

Examination of skin and skin appendages

At a general view of the patient, we should note the basic properties of his/her skin, from which we can roughly estimate the hydration state, blood oxygenation, bleeding and the presence of swelling. We pay attention to the skin and do not omit to assess the skin appendages.

Skin

For the skin, we notice the **colour, presence of rashes, pathological formations and scars, bleeding, moisture and turgor.**

Colour

The colour is influenced by three pigments: melanin, carotenoids and hemoglobin - according to the richness and blood flow of the skin capillaries.

Pallor

- It occurs in anemia (other symptoms are dizziness, shortness of breath, tinnitus, tachycardia).
- It is also significant in aortic stenosis and hypotension.
- *Febris pallida* - pallor in rheumatic fever or shock; sepsis
- The color of white coffee is observed in Hodgkin's disease
- "Habitual" pallor - in which there is no anemia, but there is less blood flow to the skin capillaries
- Can occur in fainting, paroxysmal hypertension, adrenal medullary tumor (pheochromocytoma)

Cyanosis

Bluish skin discoloration caused by increased levels of reduced hemoglobin in the blood with levels above 50 g/L. Cyanosis can be categorised into 2 types:

1. **Central** - Bluish discoloration present evenly over the entire body area caused by poor oxygenation of blood cells in the lungs or due to low partial pressure of oxygen in the air:
 - Oxygen saturation of the blood is also reduced during pulmonary congestion
 - As well as in congenital heart defects with a right-to-left short circuit
2. **Peripheral** - Bluish discoloration only on the peripheral parts of the body (nose, lips, auricles) caused by increased loss of oxygen from the blood during slow blood flow through the blood capillaries (*stagnant hypoxia*)
 - The local type of peripheral cyanosis occurs in some vasoneuroses and venous occlusions



Peripheral cyanosis in ischemic lower limb disease

Other types of cyanoses:

1. *Methaemoglobin cyanosis*
 - Caused by an increase in methaemoglobin production above 15 gA., has a special brownish color
 - It is either congenital or occurs, for example, in the toxic action of phenacetin, nitrobenzene, aniline, sulfonamides; in infants in the presence of nitrates in water. Nitrates are converted into nitrites by the intestinal flora.
2. *Sulfhemoglobin cyanosis*
 - Is formed during the conversion of hemoglobin to sulfhemoglobin (5 g/L sulfhemoglobin is sufficient to cause sulfhemoglobin cyanosis)
 - Occurs when sulphides are absorbed from the gut, as is the case with persistent constipation when receiving saline laxatives

Jaundice

Yellow discoloration of the skin caused by high levels of bilirubin in the blood - approximately above 35 $\mu\text{mol/L}$. We should distinguish it from carotene overdose, which does not cause yellow discoloration.

1. With increased breakdown (hemolysis) of red blood cells (**prehepatic jaundice**)
 2. Liver cell damage such as hepatitis (**hepatocellular jaundice**)
 3. Impaired bile transport by intrahepatic and extrahepatic bile ducts (**cholestatic jaundice**)
- Subicterus - milder form of jaundice, often visible only on the sclera or detectable through laboratory findings. It is common in Gilbert's syndrome.

Flushed skin

Red diffuse staining in chromaffin cell tumors associated with liver metastasis and serotonin production (such as in Carcinoid syndrome).

Flushed skin could also be influenced by emotions, warming of the body and alcohol intoxication.

Erythema

Erythema (redness) can be generalised or localised as a result of inflammatory response.

Pigmentation

Hyperpigmentation

- Increased melanin deposition in the skin and mucous membranes in Addison's disease - gray-brown skin discoloration occurs first in places exposed to sunlight or pressure (in the face, especially around the eyes, on the neck, in the palm lines)
- Pigmentation in Addison's disease is caused by melanophores stimulating ACTH (adrenocorticotrophic adrenal hormone)
- Eyelid pigmentation is associated with increased thyroid activity
- Brown spots appear on the face during pregnancy (*chloasma gravidarum*) and there is increased pigmentation of the nipples and linea alba
- Increased pigmentation during sunbathing (*chloasma solare*), pigmented spots on the face and hands in the elderly.



Jaundice skin discoloration and sclera

Depigmentation

Depigmentation refers to the loss of melanin in the skin. It could be localised or diffused:

- Local - Vitiligo, leucoderma
- Diffuse - Albinism

Swelling

The skin is tense and the pressure at the swelling site creates a dimple that persists even after the pressure is removed.

- Can be **localised** or **generalised**
- Anasarca refers to a severe and generalised form of edema, with swelling throughout the body and could involve not only the tissues but also body cavities
- We monitor swelling of the limbs, which usually occurs in chronic heart failure, chronic venous insufficiency, inflammatory conditions and orthopedic defects



Hyperpigmentation in Addison's disease

Bleeding

Petechiae are small protrusions in the skin (such as in thrombocytopenia, vascular disorders)

- Tiny **hemangiomas** must be distinguished from petechiae. Petechiae are always at the level of the skin, hemangiomas are vascular formations prominent above the skin.

Purpura occurs when petechiae unite into larger areas, in bleeding conditions caused by a disorder of the vascular wall (vascular purpura).

Ecchymoses cover a larger area than purpuras.

We can also assess for **hematoma**, which is localised bleeding outside of the blood vessels that could occur result from diseases or trauma.

- **Skin moisture**

The skin moisture is increased with conditions of neurosis, hyperthyroidism, and rheumatic fever.

Skin turgor

The skin turgor, or the elasticity of the skin could be used to assess the dehydration state. After pinching the skin, it should return back to its original position within one or two seconds. A delayed time suggests poor skin turgor and dehydration.

Temperature

- Warm, moist skin with thyrotoxicosis
- Coarse, cold in myxedema

Spider veins

- Could be associated with liver cirrhosis, mainly in the upper chest

Skin rashes

- May be related to an infectious disease (smallpox, rubella, measles, mumps)
- May occur as part of an allergic reaction (urticaria) - also known as 'hives', characterised by itchy, red, raised skin bumps

For internal diseases:

- It is sometimes present in systemic disease (eg, a typical butterfly rash in systemic lupus erythematosus).
- **Erythema nodosum** occurs in sarcoidosis, tuberculosis, rheumatic fever and in infections caused by beta-hemolytic streptococcus
 - These are flat spots of violet color, up to about 2 cm in size, stiffer to the touch and very sensitive
 - They appear especially above the extensors of the lower limbs
- **Herpes zoster (shingles)** - manifests itself as the sowing of blisters most often in the intercostal spaces and is often accompanied by neuralgia in the area. It is quite common in Hodgkin's disease and chronic lymphadenosis

Pathological skin formations and scars

- Osler's nodes
 - In bacterial endocarditis,
 - They are slightly reddish, up to 1 cm in size and located mainly on the fingertips
- Small vascular ectasia occurs in Osler-Weber-Rendu. They are most often located on the lips, tongue, oral and nasal mucosa

Skin appendages

Effects on hair - mostly caused by a disorder of the endocrine glands. In women with excessive hair (chest, abdomen, face), excessive hair is referred to as **hirsutism**. Hair changes in the lower limbs can also be caused by ischemic disease of the lower limbs. The cutaneous adnexa usually disappears in connection with the administration of cytostatic treatment.

- Alopecia - hair disappearance:
 1. limited - alopecia areata - thyroid disease
 2. diffuse - alopecia difusa.

Effects on nails and face shape

Fragility and cleavage in iron deficiency anemia, myxedema and vitamin deficiencies.

- Flat to spoon-shaped - in iron deficiency anemia (sideropenic anemia)
- Nail clubbing - congenital heart defects, other causes of pulmonary hypertension , COPD

Source

- ws:Vyšetření kůže a kožních adnex



Peripheral and pretibial myxedema in a patient with thyrotoxicosis



Spider veins