

# **CUTANEOUS MANIFESTATIONS OF INTERNAL DISEASES**

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# Cutaneous Manifestations

- Diabetes mellitus
- Thyroid disease
- Adrenal disease
- Renal disease
- Liver disease
- Rheumatologic disease
- Nutritional disease

# Diabetes Mellitus

- Approximately **30%** of patients with DM develop skin lesions at some point
- Overall prevalence of cutaneous disorders does not differ between type I and type II diabetics

**Type I** patients get more **autoimmune** type lesions

**Type II** patients get more **cutaneous** infections

# Diabetes Mellitus

- Cutaneous lesions usually appear after the development of DM, but may be the first presenting sign
- **Four major groups of skin findings:**
  - Skin diseases associated with DM
  - Cutaneous infections
  - Cutaneous manifestations of diabetic complications
  - Skin reactions to diabetic treatment

# Necrobiosis Lipoidica (NL)

- NL is 3x more common in women.
- NL appears **earlier** (mean age 22) in **Type I diabetics** than Type II (mean age 49.)
- Begins as an oval, violaceous patch and expands slowly.
- Advancing border is red.
- Central area turns yellowish brown.
- Central area atrophies and telangiectasia become evident.
- 13% of cases progress to ulceration

# Necrobiosis Lipoidica (NL)

- Classically, NL occurs bilaterally on the pretibial or medial malleolar areas
- Not painful
- Spontaneous resolution occurs in 13-19% with residual scarring

# Necrobiosis Lipoidica (NL)



# Granuloma Annulare (GA)

- Ring of small, firm, flesh-colored or red papules
- Localized, most frequently found on lateral and dorsal surfaces of hands and feet
- Can spontaneously regress without scarring
- Scarification or cryotherapy as form of treatment



# Granuloma Annulare (GA)



# Diabetic Bullae (DB)

- **Approximately 0.5% of diabetics**
- Two types have been described
  - More frequent, non-scarring lesions with a histologic intraepidermal split without acantholysis
  - Less common, occasionally hemorrhagic bullae that heal with scarring, slight atrophy, and have a histologic subepidermal split
- Painless bullae on non-inflamed base that appear suddenly
- Most common on the dorsa and sides of lower legs and feet, sometimes with similar lesions on the hands and forearms
- Bullae contain clear, sterile fluid

# Diabetic Bullae (DB)

- Bullae tend to heal spontaneously in 2-5 weeks
- Diagnosis of exclusion
- **DDx:** bullous pemphigoid, epidermolysis bullosa acquisita, porphyria cutanea tarda, bullous impetigo, erythema multiforme
- May recur in the same or new locations

# Diabetic Bullae (DB)



# Acanthosis Nigricans (AN)

- Seen in situations of insulin resistance
- Carcinomas, especially of the stomach Secondary to drugs (nicotinic acid, estrogen, or corticosteroids)
- Pineal tumors
- Other endocrine syndromes (PCOS, acromegaly, Cushing's disease, hypothyroidism)
- Obesity

# Acanthosis Nigricans (AN)

- May be related to insulin binding insulin-like growth factor receptors on keratinocytes and dermal fibroblasts, thus stimulating growth
- Hyperpigmented, velvety plaques in body folds, mostly axillae and neck
- Can also present on groin, umbilicus, areolae, submammary areas, and on the hands



# Acanthosis Nigricans (AN)

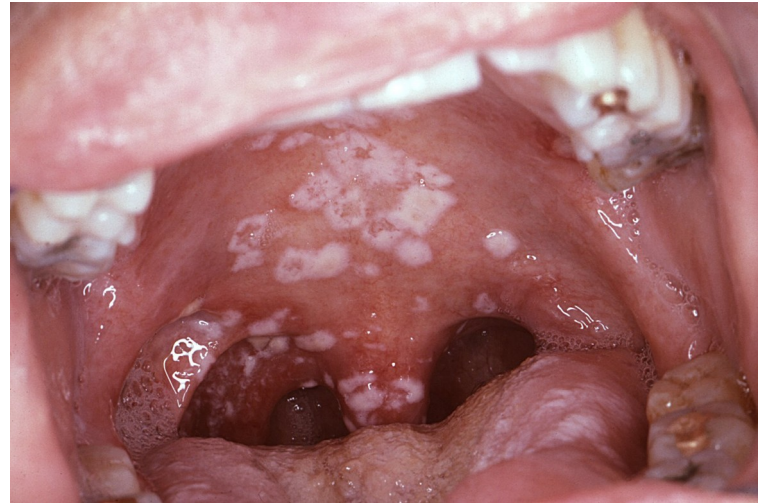


# Skin Infections in DM

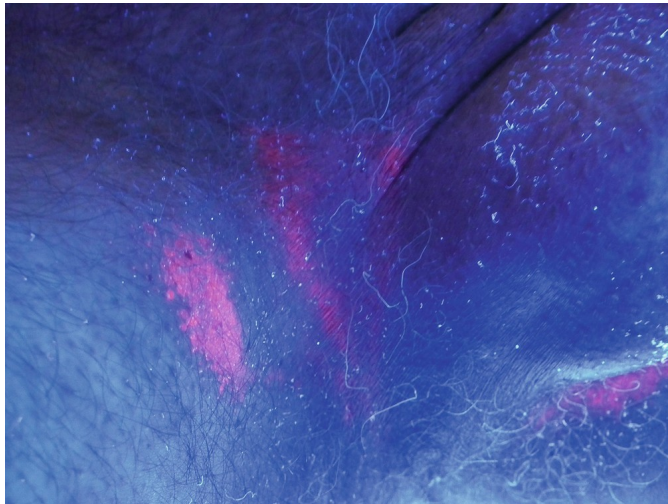
- Occur in 20-50% of poorly controlled diabetics
- More common in Type II
- May be related to
  - Abnormal microcirculation
  - Hyperglycemia
  - Neuropathy
  - Decreased phagocytosis
  - Impaired leukocyte adherence



# Candidiasis



# Bacterial Infections



# Diabetic Dermopathy (DD)

- Pigmented pretibial papules
- Most common cutaneous manifestation of diabetes
- Benign asymptomatic red brown macules on shins
- Probably post microtraumatic
- No treatment needed

# Diabetic Dermopathy (DD)



# Cutaneous Manifestations of Diabetic Complications

- Peripheral neuropathy leads to unnoticed trauma
- Vascular complications may lead to ulcers and complicate ulcer healing
- Risk of amputation goes up 8x once these develop

# Cutaneous Reactions to Diabetic Treatment

## Allergy

- May be local or systemic and usually occurs within the first month of therapy
- Erythematous or urticarial pruritic nodules at the site of injection

## Lipoatrophy

- Circumscribed depressed areas of skin at the insulin injection site 6-24 months after starting insulin

## Lipohypertrophy

- Soft dermal nodules that resemble lipomas at sites of frequent injection
- May be a response to the lipogenic action of insulin

# Thyroid Diseases

- Hyperthyroidism
- Hypothyroidism

# Thyroid Hormones and the Skin

- Thyroid hormones play a pivotal role in the growth and formation of hair and sebum production
- Thyroid hormones stimulate epidermal oxygen consumption, protein synthesis, mitosis, and determination of epidermal thickness
- There is increased cutaneous blood flow and peripheral vasodilation



# Hyperthyroidism

- Skin is usually warm, moist, and smooth
- Facial redness (flushing)
- Palmar erythema
- Hyperpigmentation, esp. creases of palms and soles  
**(not mucous membranes)**
- Hair is fine and friable, hair loss may be excessive
- History of early graying
- Hyperhidrosis, particularly of palms and soles
- **Plummer's nail:** concave contour, distal onycholysis

# Scleromyxedema

- Numerous firm white, yellow, or pink papules on face, trunk, axillae, and extremities
- Lesions result from accumulation of hyaluronic acid in the dermis, accompanied by large fibrocytes

# Scleromyxedema



# Hypothyroidism

- Skin is cool, dry, and pale.
- Pallor results from cutaneous vasoconstriction and increased deposition of water and mucopolysaccharides in the dermis, which alter the refraction of light
- Carotenemia (from decreased hepatic conversion of beta carotene to Vit A) gives skin yellowish hue (palms, soles, nasolabial folds)
- Hair is dry, brittle, coarse with partial alopecia
- Loss of hair from lateral 1/3 of eyebrows (lateral superciliary madarosis)  
**Sign of Herthoge**
- Hair growth slows down, the proportion of telogen hair is increased
- Myxedema (mucopolysaccharide deposition)

**These changes normalise with normalization of thyroid hormone levels**

# Adrenal Insufficiency

- Increased stimulation of melanocortin-2 receptor by ACTH itself
- Pigmentation is maximal over photoexposed areas, **also mucuos membranes**, palmar creases, areas subject to friction, genitalia, areola, axillae, perineum as well as in scars.
- Nails-longitudinal melanonychia

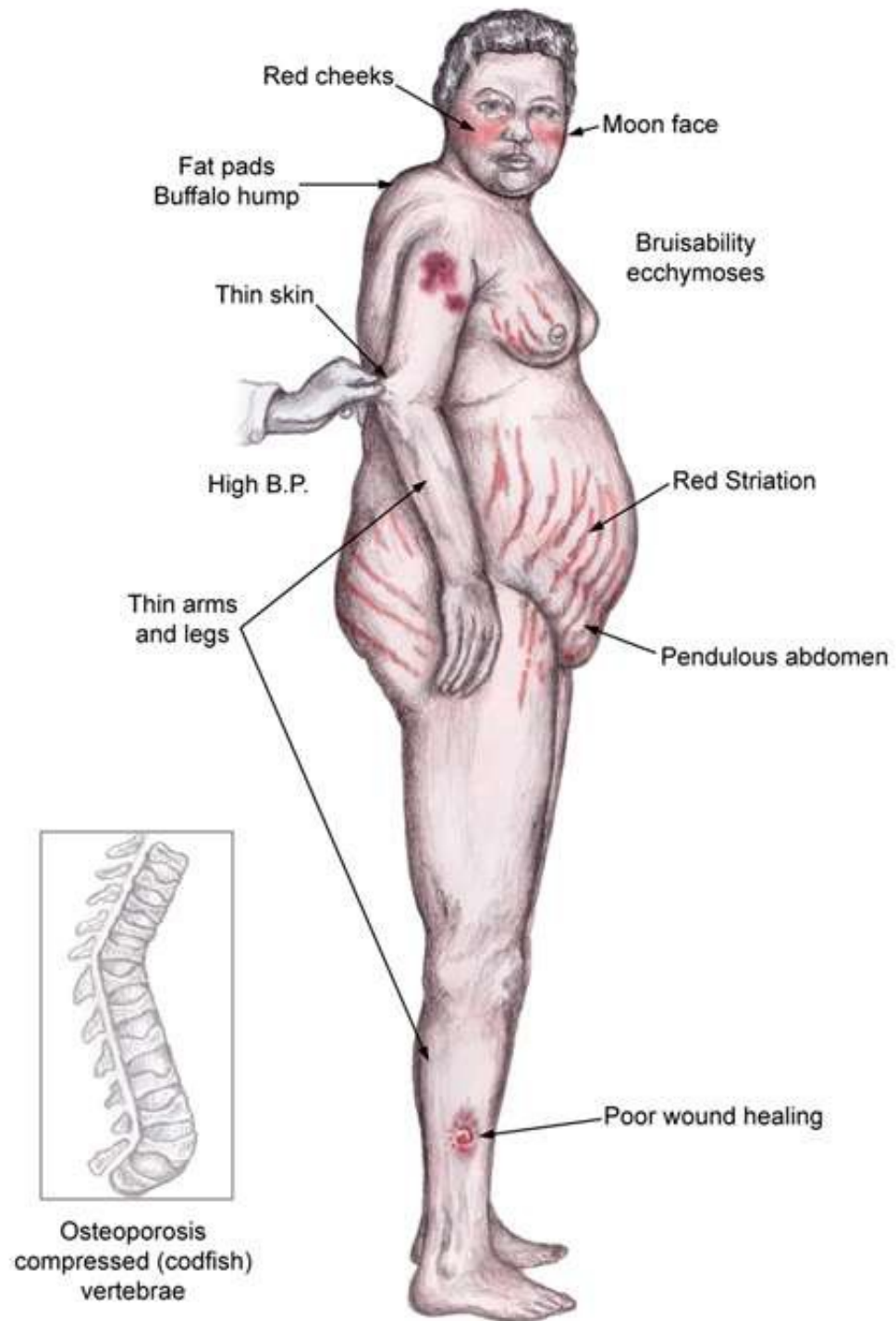


# Adrenal Insufficiency



# Hypercorticism

- Truncal obesity
- Buffalo hump
- Moon facies
- Slender limbs
- Cutaneous atrophy and telangiectasias
- Fragility with purpura
- Poor wound healing
- Acneform eruptions
- Hirsutism
- Cigarette paper like wrinkling of skin on dorsum of hands (liddle's sign)
- Livid striae on abdomen, breasts, proximal part of limbs





# Renal Disease

- Uremia
  - Xerosis
  - Pruritus
  - Pigmentary alterations
  - Purpura
  - Bullous disease of dialysis
  - Calcinosis cutis
- Transplant patients
  - Malignancies
  - Infections

# Liver Disease

- Jaundice
- Spider angiomas
- Palmar erythema
- Pruritus
- Xanthoma
- Lichen planus

# Liver Disease



# Rheumatologic Disease

- Systemic scleroderma
  - Symmetrical thickening, tightening, induration of skin of digits and dorsal hands; may affect entire extremity and involve face and torso
  - Sclerodactyly: Madonna fingers
  - Digital pitted scars or loss of finger pad soft tissue
  - Bibasilar pulmonary fibrosis

# Rheumatologic Disease

