

PIGMENTARY DISORDERS

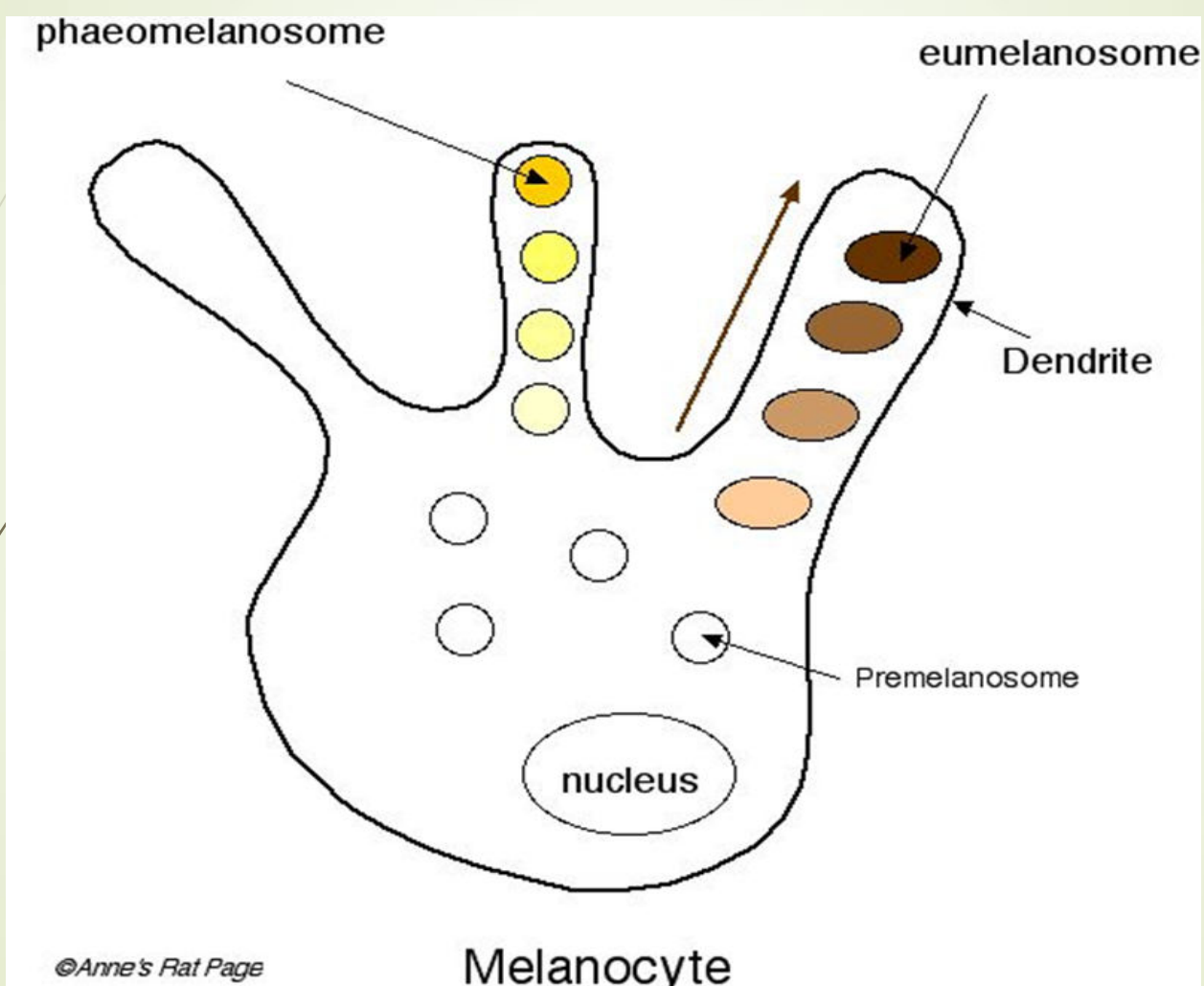
Neirita Hazarika

INTRODUCTION

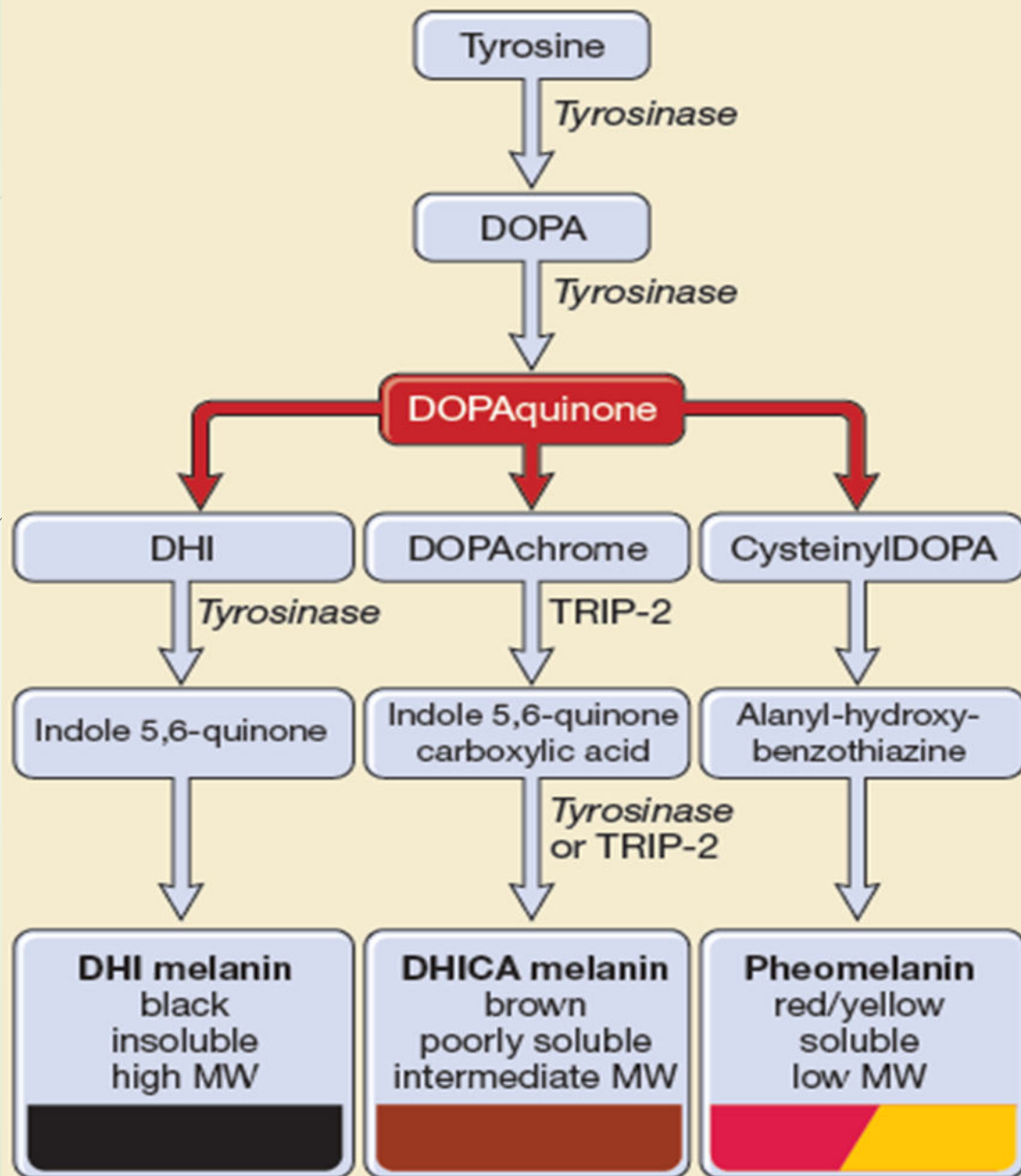
- Human skin colour – unique
- Varies with race, climate, light exposure, ethnic and individual skin constitution, lifestyle and anatomical regional variations
- Basic pigments – **MELANIN**, Hb, caretenoids

MELANOCYTE

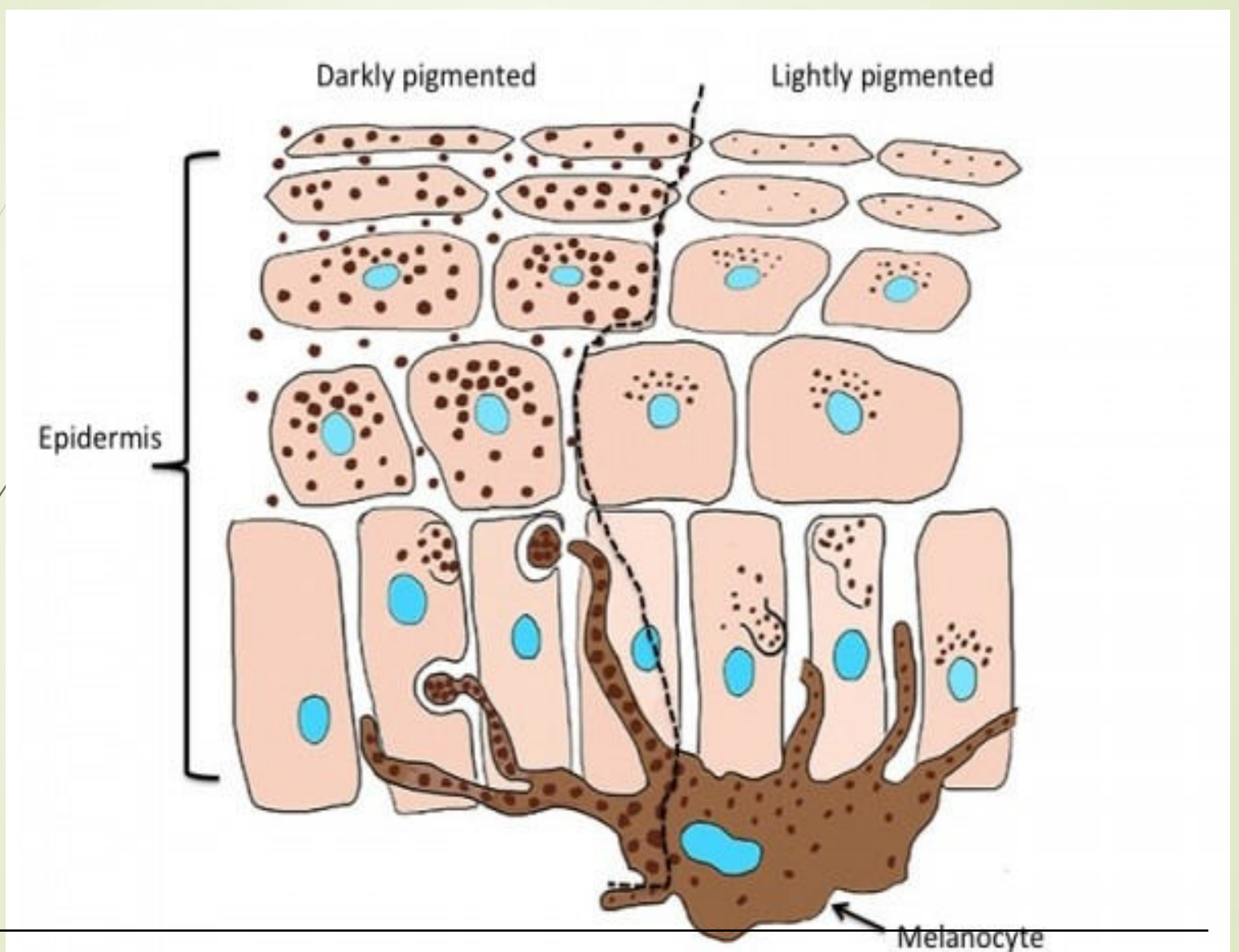
- Dendritic cells
- Develop from melanoblasts
- Light microscopy: clear cells in and immediately beneath the basal layer of epidermis.
- On H&E stain: an avg 1 melanocyte / 10 keratinocytes.



Melanin biosynthesis



EPIDERMAL MELANIN UNIT



1 melanocyte $\rightarrow$ 36 keratinocytes

FUNCTION OF MELANIN

- Protection - scattering and absorbing UV light
- Neutraliser of toxic, free radical oxygen derivatives, by products of various inflammatory processes.
- Impart different colour to hair - black, blond,brunette,red

CLASSIFICATION OF PIGMENTARY DISORDERS

- Hyperpigmentary
- Hypopigmentary
- Depigmentary

HYPOPIGMENTARY AND DEPIGMENTARY DISORDERS

- **Developmental anomaly** – nevus depigmentosus
- **Genetic** – albinism, piebaldism, tuberous sclerosis, phenylketonuria
- **Endocrine** – Addison's disease, hyperthyroidism
- **Nutritional** – kwashiorkor, ulcerative colitis
- **Chemicals & Drugs** – phenol, corticosteroids, retinoic acid

➤ **Post inflammatory**

Mechanical - burns, radiation

Infective – p.versicolor, leprosy, syphilis, herpes

Non infective - P.alba, morphea, psoriasis, DLE

Miscellaneous – vitiligo, halo nevus

Affecting hair alone - alopecia areata

VITILIGO

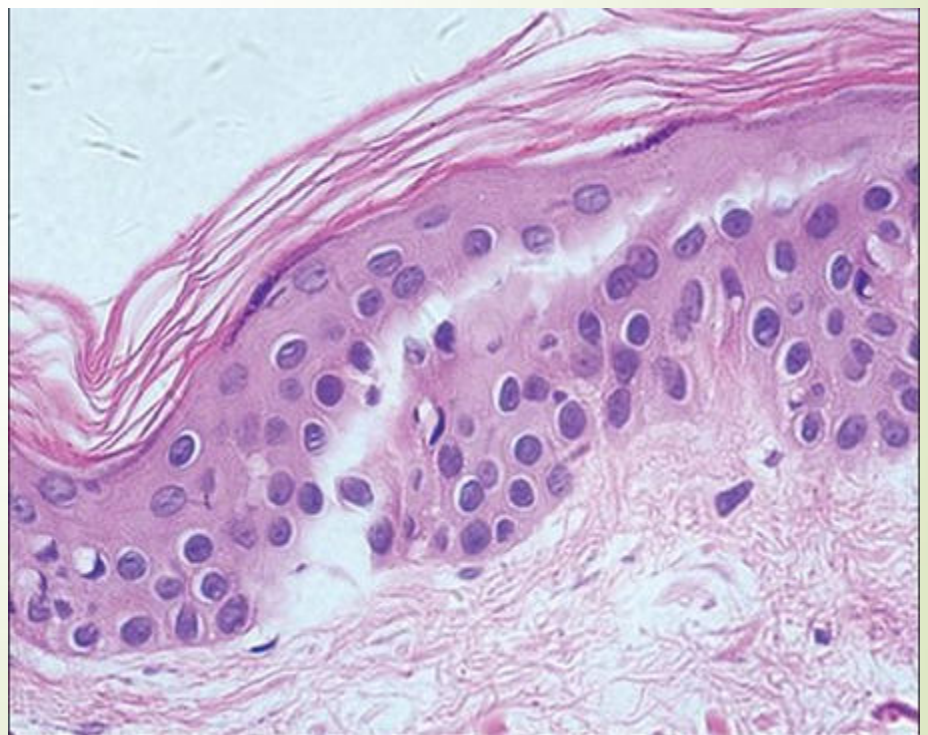
Common disorder characterised by well circumscribed milky white macules (due to loss of melanocytes) with scalloped margin

Pathogenic mechanisms:

- Autoimmune destruction of melanocytes
- An intrinsic defect in melanocytes, their adhesive properties and/or factors critical to their survival
- Defective defense against oxidative stress leading to destruction of melanocytes

HPE

- absence of melanin granules and gross lack of dopa positive melanocytes in the basal layer.
- Can affect the melanocytes of the hair.



Types

Non-segmental vitiligo

Segmental

Unclassified or indeterminate

Subtypes

Acrofacial

Mucosal (more than one site affected)

Generalized or common

Universal

Mixed (associated with segmental vitiligo)

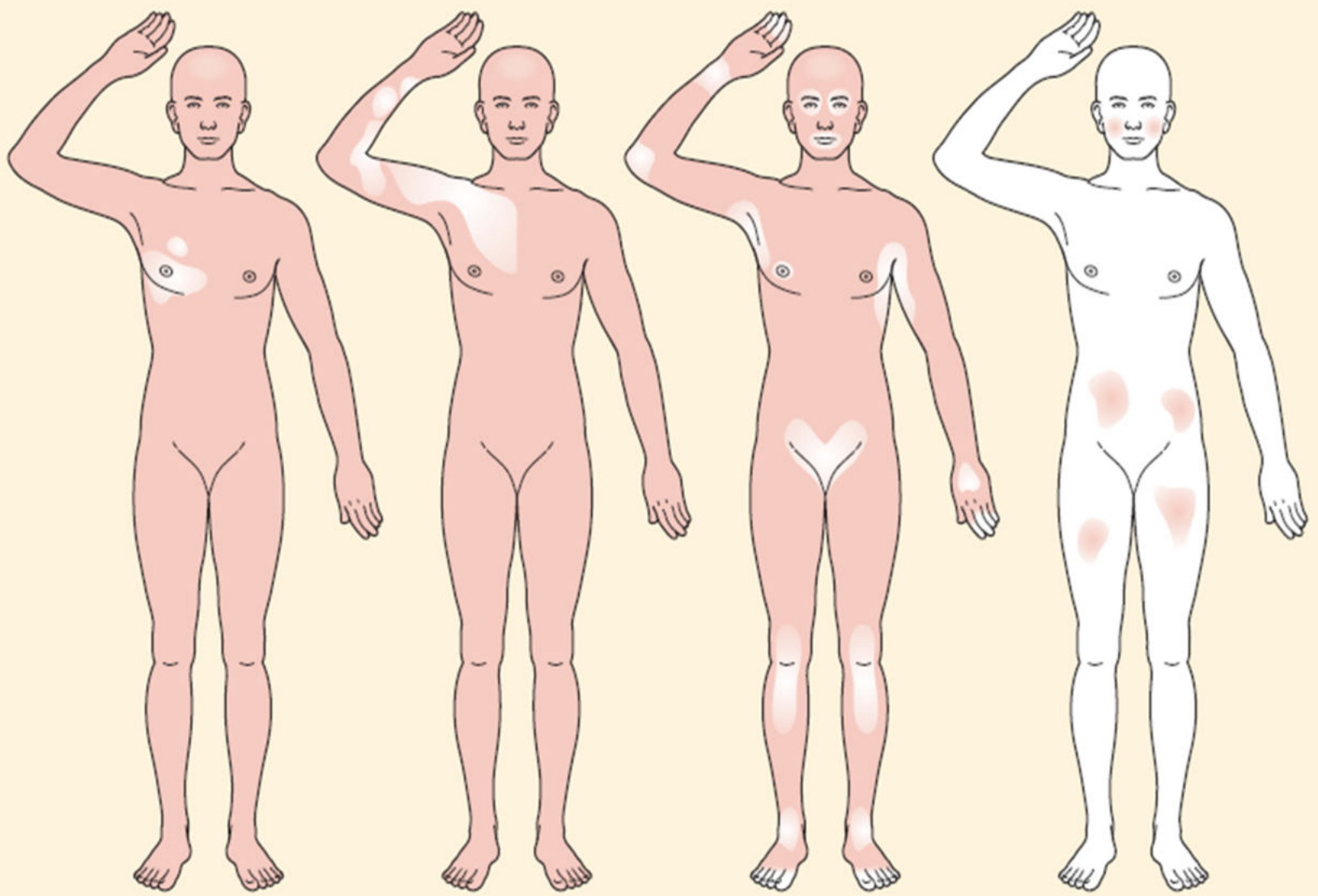
Rare forms

Unisegmental, bisegmental or multisegmental

Focal

Mucosal (only one site affected)

DISTRIBUTION PATTERN OF AMELANOTIC SKIN LESIONS IN VITILIGO



Focal

Unilateral/Segmental

Vulgaris

Universal

Classes of non-segmental vitiligo:

Generalized
Vitiligo

Acrofacial
Vitiligo

Focal
Vitiligo

Universal
Vitiligo

Mucosal
Vitiligo





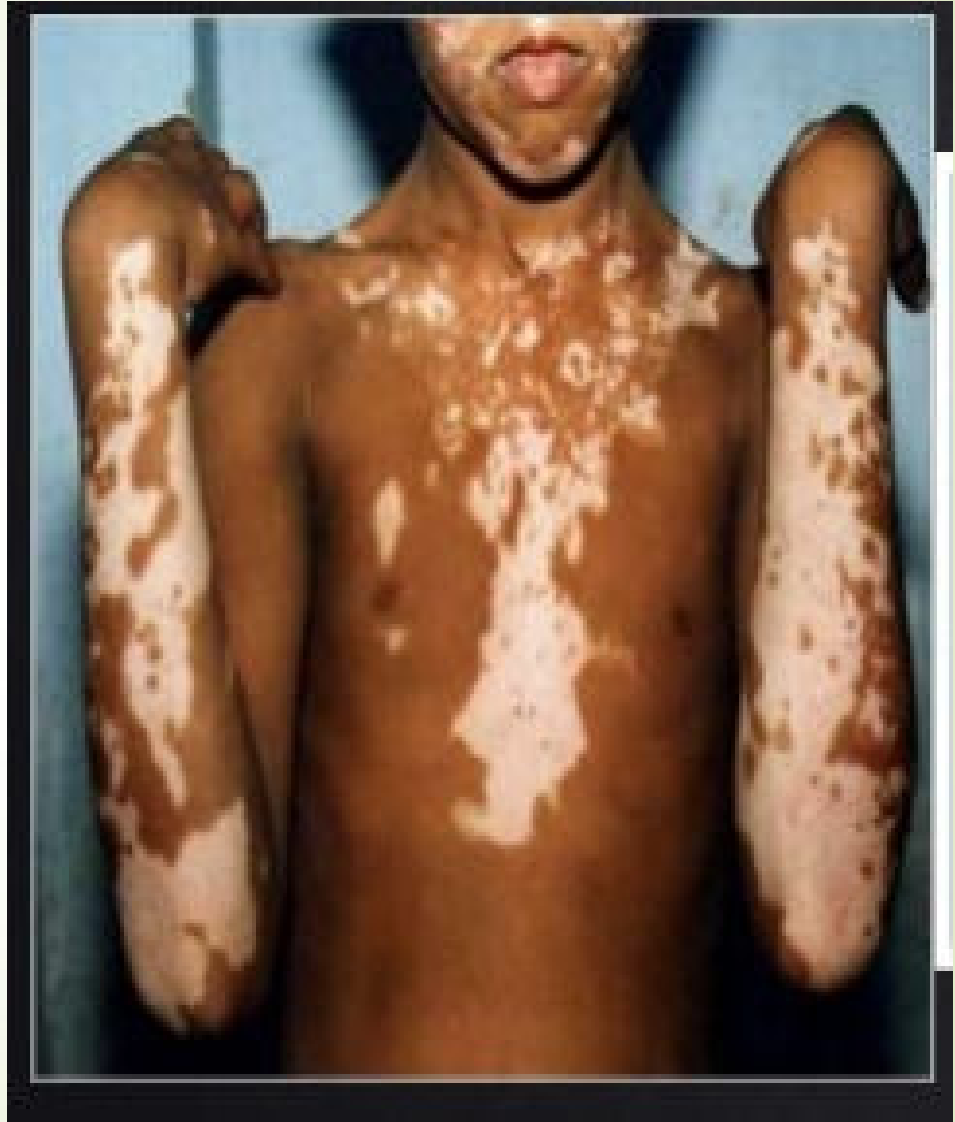
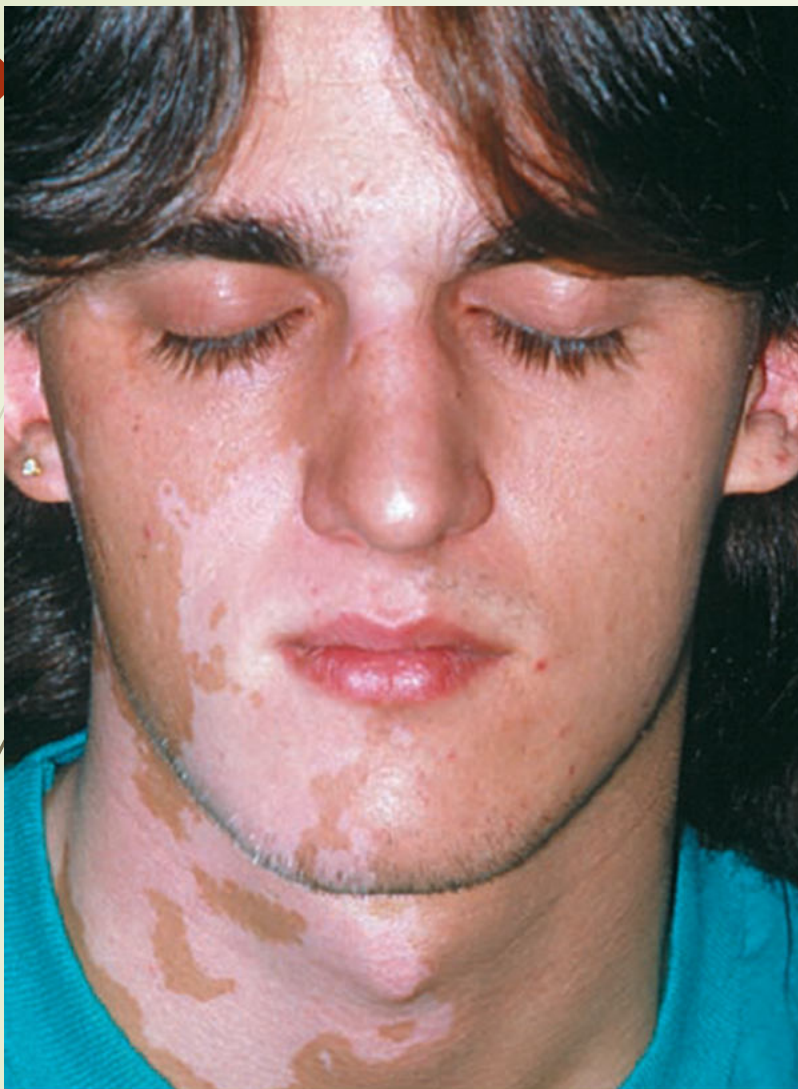
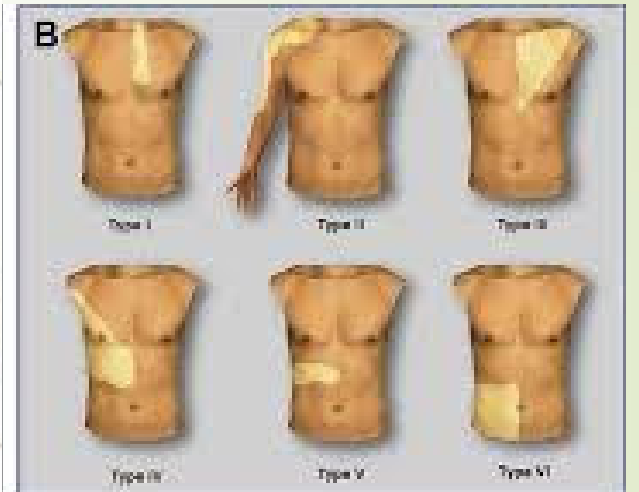
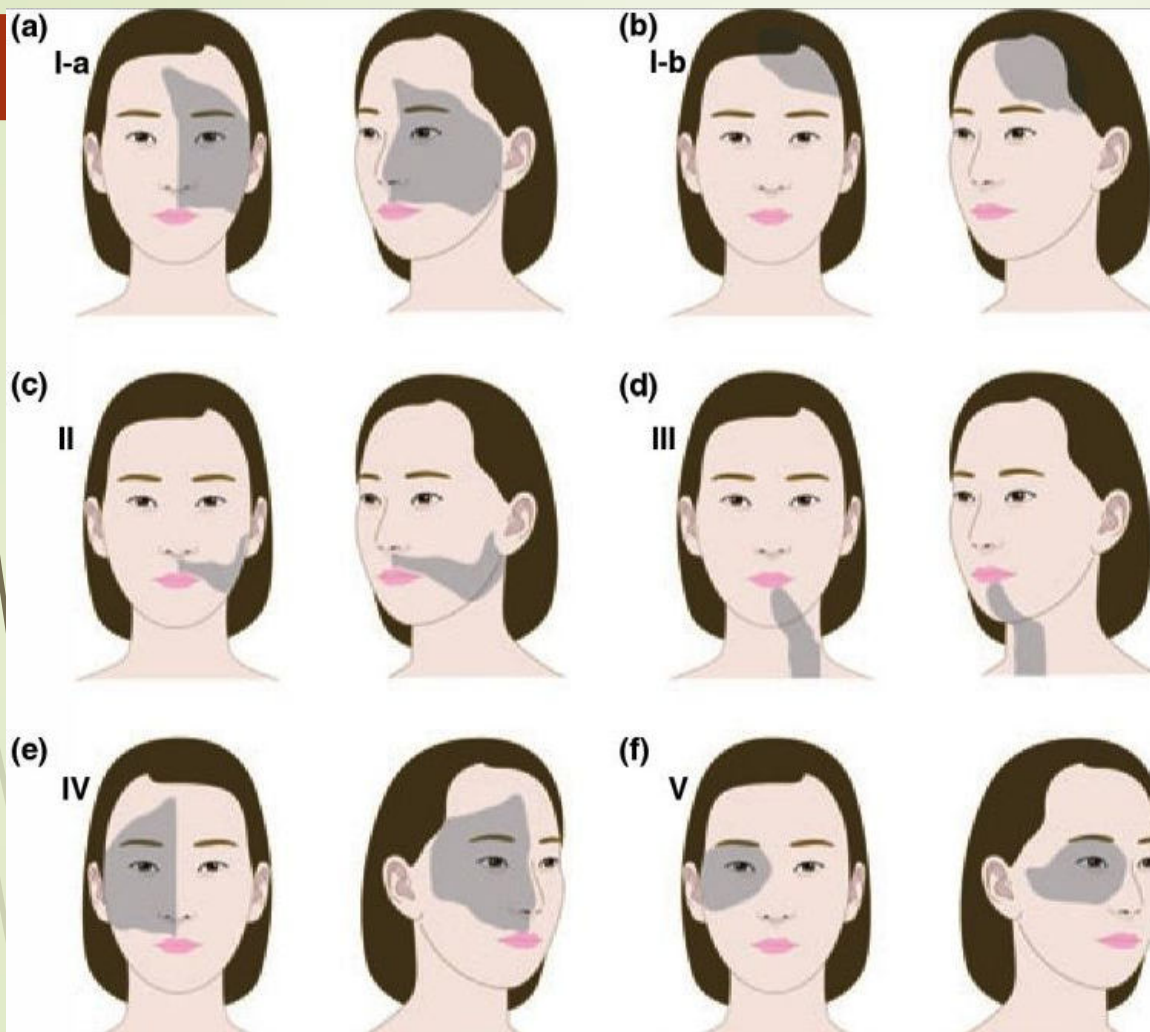


Figure 74-3 Vitiligo universalis.





WOOD'S Lamp Examination

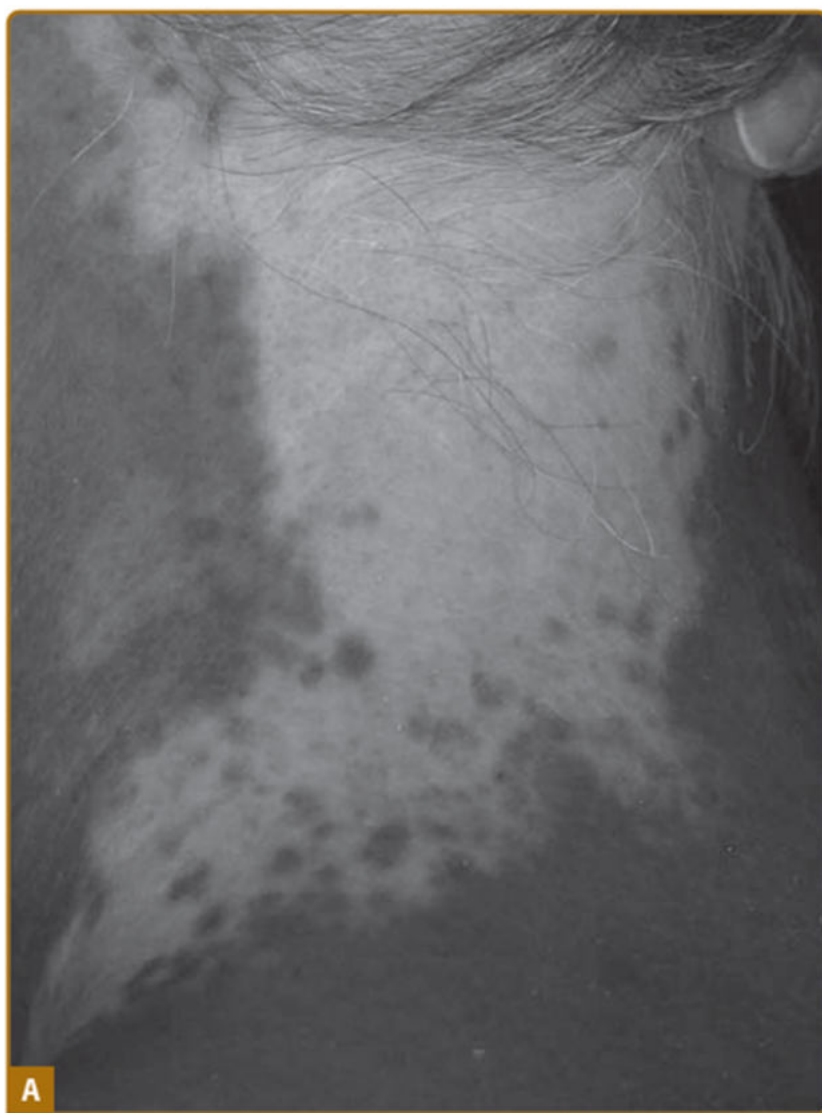
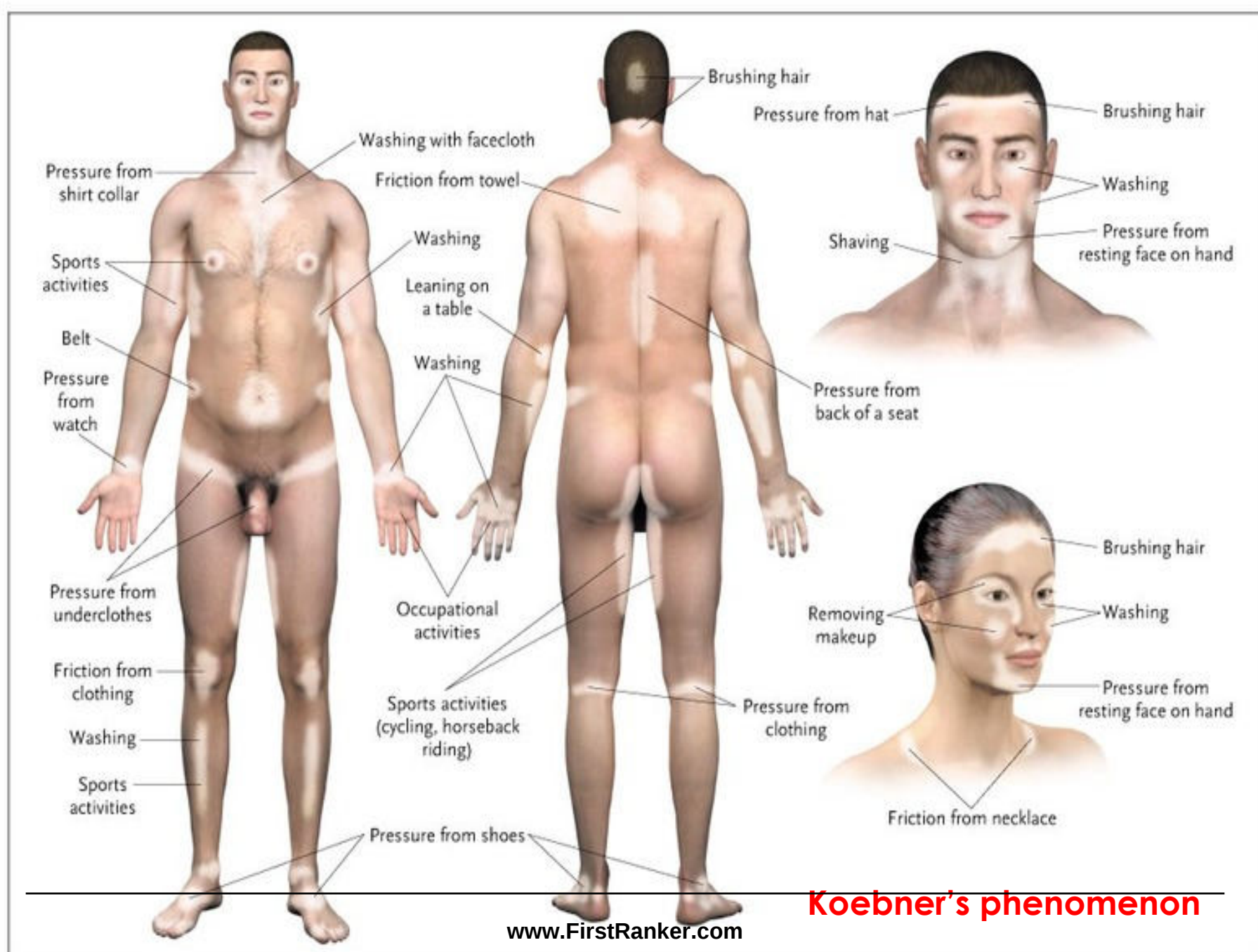
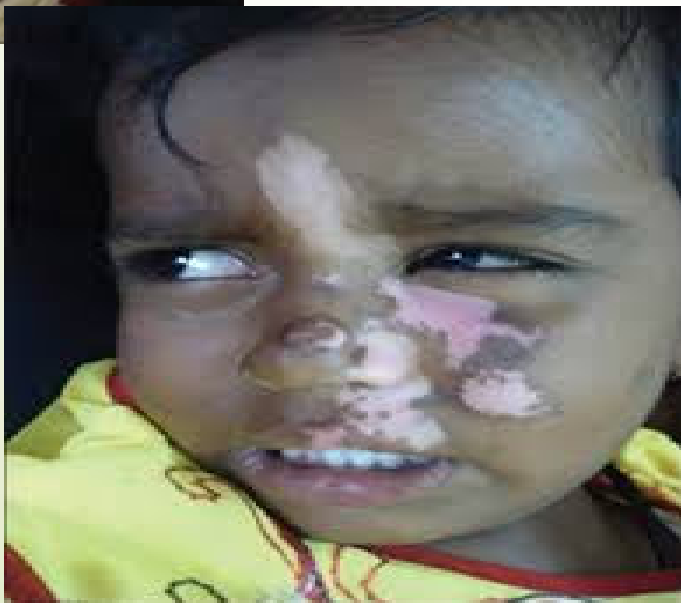


Figure 74-9 Wood's lamp examination. Wood's lamp provides bright reflection of white patches and enhanced details on intermediate pigment tones (A), as compared with white light (B). (Reprinted with permission from Taieb A, Picardo M: Vitiligo. *NEJM* 260:160-169, 2009.)



Koebner's phenomenon

Childhood vitiligo

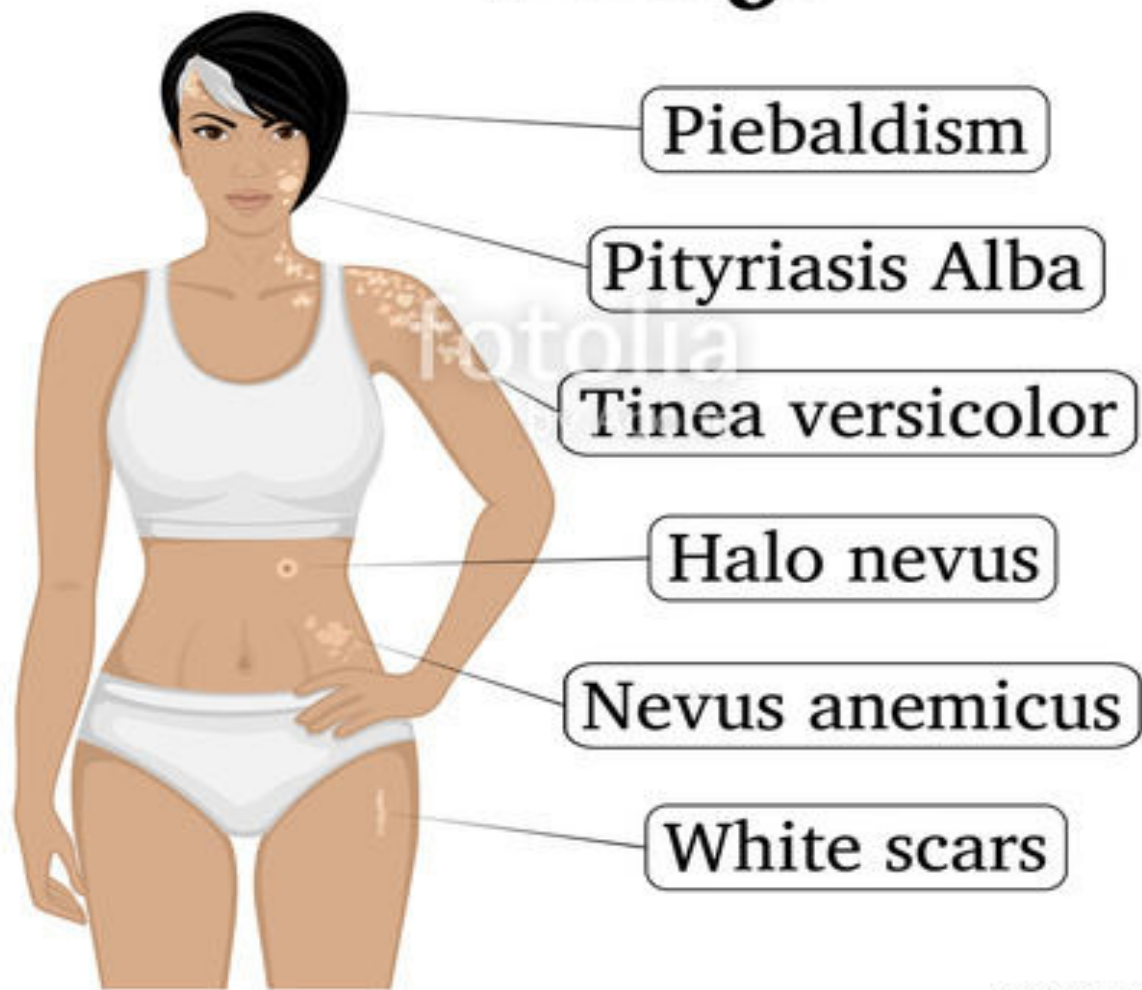


- positive family history,
- few lesions,
- segmental,
- difficult to Rx,
- better prognosis

Associations

- Dm,
- Thyroid Disorders,
- Pernicious Anemia,
- Addison's Disease

Skin conditions similar to Vitiligo



#196200778

DIFFERENTIAL DIAGNOSES FOR GENERALIZED VITILIGO

Inherited Hypomelanoses

Piebaldism
Waardenburg's syndrome
Tuberous sclerosis
Ito's hypomelanosis

Infectious Disorders

Tinea versicolor
Secondary syphilis
Leprosy (tuberculoid/borderline forms)

Postinflammatory Hypopigmentation

Discoid lupus erythematosus, scleroderma, lichen sclerosis et atrophicus, psoriasis

Paramalignant Hypomelanoses

Mycosis fungoides
Cutaneous melanoma
Autoimmune reactions to advanced melanoma

Idiopathic Disorders

Idiopathic guttate hypomelanosis
Postinflammatory pigment loss

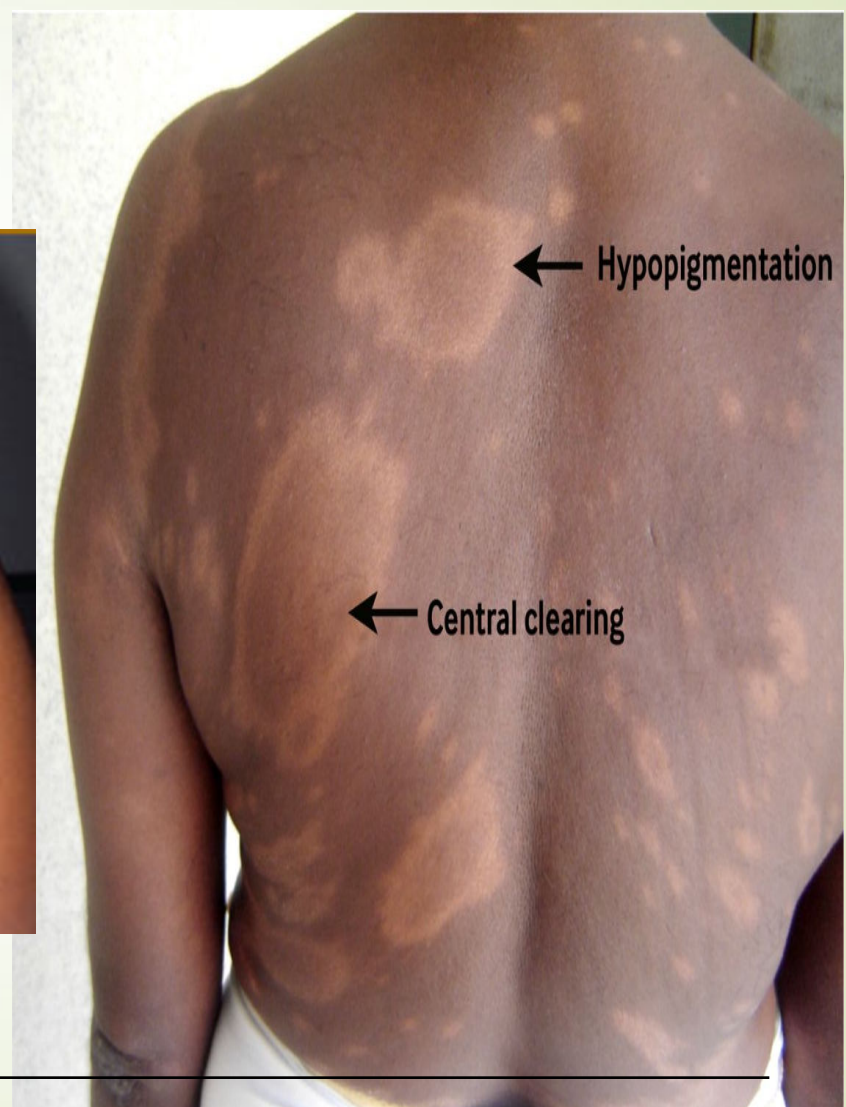
Toxin-Induced Depigmentation

Drug-induced depigmentation

Pityriasis versicolor



Pityriasis Alba



BOX 74-2 DIFFERENTIAL DIAGNOSES FOR LOCALIZED VITILIGO

NEVUS DEPIGMENTOSUS	Solitary hypopigmented macule well circumscribed with irregular borders, stable in size, solitary, most often present at birth.
NEVUS ANEMICUS	Hypochromic pale lesion with well-defined borders and irregular margins; often solitary, located on the trunk. Histology and electron microscopic examination reveal no abnormality in melanocytes or melanization.



TREATMENT : MEDICAL

TOPICAL	PHOTOTHERAPY	SYSTEMIC
POTENT TCS	PUVA (TOPICAL / ORAL)	MINI PULSE OF STEROIDS
TIMS	UVB	LEVAMISOLE
VITAMIN D ANALOGUES	EXCIMER LASER	ANTIOXIDANTS
PSEUDOCATALASE		CQ/HCQS
BASIC FIBROBLAST GROWTH FACTOR		CYCLOPHOSPHAMID E
PLACENTAL EXTRACTS		AZATHIOPRINE
PHENYLALANINE		CYCLOSPORINE

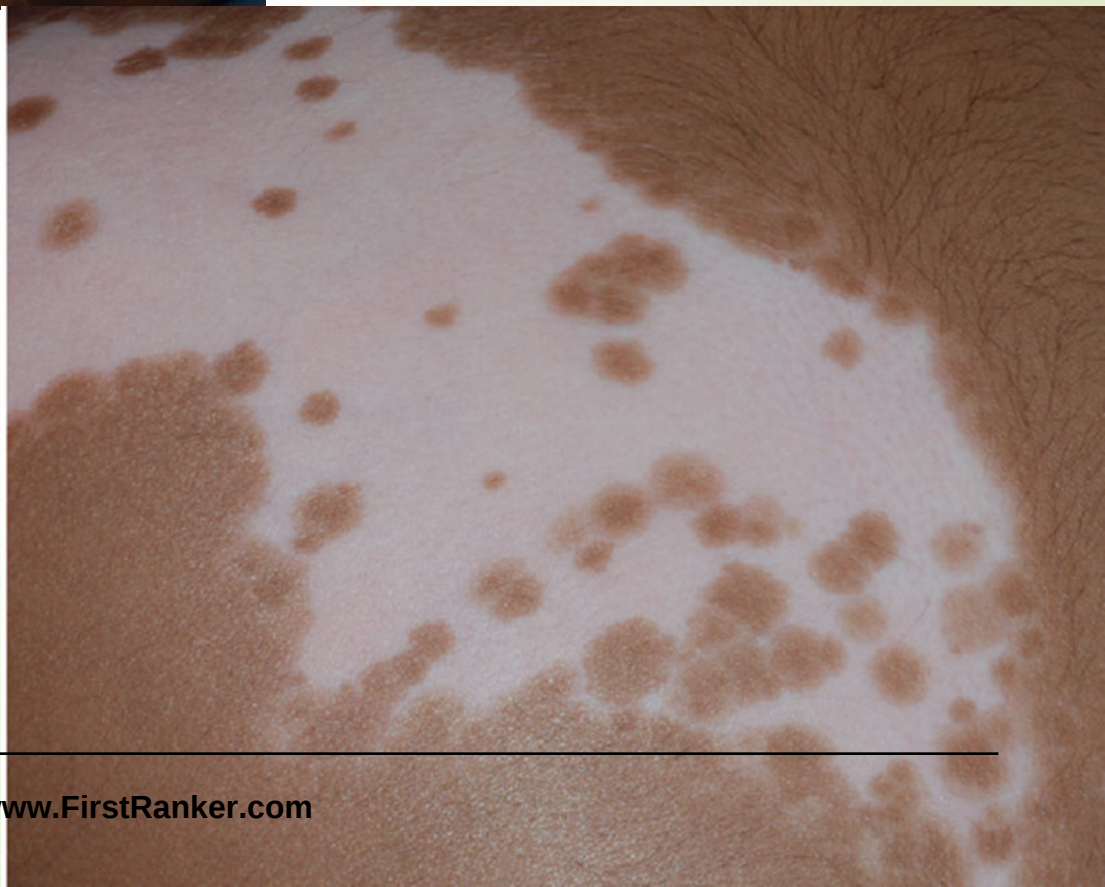
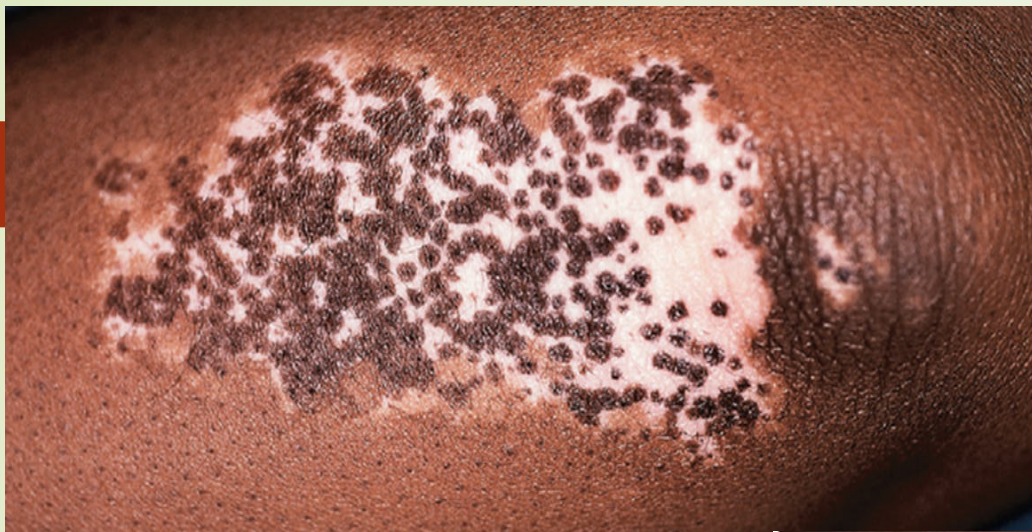
TREATMENT : SURGICAL

➤ done only in stable vitiligo + refractory to medical treatment

1. Grafting – punch, split skin thickness, blister
2. Tattooing
3. Dermabrasion
4. Melanocyte culture and transplantation

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HYPERPIGMENTARY DISORDERS

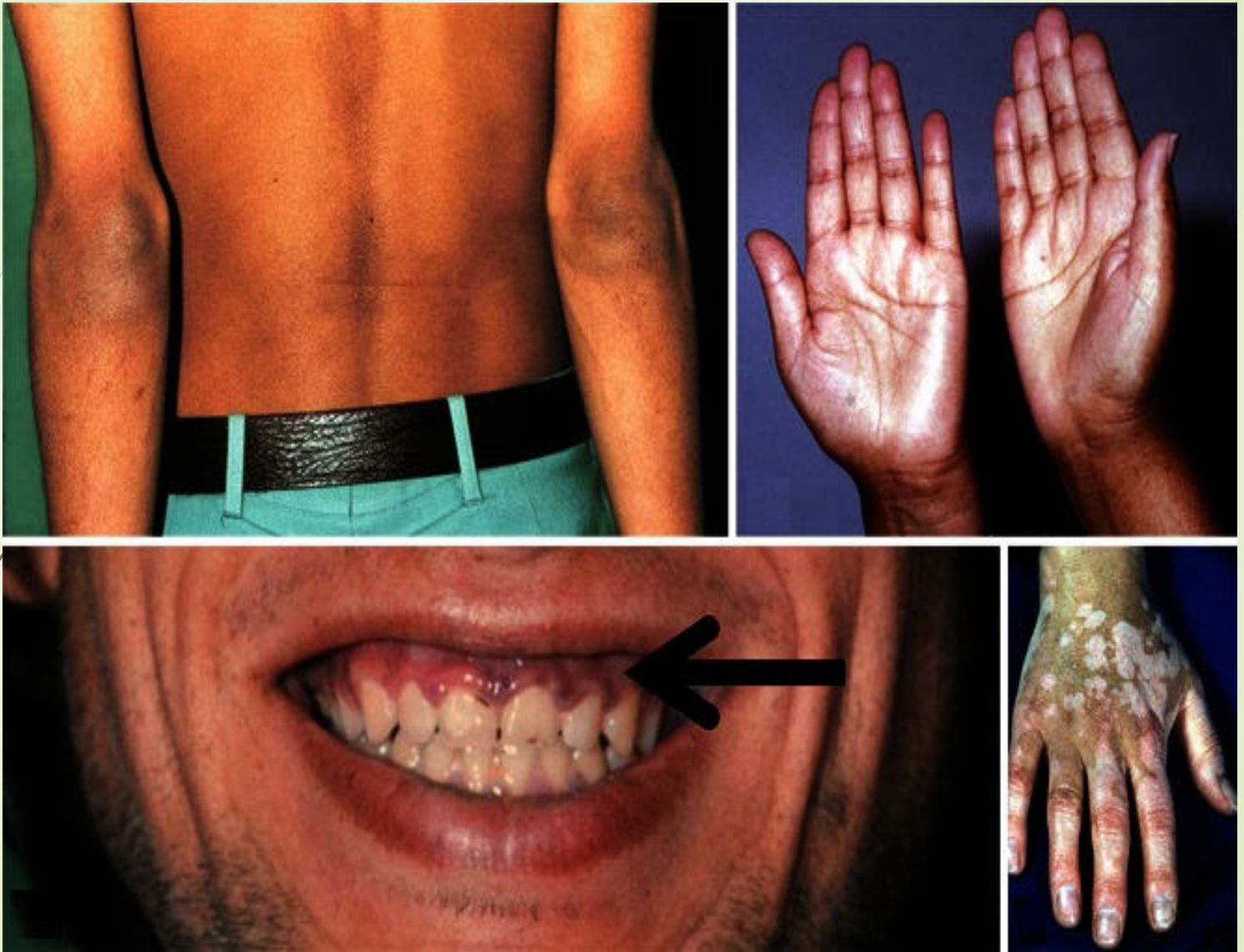
- Classification is based on level of hyperpigmentation and extent of involvement.
- **MACULAR PIGMENTATION** –
 - Small macule – freckles, lentigenes
 - Large macule – café-au-lait spots, mongolian spot, Becker's nevus
 - Irregular pigmentation – PIH
 - Generalised diffuse – tanning





DIFFUSE PIGMENTATION

- Addison's disease
- Nutritional disorders – Vit B12 deficiency, Pellagra
- Connective tissue diseases – systemic sclerosis
- Metabolic – cirrhosis, Wilson's disease
- Malignancy



➤ **DRUGS –**

Focal – FDE (barbiturates , phenolphthalein)

Diffuse – clofazamine, antimalarials, busulfan

➤ **FACIAL MELANOSIS –**

heterogenous ,multifactorial ,can be patchy and diffuse,most common over the face and neck

Eg: melasma, lichen planus pigmentosus



MELASMA



- Acquired ,circumscirbed, pigmentary disorder
- characterized by symmetrically distributed brown macules with defined borders involving the face
- CAUSES
 - sunlight ,
 - hormonal (pregnancy),
 - genetic,
 - toxic (cosmetics),
 - drugs(OCP).

Pathogenesis

- Increase in melanocyte number and activity
- increase in formation,size and melanization of melanosomes

CLASSIFICATION

1. Clinical :

Acc to distribution –

- central facial,
- malar,
- mandibular

Acc. to wood 's lamp –

- epidermal,
- dermal,
- mixed

2. Histopathological :

- epidermal,
- dermal

TREATMENT

1. Sun protection
2. Topical depigmenting agents
 - Steroids + hydroquinone + retinoids –in combination(Kligman's)
 - Azelaic acid
 - Kojic acid
 - Glycolic acid
3. Chemical peels
4. Lasers

WOOD'S LAMP



- high pressure mercury arc
- fitted with a compound filter made of barium silicate with 9% nickel oxide "**Wood's filter**".
- opaque to all light rays except a band between 320 and 400 nm with a peak at 365 nm.

Technique of Wood's lamp examination

- The lamp allowed to warm up for about 1 minute.
- Examination room perfectly dark & windowless.
- The light source 4 to 5 inches from the lesion.
- Washing the area
- Examine

Applications of Wood's lamp

➤ Tinea capitis

Table 1: Fluorescence characteristics of tinea capitis

Organism	Color of fluorescence
<i>Microsporum audouinii</i>	Blue-green
<i>Microsporum canis</i>	Blue-green
<i>Microsporum ferrugineum</i>	Blue-green
<i>Microsporum distortum</i>	Blue-green
<i>Microsporum gypseum</i>	Dull-yellow
<i>Trichophyton schoenleinii</i>	Dull-blue

➤ Pityriasis Versicolor

Malassezia furfur emits a yellowish-white or copper-orange fluorescence

Applications of Wood's lamp

- **Pseudomonas** species produce a pigment 'pyoverdin' or 'fluorescein' which shows green fluorescence
- **Erythrasma** - *Corynebacterium minutissimum* shows coral red fluorescence
- **P. acnes** - imparts orange-red fluorescence to the comedones
- **Melasma** - Wood's lamp can be used to determine the depth of melanin in the skin.
- Wood's lamp is therefore helpful in making a diagnosis of **vitiligo**
- Detection of excess porphyrins in the teeth, urine, stool samples, red blood cells and blister fluid in different forms of **porphyrias**

THANK YOU

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