

SKIN

STEPS OF EXAMINATION

Step 1: Approach the patient

- Read the instructions carefully for clues
- Shake hands, introduce yourself
- Ask permission to examine him

Step 2: General inspection: you may have been given a lead in the instructions such as look at the hands or look at the face, however always start your visual survey systematically (scalp & hair → face → eyes [eyebrows & eyelids] → mouth & lips → hands & nails → arms & elbows → neck, axilla & trunk → legs & feet)

- **Scalp & hair:**
 - Psoriasis (redness and scaling at the hairline)
 - Alopecia:
 - Diffuse non-scarring alopecia (age-related hair loss, hypothyroidism, hypopituitarism, iron deficiency, cytotoxic agents)
 - Localized non-scarring alopecia (alopecia areata, fungal infection, traction alopecia in nervous children)
 - Scarring alopecia (burns, lichen planus, discoid lupus, trigeminal zoster)
- **Face:**
 - Systemic sclerosis (tight, shiny skin, mask face, beaked nose)
 - Malar (butterfly) rash (SLE)
 - Linear scleroderma (en coup de sabre)
- **Eyes (eyebrows & eyelids):**
 - Dermatomyositis (heliotrope discolouration of the eyelids with periorbital oedema)
 - Xanthelasma (familial hypercholesterolaemia – non specific)
- **Mouth & lips:** look at the lips, ask the patient to evert his lips (look at the inner side of the lips), then to open his mouth (shine your pen torch into the opened mouth), then to protrude his tongue out, then to move it from side to side (inspect the posterolateral edge of the tongue) then to touch the roof of the mouth with the tip of the tongue (inspect the under surface of the tongue and the floor of the mouth). Look for:
 - Hereditary haemorrhagic telangiectasia (Osler-Weber-Rendu syndrome)
 - Lichen planus (white lace-like network on mucosal surface)
 - Addison's (diffuse pigmentation next to the teeth)
 - Mouth ulcers (inflammatory bowel, Behcet's, celiac disease, extragenital syphilis)
- **Hands & nails:**
 - Nail pitting (psoriasis or fungal infection)
 - Onycholysis (psoriasis, fungal infection or thyrotoxicosis)
 - Periungual telangiectasias (SLE, scleroderma, and dermatomyositis)
 - Sclerodactyly (systemic sclerosis, dermatomyositis)
 - Gottron's papules (dermatomyositis)
 - Striate xanthomata (dysbetaipoproteinemia)
 - Tendon xanthomata (familial hypercholesterolaemia)
 - Skin crease pigmentation (Addison's)
 - Thin skin with bruises and/or purpura (Cushing's)
- **Arms & elbows:**
 - Psoriasis (extensor surfaces)
 - Eczema (dermatitis) (flexor areas)
 - Tendon xanthomata (familial hypercholesterolaemia)
 - Eruptive xanthomata (familial hypertriglyceridaemia, familial lipoprotein lipase deficiency, familial apo CII deficiency)
 - Tuberous/tuberoeruptive xanthomata (familial hypercholesterolaemia, dysbetaipoproteinemia)
 - Rheumatoid nodules (around pressure points, especially the elbows)
 - Gouty tophi (in the skin around the joints, particularly the hands and feet, and on the helix of the ear and the olecranon and prepatellar bursae)
- **Neck, axilla & trunk:**
 - NF 1 (Von Recklinghausen's disease): 6 or more café-au-lait patches, cutaneous neurofibromas (multiple, palpable, rubbery, cutaneous tumors), and freckling in non-sun exposed areas (axillary or inguinal)
 - Morphea: single or multiple plaques of skin induration (localized scleroderma)
 - Addison's (areolar and scar pigmentation)
- **Legs & feet:**
 - Leg ulcer (venous, ischemic, neuropathic)
 - Pretibial myxoedema (Grave's disease)
 - Psoriasis (knees, gluteal cleft)
 - Eczema (popliteal fossae)
 - Tendon xanthomata (Achilles)
 - Gouty tophi (feet and prepatellar bursae)

Step 3: Examine the lesion (or one typical lesion in pleomorphic rash) in terms of:

- **Site:** note the anatomical distribution of the lesion whether
 - Confined to a single area (morphoea, erythema nodosum, rodent ulcer, melanoma, alopecia areata)
 - Present in other areas (psoriasis, neurofibromatosis, acanthosis nigricans, dermatomyositis)
 - Widespread (drug eruption)
 - Predilection to extensor areas (psoriasis)
 - Flexor areas (lichen planus, eczema)
 - Mucous membranes (candidiasis), nails and face (tuberous sclerosis)
 - Both legs (necrobiosis lipoidica diabetorum)
 - Joints of hands, elbows and on the ears (gouty tophi)
 - Sun exposed areas (drugs, SLE)
 - Dermatomal (HZ)
- **Size & Shape**, e.g. oval, circular, annular, etc.; measures (- x -)
- **Colour**, e.g. erythematous (red) or pigmented
- **Consistency**: palpate any lesion with your finger tips to find their consistency
- **Character**:
 - **Erythema**: redness due to increased skin perfusion
 - **Purpura**: discoloration of the skin or mucosa due to extravasation of red cells (does not blanch on pressure)
 - **Petechiae**: small purpuric lesions < 2 mm in diameter
 - **Echymosis**: large extravasation of blood
 - **Telangiectasia**: permanently dilated, visible small vessels
 - **Macules**: flat, circumscribed area of discolouration, not raised above the skin – size and shape varies
 - **Papules**: raised, circumscribed, firm lesions < 1 cm in diameter
 - **Nodules**: like papules but larger > 1 cm in diameter; usually lie deeper in skin
 - **Plaques**: raised, flat-topped, disc-shaped lesion
 - **Weal**: area of circumscribed elevation (dermal oedema), white with pink margins, compressible, associated with itching and tingling; usually transient
 - **Vesicles**: circumscribed fluid containing elevation < 5 mm in diameter
 - **Bullae**: large vesicles > 5 mm in diameter
 - **Pustules**: circumscribed elevations containing purulent fluid which may, in some cases, be sterile (e.g. Behcet's)
- **Surface**
 - **Scales**: flakes of easily detached keratin (dead tissue from the horny layer) which may be dry (e.g. psoriasis) or greasy (e.g. seborrhoeic dermatitis)
 - **Crusts**: an accumulation of dried exudates
 - **Ulcers**: excavations in the skin due to loss of tissue including the epidermal surface; remember that every ulcer has a shape, an edge, a floor, a base and a secretion, and it forms a scar on healing
 - **Excoriation**: shallow linear abrasion due to scratching
- **Secondary features**, e.g.
 - Lichenification: areas of increased epidermal thickness and accentuated skin markings secondary to chronic rubbing
 - Sclerosis: induration of the dermis or subcutaneous tissues
- **Surrounding skin**, e.g.
 - Scratch marks (itching)
 - Radiotherapy field markings on the skin in the vicinity of a radiation burn
 - Paper-thin skin with purpura (corticosteroid therapy)

Step 4: Examine local lymph nodes if indicated (see Ch 17. Endocrine – Neck)

Step 5: Additional signs and associated features, e.g.

- Psoriasis: arthropathy and nail changes
- Eruptive xanthomas: scar from operative management of acute pancreatitis
- Hereditary haemorrhagic telangiectasis: GI bleeding

Step 6: Ask some questions to confirm the diagnosis (if mentioned in the instructions):

- **Scleroderma:** “Do you have any difficulty with swallowing? Diarrhoea? Bloating? Indigestion? Do you have any shortness of breath (pulmonary or cardiac fibrosis)? Dry cough? Dry eyes? Do your fingers change colour in the cold?”
- **Raynaud's:** “Do your fingers change colour in the cold or with emotion? What colour do they go? Is there a particular sequence of colours (White → Blue → Crimson red)? Is it painful? Does it improve by heat? How long have you had the trouble? What is your job (Vibrating tools)? Do you have any difficulty with swallowing (CREST)? Any Joint pains or dry eyes (connective tissue disorders)?”

Step 7: Thank the patient and cover him (her)

THEORETICAL NOTES

Skin layers:

- Inner dermis of collagen and elastic tissue lying on subcutaneous fat
- Outer continuously replenishing epidermis; extending from a basal layer of cells with scattered melanocytes to a top layer of protective keratinocytes. These continuously degenerate and slough off to be replaced by cells from beneath.
- The epidermo-dermal junction is demarcated by a basement membrane.

Onych-: prefix denoting nail(s)

Onycholysis: separation or loosening of part or all of a nail from its bed. The condition may occur in psoriasis and in fungal infection of the skin and nail bed. It is commoner in women and may return to normal spontaneously

Onychomycosis: fungus infection of the nails caused by dermatophytes or Candida. The nails become yellow, opaque, and thickened.

Paronychia (whitlow): an inflamed swelling of the nail folds. Acute paronychia is usually caused by infection with *Staphylococcus aureus*. Chronic paronychia occurs mainly in those who habitually engage in wet work; it is associated with secondary infection with *Candida albicans*. It is vital to keep the hands dry to control paronychia

Koilonychia: the development of thin (brittle) concave (spoon-shaped) nails, a common disorder that can occur with anaemia due to iron deficiency, though the cause is not known. Any underlying disease should be treated.

Xanthomas and associated dyslipidaemia

| Type of xanthomata | Site | Associated dyslipidaemia |
|--|--|--|
| ▪ Xanthelasmas (barely elevated deposits of cholesterol) | ▪ Eyelids | ▪ Familial hypercholesterolaemia (at least 50% of the patients with xanthelasma have normal lipid profiles) |
| ▪ Tendon xanthomata | ▪ Extensor tendons of the knuckles and Achilles tendons | |
| ▪ Striate xanthomata (yellow-orange lines) | ▪ Palm creases | ▪ Remnant hypercholesterolaemia (dysbetalipoproteinemia) |
| ▪ Tuberous/tuberoeruptive xanthomata (soft, painless nodules) | ▪ Elbows and buttocks | ▪ Familial hypercholesterolaemia ▪ Remnant hypercholesterolaemia (dysbetalipoproteinemia) |
| ▪ Eruptive xanthomata (small orange-red papules) | ▪ Trunk and extremities | ▪ Chylomicronaemia syndrome (familial lipoprotein lipase deficiency & familial apo CII deficiency) ▪ Familial hypertriglyceridaemia |

Examples of lesion according to anatomical distribution:

Hair & Scalp:

- **Psoriasis:** redness and scaling at the hair line
- **Alopecia:** either diffuse non-scarring alopecia (age-related hair loss, hypothyroidism, hypopituitarism, iron deficiency, cytotoxic agents), localized non-scarring alopecia (alopecia areata, fungal infection, traction alopecia in nervous children), scarring alopecia (burns, lichen planus, discoid lupus, trigeminal zoster)

Face:

- **Systemic sclerosis:** tight, shiny skin, mask face, beaked nose
- **Malar (butterfly) rash:** fixed erythematous rash (flat or raised) over the cheeks and bridge of the nose, with fine scales and may be telangiectasis (SLE). A more diffuse maculopapular rash, predominant in sun-exposed areas, is also common and usually indicates disease flare.
- **Linear scleroderma:** involves an extremity or face. Linear scleroderma of one side of the forehead and scalp produces a disfigurement referred to as “en coup de sabre” because it resembles a wound from a sword. It may be associated with hemiatrophy of the same side of the face
- **Capillary haemangioma (port wine stain):** purple birth mark on the face, may be associated with ipsilateral vascular meningeal malformation and epilepsy (Sturge-Weber syndrome)
- **Rodent ulcer (Basal cell carcinoma):** raised lesion with central ulceration and a pearly, rolled, telangiectatic tumour border (usually below the eye or on the side of the nose)
- **Lupus pernio:** dark-red discolouration of the nose (sarcoidosis)

Eyebrows & eyelids:

- **Dermatomyositis** - heliotrope discolouration of the eyelids with periorbital oedema
- **Xanthelasma** - barely elevated deposits of cholesterol on the eyelids (familial hypercholesterolaemia). Non specific sign; at least 50% of the patients with xanthelasma have normal lipid profiles
- **Zoster ophthalmicus:** HZ of ophthalmic branch of the trigeminal nerve

Lips & Mouth:

- **Hereditary haemorrhagic telangiectasia (Osler-Weber-Rendu syndrome):** autosomal dominant condition with mucosal telangiectasia; presents with GI bleeding or epistaxis. The telangiectasia also occur in the retina and brain
- **Lichen planus:** white lace-like network on mucosal surface
- **Addison's:** diffuse pigmentation next to the teeth
- **Mouth ulcers** (inflammatory bowel, Behcet's, celiac disease, extragenital syphilis)
- **Candidiasis** (white exudates inside the mouth usually associated with a disease requiring multiple antimicrobial therapy, or an immunosuppressive disorder, e.g. Leukaemia, AIDS, etc.)
- **Cheilosis:** swollen cracked bright-red lips (iron, folate, vitamin B12 or B6 deficiency)
- **Pemphigus vulgaris:** blistering of skin and mucus membrane. In half or more of patients, lesions begin in the mouth
- **HSV:** grouped and confluent vesicles with an erythematous rim on the lips. Persistent ulcerative HSV are among the most common infections in AIDS.
- **Peutz-Jeghers' syndrome:** autosomal dominant condition with brown spots on the lips, oral mucosa, around the mouth, face and occasionally elsewhere on the skin; associated with hamartomatous polyps of the small and large bowel which only rarely become malignant
- **Leucoplakia:** a thickened white patch on a mucous membrane, such as the mouth lining or uvula that cannot be rubbed off. It is not a specific disease and is present in about 1% of the elderly. Occasionally Leucoplakia can become malignant. Hairy Leucoplakia, with a shaggy or hairy appearance, is a marker of AIDS
- **Gum hypertrophy** (phenytoin, cyclosporine, AML)
- **Smooth and red tongue** (B12 deficiency)
- **Geographical tongue** (riboflavin/B2 deficiency)

Nails & Hands:

- **Nail pitting** (psoriasis or fungal infection)
- **Onycholysis**: separation or loosening of part or all of a nail from its bed (psoriasis, fungal infection or thyrotoxicosis)
- **Periungual telangiectasias**: pathognomonic signs of the three major connective tissue diseases – SLE, scleroderma, and dermatomyositis)
- **Sclerodactyly**: thickening and tightening of the digital subcutaneous tissue (systemic sclerosis, dermatomyositis)
- **Gottron's papules**: purplish discolouration seen over the knuckles (dermatomyositis)
- **Striate xanthomata**: yellow-orange lines in the palm creases (dysbetalipoproteinemia)
- **Tendon xanthomata**: extensor tendons of the knuckles (familial hypercholesterolaemia)
- **Skin crease pigmentation** (Addison's)
- **Thin skin with bruises and/or purpura** (Cushing's)
- **Lichen planus**: thinning of the nail plate with longitudinal, linear depressions. Occasionally there is destruction of the nail (pterygium)
- **Koilonychia**: thin, brittle, concave, spoon-shaped nails (Iron deficiency)
- **Paronychia (whitlow)**: inflamed swelling of the lateral nail folds (acute paronychia is usually caused by infection with *Staphylococcus aureus*. Chronic paronychia occurs mainly in those who habitually engage in wet work; it is associated with secondary infection with *Candida albicans*)
- **Periungual fibromata**: periungual fibrous hyperkeratotic outgrowths (tuberous sclerosis)
- **Dupuytren's contractures**: flexion deformity of the fingers, usually the ring and little fingers, caused by thickening and shortening of the palmar fascia (familial, alcoholism, chronic antiepileptic therapy, operators of vibrating machines)
- **Yellow nail syndrome**: nails are yellow and excessively curved. Associations include recurrent pleural effusions, chronic bronchitis, bronchiectasis, nephrotic syndrome, hypothyroidism, lymphoedema and penicillamine therapy
- **Half and half nails**: the proximal nail bed is white and distal half is pink or brown. They are associated with CRF and RA

Arms and elbows:

- **Psoriasis**: erythematous, sharply demarcated papules and rounded plaques, covered by silvery scale (extensor surfaces). Traumatized areas often develop lesions of psoriasis (Koebner or isomorphic phenomenon). The most common areas for plaque psoriasis to occur are the elbows, knees, gluteal cleft, and the scalp. Involvement tends to be symmetric.
- **Eczema (dermatitis)**: ridging, redness, scaling and papulovesicular rash, commonly over flexural skin, particularly the antecubital and popliteal fossae
- **Tendon xanthomata** (familial hypercholesterolaemia)
- **Eruptive xanthomata**: small orange-red papules on the trunk and extremities (familial hypertriglyceridaemia, familial lipoprotein lipase deficiency, familial apo CII deficiency)
- **Tuberous/tuberokeruptive xanthomata**: soft, painless nodules on the elbows and buttocks (familial hypercholesterolaemia, dysbetalipoproteinemia)
- **Rheumatoid nodules**: firm, 0.5- to 4-cm nodules that tend to localize around pressure points, especially the elbows. They are seen in approximately 20% of patients with rheumatoid arthritis and 6% of patients with Still's disease. Biopsies of the nodules show palisading granulomas. Similar lesions that are smaller and shorter-lived are seen in rheumatic fever.
- **Gouty tophi**: firm yellow papules or plaques (occasionally discharge a chalky material) due to deposition of monosodium urate in the skin around the joints, particularly the hands and feet, and on the helix of the ear and the olecranon and prepatellar bursae.
- **Lichen planus**: small, purplish, discrete, flat-topped papules, most commonly on the wrist (flexor areas). The skin lesions may occur anywhere but have a predilection for the wrists, shins, lower back, and genitalia
- **Pseudoxanthoma elasticum**: abnormal deposition of calcium on the elastic fibres of the skin, eye, and blood vessels. The primary site of involvement in the skin is the flexural areas (neck, axillae, antecubital fossae, and inguinal area). Yellow papules coalesce to form reticulated plaques, giving the plucked chicken skin appearance. Hanging, redundant skin folds develop in severe cases.
- **Olecranon bursitis**: bursitis is inflammation of a bursa, which is a thin-walled sac lined with synovial tissue. Olecranon bursitis occurs over the posterior elbow, and when the area is acutely inflamed, infection should be excluded by aspirating and culturing fluid from the bursa.

Neck, Axilla & Trunk:

- **Neurofibromatosis type 1 (Von Recklinghausen's disease):** autosomal dominant disease caused by Mutation of the NF1 gene on chromosome 17. Major features include the presence of 6 or more café-au-lait patches, cutaneous neurofibromas (multiple, palpable, rubbery, cutaneous tumors), freckling in non-sun exposed areas (axillary or inguinal), hamartomas of the iris (Lisch nodules), and pseudoarthrosis of the tibia. Neurofibromas are benign peripheral nerve tumors composed of proliferating Schwann cells and fibroblasts. Patients with NF1 are at increased risk of developing nervous system neoplasms, including plexiform neurofibromas, optic gliomas, ependymomas, meningiomas, astrocytomas, and pheochromocytomas. NF2 is characterized by the development of bilateral vestibular schwannomas in >90% of individuals who inherit the mutation of the NF2 gene on chromosome 22. Multiple cafe au lait spots and peripheral neurofibromas occur rarely.
- **Morphea:** single or multiple plaques of skin induration (localized scleroderma)
- **Addison's** (areolar and scar pigmentation)
- **HZ (shingles):** unilateral vesicular eruption along the intercostals nerves (dermatomes from T3 to L3 are most frequently involved)
- **Vitiligo:** localized area of hypopigmentation as a result of loss of melanocytes, commonly associated with other autoimmune disorders (hypothyroidism, Graves' disease, pernicious anemia, Addison's disease, uveitis, alopecia areata, chronic mucocutaneous candidiasis, polyglandular autoimmune syndromes types I and II)
- **Pemphigus:** blisters over the trunk and limbs
- **Tinea (pityriasis) versicolor:** asymptomatic, well-delineated, hyperpigmented or hypopigmented macules centred on the upper trunk and upper arms. Confluent lesions may cover large areas, making the border difficult to find. A fine "branny" scale or folliculitis is sometimes visible.
- **Pityriasis rosea:** multiple, round to oval erythematous patches with fine central scale, distributed along the skin tension lines on the trunk.
- **Dermatitis herpetiformis:** itchy blisters over scapulae, buttocks, elbows, knees
- **Pseudoxanthoma elasticum:** abnormal deposition of calcium on the elastic fibres of the skin, eye, and blood vessels. The primary site of involvement in the skin is the flexural areas (neck, axillae, antecubital fossae, and inguinal area). Yellow papules coalesce to form reticulated plaques, giving the plucked chicken skin appearance. Hanging, redundant skin folds develop in severe cases.
- **Acanthosis nigricans:** pigmentation and velvety thickening of the major flexures particularly the axilla, commonly associated with insulin resistance or malignancy
- **Abnormal pattern of secondary hair growth:** axillary loss in hypogonadism, or hirsutism in androgenisation, e.g. PCOS
- **Stretch marks (striae):** atrophic and silvery indicates previous distension (usually striae gravidarum, occasionally drained ascites), or purple and livid (Cushing's)

Legs & feet:

- **Leg ulcer:** venous - painless, over the gaiter area of lower leg (near the medial and lateral malleoli), ischemic (arterial) - painful, over the distal extremities and pressure points, or neuropathic - painless, over pressure areas, e.g. under the metatarsal heads or heals, commonly due to peripheral neuropathy. In DM, ischemia and neuropathy both contribute to ulceration often with superadded infection
- **Pretibial myxoedema** (Grave's disease): noninflamed, indurated plaque with a deep pink or purple color and an "orange-skin" waxy, appearance. Nodular involvement can occur, and the condition can rarely extend over the whole lower leg and foot, mimicking elephantiasis. Non pitting pretibial oedema is also seen in hypothyroidism, along with puffy face, oedematous eyelids and pallor (often with a yellow tinge due to carotene accumulation).
- **Psoriasis** (knees, gluteal cleft)
- **Eczema** (popliteal fossae)
- **Tendon xanthomata** (Achilles)
- **Gouty tophi** (feet and prepatellar bursae)
- **Lichen planus (shins)**
- **Pyoderma gangrenosum:** irregular ulcer with necrotic base, overhanging purple edge, and a peripheral erythematous halo. An estimated 30 to 50% of cases are idiopathic, and the most common associated disorders are ulcerative colitis and Crohn's disease. Less commonly, it is associated with chronic active hepatitis, seropositive rheumatoid arthritis, acute and chronic granulocytic leukemia, polycythaemia vera, and myeloma.
- **Necrobiosis lipoidica diabetorum:** painless yellowish plaques, usually bilateral, associated with DM
- **Erythema nodosum:** panniculitis characterized by tender deep-seated tender red nodules and plaques, usually located on the lower extremities. Common causes are Streptococcal infection, other upper respiratory tract infections, sarcoidosis, and inflammatory bowel disease.
- **Henoch-Schonlein (anaphylactoid) purpura:** systemic small vessel vasculitis characterized by palpable purpura (most commonly distributed over the buttocks and lower extremities), arthralgias, gastrointestinal signs and symptoms, and glomerulonephritis.
- **Erythema ab igne:** skin is dry, often with a yellow tinge due to carotene accumulation (due to sitting too close to a fire)
- **Pemphigoid:** blisters over the legs and arms
- **Keratoderma blenorragica (Reiter's syndrome):** consist of vesicles that become hyperkeratotic, ultimately forming a crust before disappearing. They are most common on the palms and soles but may occur elsewhere as well.