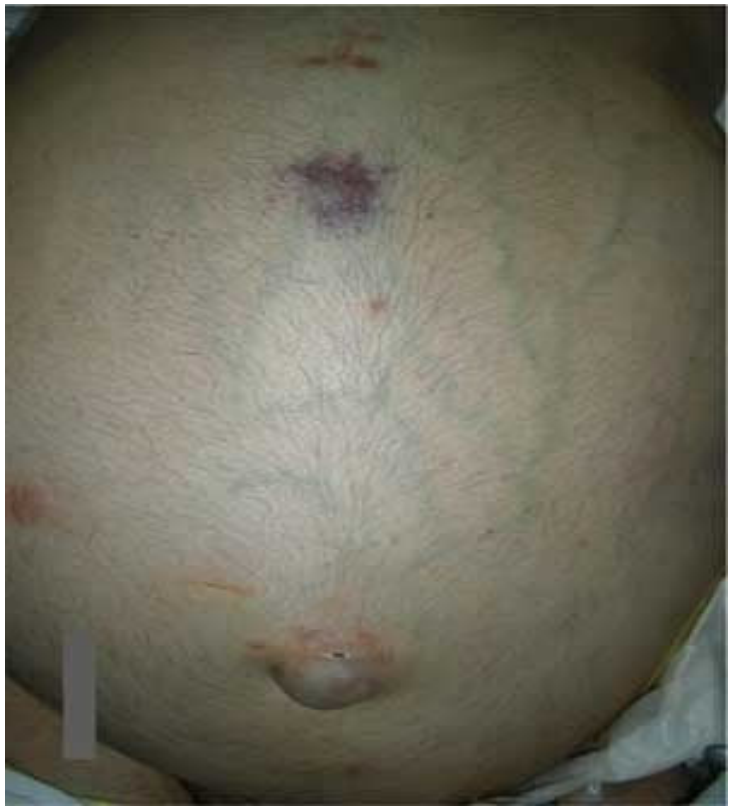


- Anemia- CLD
- Jaundice -liver pathology
- Enlarged lymphnode- tb,malignancy,lymphoma
- Oedema- nephrotic syndrome periorbital oedema ,facial puffiness, pedal oedema
- PND , dyspnea, orthopnea- CCF

Inspection

- Abdomen distended
- Umbilicus can be inverted or everted

  slit transversely-laughing umbilicus
- Flanks full-1.5L
- Caput medusa -portal hypertension
- Scrotal oedema –nephrotic syndrome



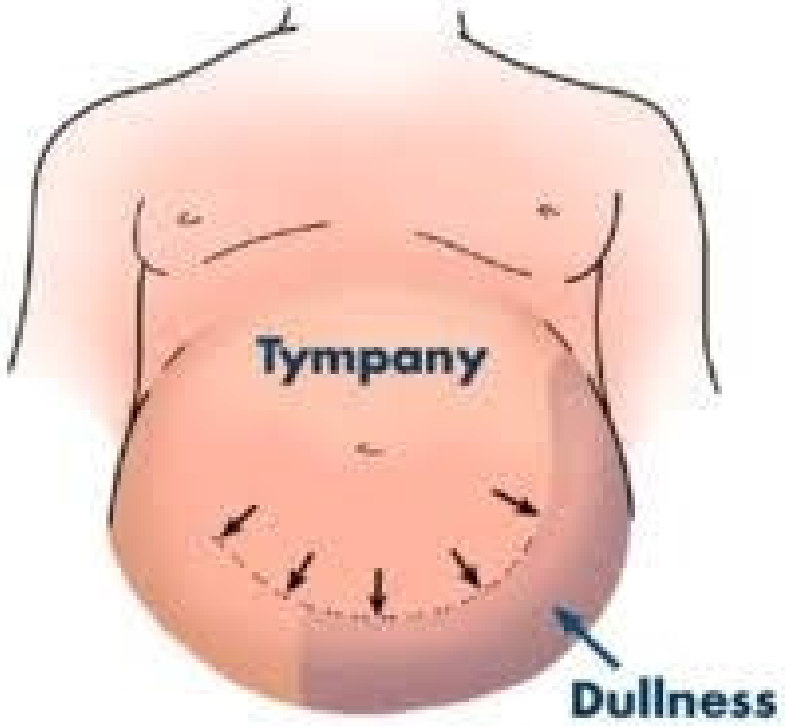
Palpation

- Tenderness and local rise of temperature-peritonitis
- Enlarged tender liver and ascites-CCF
- Sister joseph nodule –CA stomach
- Tb peritonitis-doughy feel of abdomen

  multiple palpable mass due to matted omentum and loops of intestine

Percussion

- About1 to 1.5L fluid is needed to produce flank dullness
- SHIFTING DULLNESS-supine position
- FLUID THRILL
- PUDDLE SIGN-minimal fluid(120ml)



Shifting dullness

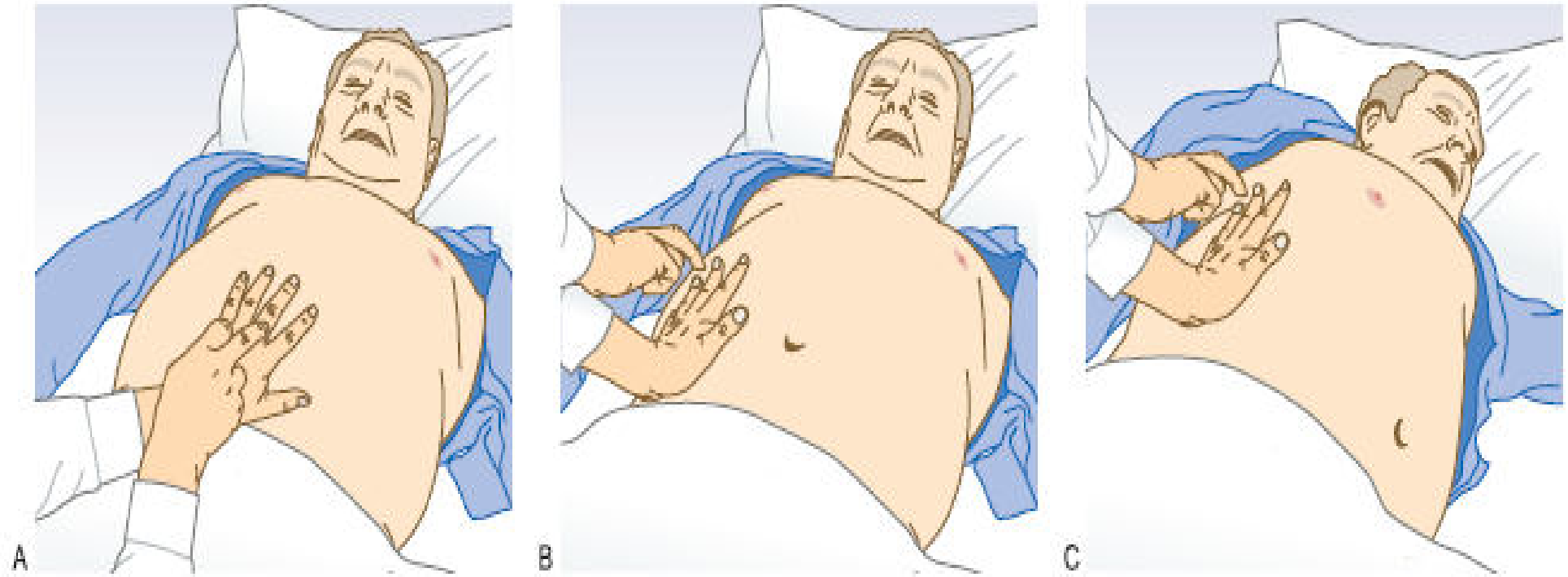
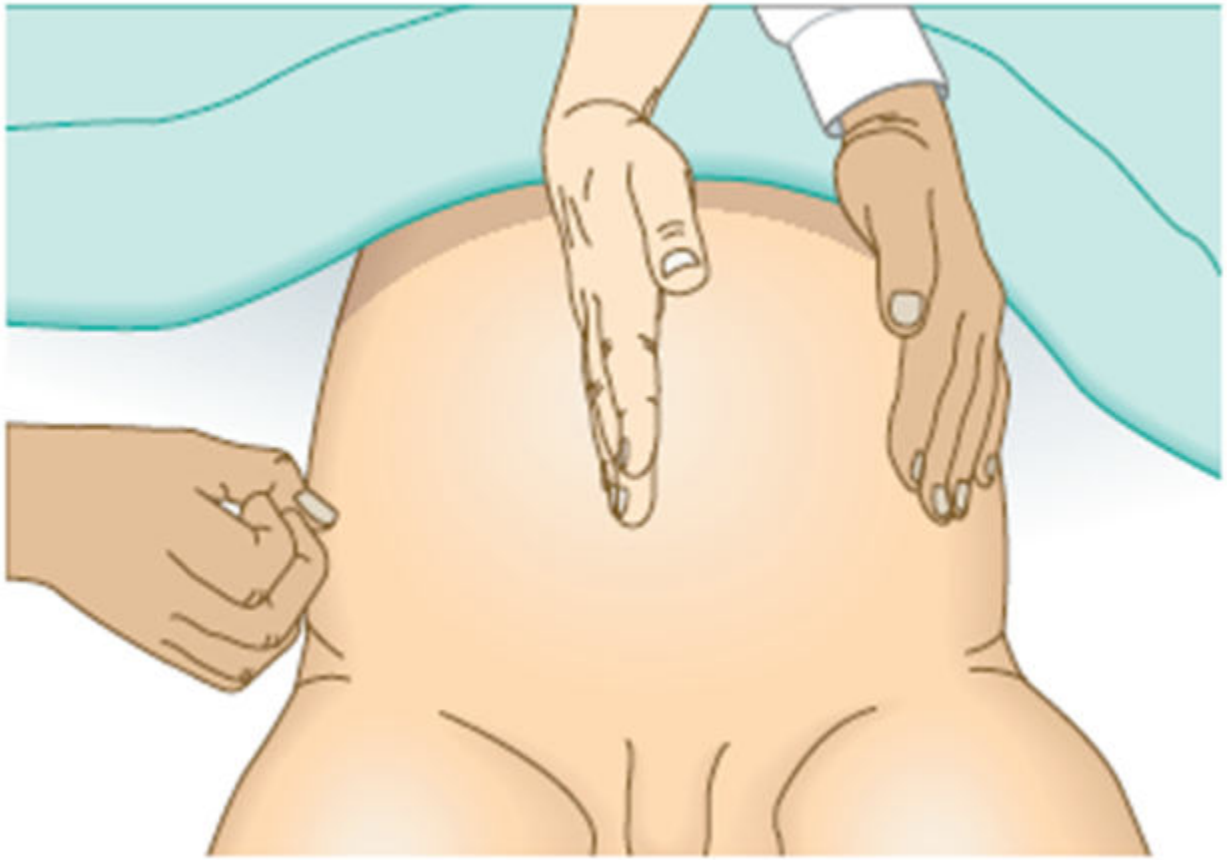
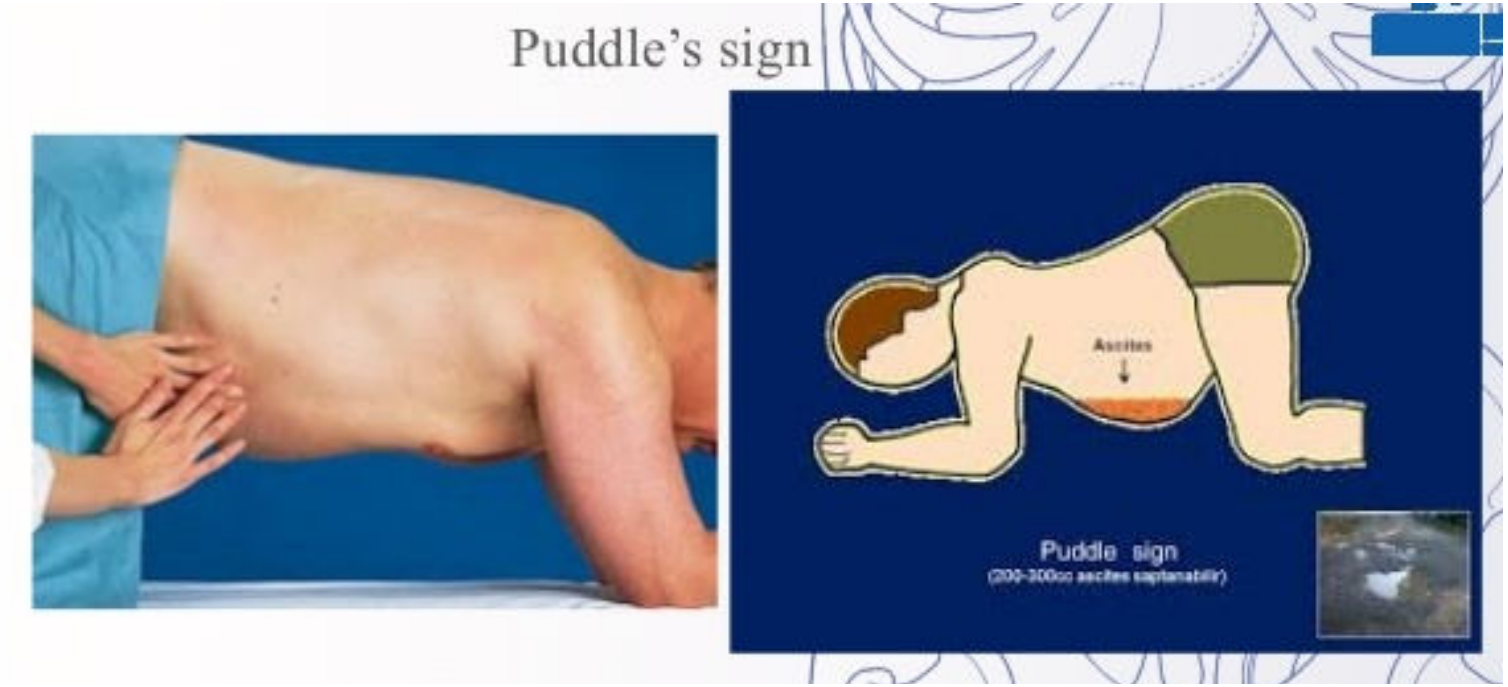


Fig. 6.17 Percussing for ascites. A and B Percuss towards the flank from resonant to dull. C Then ask the patient to roll on to their other side. In ascites the note then becomes resonant.

Fluid thrill



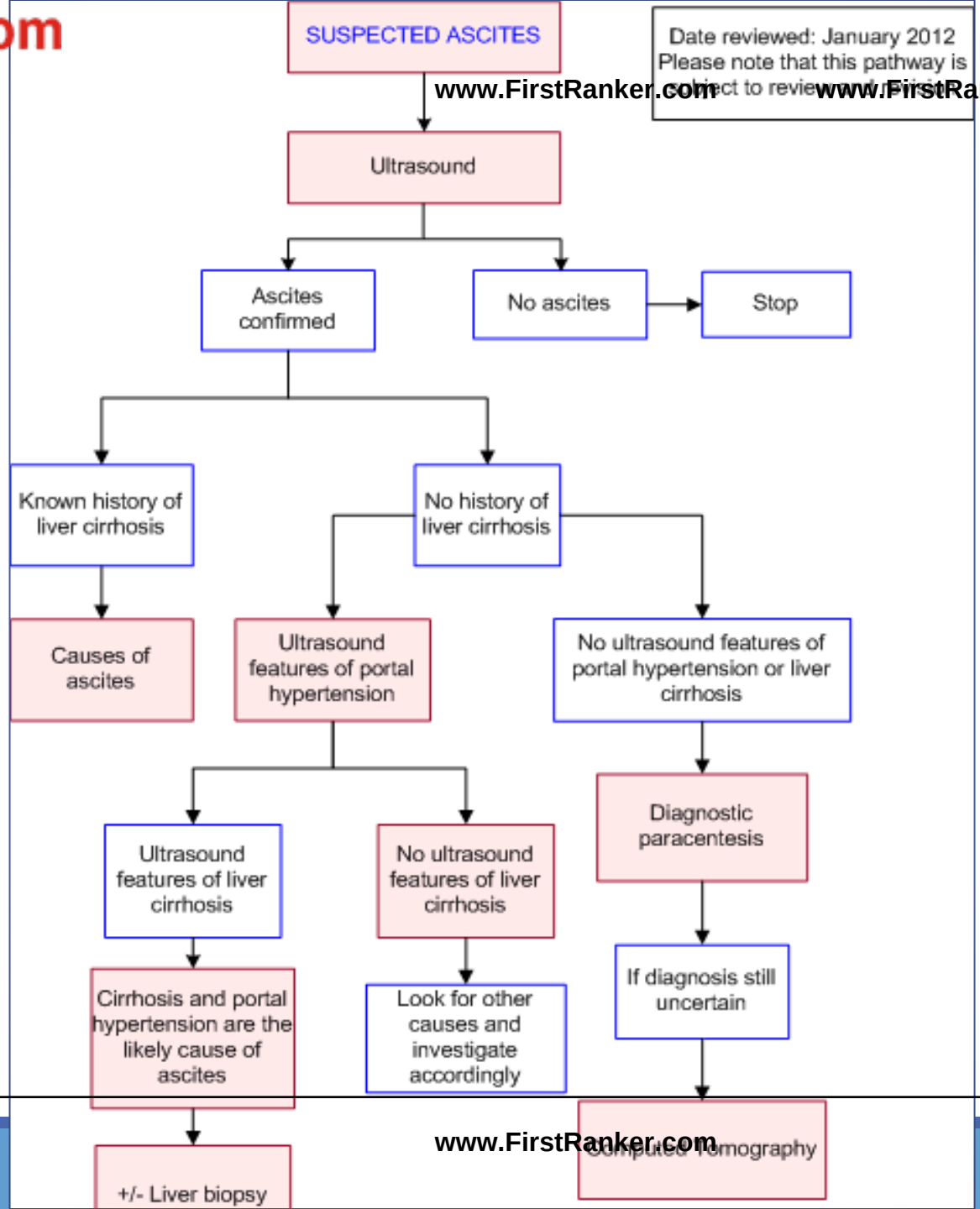
Puddle sign

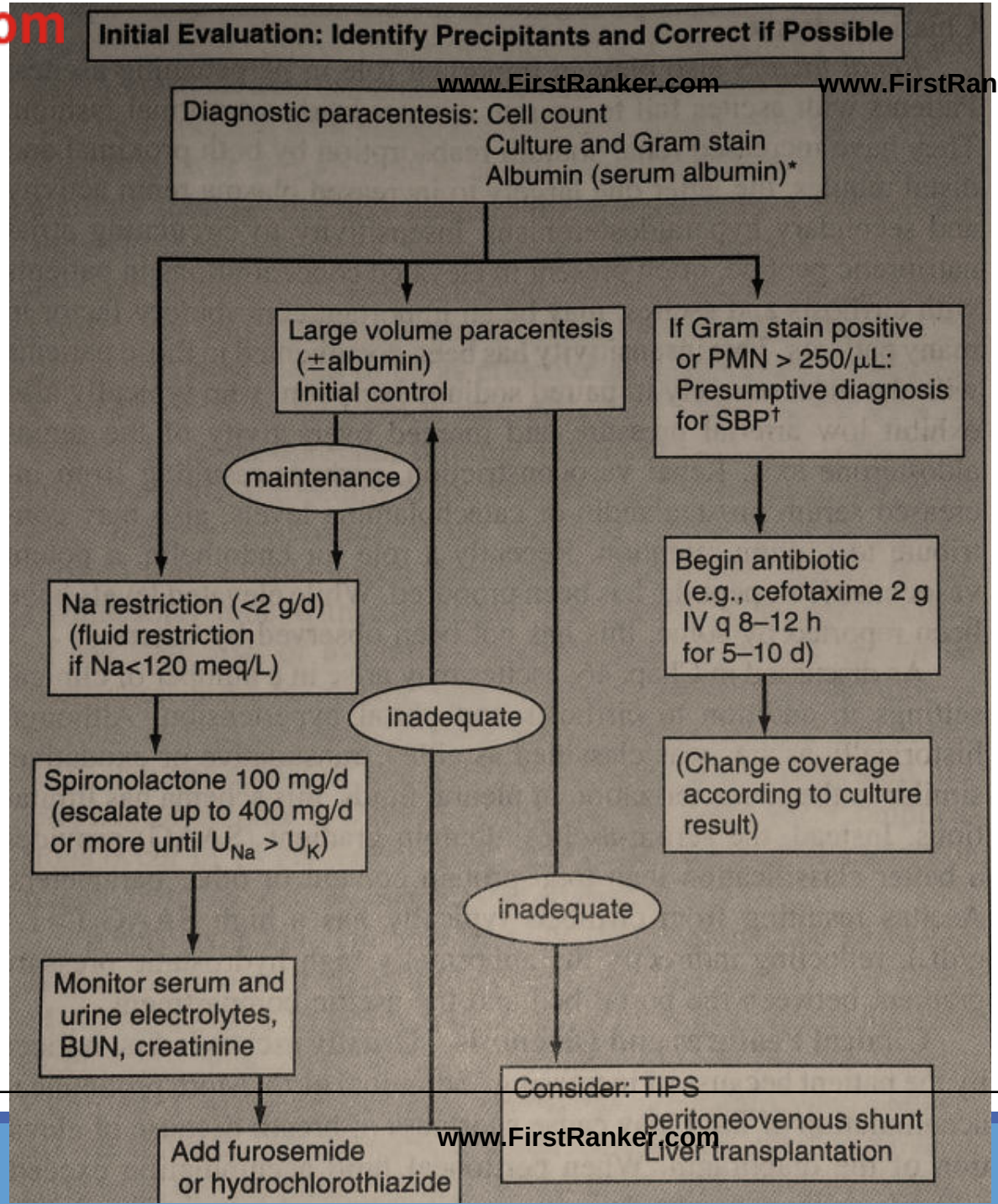


Minimum amount of fluid required

Test	Minimum fluid in ml.
Diagnostic tap	10-20
Puddle sign	120
Shifting dullness	500
Fluid thrill	1000-1500
Ultrasound scan	100
CT scan	100

Investigations





Ascites

Condition	Gross Appearance	Protein, g/dL	Serum-Ascites Albumin Gradient, g/dL	Cell Count: Red Blood Cells, >10,000/μL	Cell Count: White Blood Cells, per μL
Cirrhosis	Straw-colored or bile-stained	<25 (95%)	>1.1	1%	<250 (90%);* predominantly mesothelial
Neoplasm	Straw-colored, hemorrhagic, mucinous, or chylous	>25 (75%)	<1.1	20%	>1000 (50%); variable cell types
Tuberculous peritonitis	Clear, turbid, hemorrhagic, chylous	>25 (50%)	<1.1	7%	>1000 (70%); usually >70% lymphocytes
Pyogenic peritonitis	Turbid or purulent	If purulent, >2.5	<1.1	Unusual	Predominantly polymorphonuclear leukocytes
Congestive heart failure	Straw-colored	Variable, 15–53	>1.1	10%	<1000 (90%); usually mesothelial, mononuclear
Nephrosis	Straw-colored or chylous	<25 (100%)	>1.1	Unusual	<250; mesothelial, mononuclear
Pancreatic ascites (pancreatitis, pseudocyst)	Turbid, hemorrhagic, or chylous	Variable, often >25	<1.1	Variable, may be blood-stained	Variable

Other tests

- TB peritonitis – peritoneal biopsy, stain and culture for AFB
- Neoplasm – cytology, cell block, peritoneal biopsy
- Pyogenic – gram stain , culture
- Chylous – ether extraction, Sudan staining
- Pancreatic ascites – increased amylase

THANKYOU