The Skin & Diabetes Mellitus

1. **Necrobiosis lipoidica.**
   - Less than 1% of diabetics have necrobiosis, but most patients with necrobiosis will have diabetes. Some of the remaining few will become diabetic later.
   - The lesions appear as one or more shiny, atrophic and brown red or slightly yellow lesions on the front of shins. The underlying blood vessels are easily seen through the atrophic skin and the margin may be erythematous or violet.
   - Minor knocks can lead to slow-healing ulcers.
   - No treatment is reliably helpful.

2. **Granuloma annulare.**
   - The cause of granuloma annulare is not known, the association with diabetes mellitus applies only to a few adults with extensive lesions.
   - Clinically, the lesions often lie over the knuckles, composed of dermal nodules fused into a rough ring shape.
   - On the hands the lesions are skin-coloured or slightly pink; elsewhere a purple colour may be seen.
   - Lesions tend to go away over the course of a year or two.
   - Stubborn ones respond to intralesional triamcinolone injections.

3. **Diabetic dermopathy:** In about 50% of Type I diabetics, multiple small (0.5–1 cm in diameter) slightly sunken brownish scars can be found on the limbs, most obviously over the shins.

4. **Diabetic bullae:** Non-inflammatory, spontaneous, painless blisters involving lower lings and may reach 10 cm or more in diameter.

5. **Carotenosis:** Yellowish discoloration of the skin, especially the palms and sole

6. **Stiff thick skin (diabetic sclerodactyly or cheiroarthropathy)** on the fingers and hands, demonstrated by the ‘prayer sign’ in which the fingers and palms cannot be opposed properly.

7. **Atherosclerosis with ischaemia or gangrene of feet.**

8. **Neuropathic foot ulcers.**

9. **Predisposition to certain infections:** candidiasis, staphylococcus infection, mucormycosis, group B streptococcal infection, nonclostridial gas gangrene, malignant external otitis resulting from pseudomonas.

10. **Others:**
    - Erysipelas-like erythema of the legs or feet.
    - Sweating disturbances.
    - Rubeosis of the face.
    - Lipoatrophy lipohypertrophy at sites of insulin injection. -Skin tags.
    - Vitiligo.
    - Eruptive xanthomas.

The Skin in Liver Disease

1. **Pruritus.** This is related to obstructive jaundice and may precede it.

2. **Skin pigment changes:**
   - **Jaundice:** affects sclera, palate and become generalized.
   - **Carotenemia** is similar to jaundice but not affect the sclera.
   - **Muddy gray hyperpigmentation** due to hypermelanosis with normal numbers of melanocytes.
   - **Spotty hypomelanosis** on the back, buttocks and thigh.
3. **Vascular changes:**
   - Spider angioma.
   - Palmer erythema (liver palm).
   - Paper money skin; diffusely scattered tiny telangiectasias.
   - Purpuric lesions due to poor nutrition in alcoholic liver disease.
   - Deficiency of vitamin K may lead to ecchymosis.
   - Coiled varicose veins around the umbilicus.

4. **Lichen planus.**
5. **White nails.** These associate with hypoalbuminaemia.
6. **Porphyria cutanea tarda.**
7. **Xanthomas.** In primary biliary cirrhosis.
8. **Hair loss and generalized asteatotic eczema** may occur in alcoholics with cirrhosis who have become zinc deficient.

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### The Skin in Renal Disease

1. **Pruritus.**
2. **Dry skin,** due to decrease in size of eccrine glands and diuretic use.
3. **Pigmentation.** A yellowish eryth color and pallor from anemia
4. **Half-and-half nail.** The proximal half is white and the distal half is pink or brownish.
5. **Perforating disorders.** Small papules in which collagen or elastic fibres are being extruded through the epidermis.
6. **Pseudoporphyria**
7. **The skin changes of the conditions leading to renal disease.** For example, leucocytoclastic vasculitis, connective tissue disorders, Fabry’s disease.
8. **Urea frosting,** crystalline urea deposited on the skin, is rare.
9. **Calcification and calciphylaxis.**
10. **Purpura** due to thrombocytopenia

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### The Skin & Internal Malignancy

- Obvious skin signs can be seen if a tumour invades the skin, or sends metastases to it; but there are other more subtle ways in which tumours can affect the skin.
- Sometimes they act physiologically, causing, for e.g.,
  - The acne seen with some adrenal tumours,
  - Flushing in the carcinoid syndrome,
  - Jaundice with a bile duct carcinoma.
- However, the presence of some important conditions should alert the clinician to the possibility of an underlying neoplasm.
  1. **Acanthosis nigricans:** Velvety thickening and pigmentation of the major flexures. Setting aside those cases caused by obesity, by diabetes and characterized by insulin resistance, or by drugs such as nicotinic acid used to treat hyperlipidaemia, the chances are high that a tumour is present, usually within the abdominal cavity.
  2. **Erythema gyratum repens:** Is a shifting pattern of waves of erythema covering the skin surface and looking like the grain on wood.
  3. **Acquired hypertrichosis lanuginosa** is an excessive and widespread growth of fine lanugo hair.
4. *Necrolytic migratory erythema* is a figurate erythema with a moving crusted edge. When present, usually with anaemia, stomatitis, weight loss and diabetes, it signals the presence of a glucagon-secreting tumour of the pancreas.

5. *Bazex syndrome* is a papulosquamous eruption of the fingers and toes, ears and nose, seen with some tumours of the upper respiratory tract.

6. *Dermatomyositis*, other than in childhood.

7. *Generalized pruritus*. One of its many causes is an internal malignancy, usually a lymphoma.

8. *Superficial thrombophlebitis*. The migratory type has traditionally been associated with carcinomas of the pancreas.

9. *Acquired ichthyosis*. This may result from a number of underlying diseases but it is always important to exclude malignancy, especially lymphomas, as the cause.

10. *Acute febrile neutrophilic dermatosis (Sweet’s syndrome)*: The classic triad found in association with the red oedematous plaques consists of fever, a raised erythrocyte sedimentation rate (ESR) and a raised blood neutrophil count. The most important internal association is with myeloproliferative disorders.

11. *Pachydermoperiostosis* is a coarsening and thickening of the skin seen in association with severe clubbing. It can be inherited as an autosomal dominant trait, or be a result of the standard causes of clubbing which include conditions such as bronchial carcinoma.

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**Xanthomas**

Deposits of fatty material in the skin and subcutaneous tissues (xanthomas) may provide the first clue to important disorders of lipid metabolism.

- **Primary hyperlipidaemias** are usually genetic. They fall into six groups, classified on the basis of an analysis of fasting blood lipids and electrophoresis of plasma lipoproteins. All, save type I, carry an increased risk of atherosclerosis—this lies their importance and the need for treatment.

- **Secondary hyperlipidaemia** may be found in a variety of diseases including diabetes, primary biliary cirrhosis, the nephrotic syndrome and hypothyroidism. The clinical patterns of xanthoma correlate well with the underlying cause. The main patterns and their most common associations are shown in the table.

<table>
<thead>
<tr>
<th>Type</th>
<th>Clinical appearance</th>
<th>Type of hyperlipidaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Xanthoma palpebrosum</td>
<td>Soft yellowish plaques on the eyelids</td>
<td>none or type II, III or IV</td>
</tr>
<tr>
<td>2.Tuberous xanthoma</td>
<td>yellow papules and nodules on the points of knee and elbow</td>
<td>types II, III, &amp; secondary</td>
</tr>
<tr>
<td>3.Tendinous xanthoma</td>
<td>subcutaneous swelling on fingers or Achilles tendon</td>
<td>types II, III, &amp; secondary</td>
</tr>
<tr>
<td>4.Eruptive xanthoma</td>
<td>sudden onset, multiple small yellow papules</td>
<td>types I, IV, V, &amp; secondary</td>
</tr>
<tr>
<td>5.Plane xanthoma</td>
<td>Yellow macules at any sites</td>
<td>type III &amp; secondary</td>
</tr>
<tr>
<td></td>
<td>Yellow palmar creases</td>
<td></td>
</tr>
<tr>
<td>6.Generalized plane xanthoma</td>
<td>yellow macules over wide areas</td>
<td>myeloma</td>
</tr>
</tbody>
</table>

**Generalized Pruritus**

Pruritus is a symptom with many causes. Itchy patients fall into two groups:

- Those whose pruritus is caused simply by surface causes (e.g. eczema, lichen planus and scabies), which seldom need much investigation.
- Those who may or may not have an internal cause for their itching, such as the following.
1. **Liver disease.** Itching signals biliary obstruction. It is an early symptom of primary biliary cirrhosis. Cholestyramine often helps cholestatic pruritus, possibly by promoting the elimination of bile salts.

2. **Chronic renal failure.** Urea itself seems not to be responsible for this symptom, which plagues about one-third of patients undergoing renal dialysis.

3. **Iron deficiency.** Treatment with iron may help the itching.

4. **Polycythaemia.** The itching is usually triggered by a hot bath; it has a pricking quality and lasts about an hour.

5. **Thyroid disease.** Itching and urticaria may occur in hyperthyroidism. The dry skin of hypothyroidism may also be itchy.

6. **Diabetes.** Generalized itching may be a rare presentation of diabetes.

7. **Internal malignancy.** The prevalence of itching in Hodgkin’s disease may be as high as 30%. The skin often looks normal. Pruritus may occur long before other manifestations of the disease. Itching is uncommon in carcinomatosis.

8. **Neurological disease.** Paroxysmal pruritus has been recorded in multiple sclerosis and in neurofibromatosis. Brain tumours infiltrating the floor of the fourth ventricle may cause a fierce persistent itching of the nostrils.

9. **The skin of the elderly** may itch because it is too dry. The search for a cause has to be tailored to the individual patient, and must start with a thorough history and physical examination. Unless a treatable cause is found, therapy is symptomatic and consists of sedative antihistamines, and the avoidance of rough clothing, overheating and vasodilatation, including that brought on by alcohol. UVB may help the itching associated with chronic renal, and perhaps liver disease. Local applications include calamine and mixtures containing small amounts of menthol or phenol. Sometimes lubricating the skin with emollients helps.

### Pyoderma gangrenosum

An inflamed nodule or pustule breaks down centrally to form an expanding ulcer with a polycyclic or serpiginous outline, and a characteristic undermined bluish edge.

The condition is not bacterial in origin but its pathogenesis, presumably immunological, is not fully understood. It may arise in the absence of any underlying disease, but tends to associate with the following conditions.

1. Ulcerative colitis.
2. Conditions causing polyarthritis, including rheumatoid arthritis.
5. Leukaemia (with a bullous form of pyoderma).

Lesions may be single or multiple. If gut disease is present then control of this will help the pyoderma. Otherwise the condition responds to systemic steroids but not to antibiotics, and lesions heal leaving papery scars.

### The Skin Changes of Pregnancy

**A. Physiological**

- A darkening of the nipples, genitals, and of a line down the centre of the abdominal wall, is often accompanied by a generalized increase in skin pigmentation.
- Sebum excretion may increase.
- Spider naevi and palmar erythema caused by high oestrogen levels.
- Stretch marks
- Skin tags.
B. Dermatoses of Pregnancy

- Itching is common in pregnancy, usually for obvious reasons such as scabies, but sometimes in association with mild cholestasis. The terminology of the more striking itchy dermatoses of pregnancy has always been confusing. We now prefer to divide them into only three main categories.

1. Pruritic urticarial papules and plaques of pregnancy (PUPPP): This usually starts in the third trimester. The urticated lesions favour the abdomen, particularly in association with stretch marks. The cause of PUPP is not known, but it is not associated with danger to the unborn child, and clears after the child is born. Treatment is symptomatic.

2. Prurigo of pregnancy. The development of many excoriated papules, which are not urticated, starts rather earlier than PUPPP. It also carries no threat to the unborn child and clears after the child is born.

3. Pemphigoid gestationis: triggered by HLA differences between the mother and the fetus. However, the autoantibodies are directed at the same antigens as those of ordinary pemphigoid. The condition may start at any time during pregnancy, or even just after childbirth, tending to start earlier in subsequent pregnancies. The itchy urticarial plaques, often annular, go on to blister. Immunofluorescence differentiates the condition from PUPPP. Systemic corticosteroids are usually required, and there may be a risk of premature delivery.

C. Effect of Pregnancy on other Dermatoses

- Candidiasis is common in pregnancy and genital warts can become unusually luxuriant.
- The effects of pregnancy on common disorders, such as atopic eczema, acne and psoriasis, are unpredictable in any individual patient, but there is an overall trend towards improvement…..

Malabsorption & Malnutrition

Some of the most common skin changes are listed in the table

<table>
<thead>
<tr>
<th>Condition</th>
<th>Skin changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnutrition</td>
<td>Itching, dryness, pigmentation, brittle nail and hair</td>
</tr>
<tr>
<td>Kwashiorkor</td>
<td>Dry red-brown hair, pigmented cracked skin</td>
</tr>
<tr>
<td>Iron deficiency</td>
<td>Pallor, itching, diffuse hair loss, koilonychia, smooth tongue</td>
</tr>
<tr>
<td>Vitamin A (retinol) deficiency</td>
<td>Dry skin, follicular hyperkeratosis, xerophthalmia</td>
</tr>
<tr>
<td>Vitamin B1 (aneurin) deficiency</td>
<td>Beri-beri edema</td>
</tr>
<tr>
<td>Vitamin B2 (riboflavin) deficiency</td>
<td>Angular stomatitis, smooth purple tongue, seborrhoic dermatitis-like eruption</td>
</tr>
<tr>
<td>Vitamin B6 (pyridoxine) deficiency</td>
<td>Ill-defined dermatitis</td>
</tr>
<tr>
<td>Vitamin B3 (niacin) deficiency</td>
<td>Pellagra (dermatitis, dementia and diarrhea)</td>
</tr>
<tr>
<td>Vitamin C deficiency (scurvy)</td>
<td>Skin hemorrhage especially around follicular keratosis containing coiled hairs, bleeding gums, edematous 'woody' swelling of limbs in elderly.</td>
</tr>
</tbody>
</table>