

Symptoms and Syndromes

12 Jaundice

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12 Jaundice

For doctor and patient alike, the phenomenon of **jaundice** evokes the idea of a disease of the liver or of the bile ducts. Indeed, awareness of the condition of jaundice is undoubtedly as old as medical science itself. (s. pp 6, 7)

1 Definition

The term **jaundice** or **icterus** is used to depict the yellowish discolouring of the skin, mucous membranes and body fluids witnessed as a result of hyperbilirubinaemia in excess of 2.5 mg/dl, with subsequent deposition of bile pigments in tissue which is rich in elastin. In cases of severely impaired liver function or renal insufficiency, bilirubin values can rise dramatically. • The term **sub-icterus** is used to describe a low-grade icteric condition occurring in the region of the white sclera with a serum bilirubin value of > 1.8 mg/dl; for this reason, it is also known as *scleral icterus*. (s. pp 80, 99)

Jaundice is a **disorder in the metabolism of bilirubin** (s. p. 33); it is thus neither directly related to the bile acid metabolism (s. p. 35) nor to *cholestasis*. (see chapter 13)

Jaundice is a symptom and not a disease. • It can occur with and without cholestasis.

2 Localization of bilirubin

Bilirubin is a hydrophobic organic anion. It shows a varied affinity to the individual tissues, so that differentiation can be made between bilirubinophilic and bilirubinophobic tissues (F. ROSENTHAL, 1930). Above all, tissue which is rich in elastin (skin, sclera, intima of the vessel wall, ligaments) absorbs bilirubin rapidly and intensively. Jaundice is thus first manifested at the sclera, where it remains detectable longest. Subsequently, the face, chest and abdomen as well as inner organs (such as the liver) and, to a lesser degree, the extremities are the most affected areas. Cartilage and nerve tissue are rarely yellow-coloured as a result of the icteric condition, and if so, only to a minor degree. The soles of the feet and palms of the hands only show slight icteric staining, if at all. • Saliva, lacrimal fluid and gastric juice are not stained icteric-yellow. Cerebrospinal fluid occasionally contains bilirubin and takes on a yellow hue, such as in hepatic coma (D.S. AMATUZZIO et al., 1953) or Weil's disease (W.H. CARGILL Jr. et al., 1947).

In cases of obstructive jaundice, bilirubin enters the lymphatic vessels, so that the lymphatic fluid is already icteric when it enters the thoracic duct. Exudates and transudates are always yellow-coloured in a certain correlation to the serum bilirubin values, although they contain less bilirubin (in accordance with their lower protein content) than the serum itself. Due to their larger protein content, exudates are more icteric in colour than transudates. • Icteric colouring is hardly or not at all evident on paralyzed parts of the body. It would appear that bilirubin concentration also depends on normal nerve function. As a rule, jaundice is not detected in the region of an oedema (J. MEAKINS, 1927; J.H. PAGE, 1929).

3 Different shades of jaundice

The respective colouring of jaundice depends on a number of different factors. The reddish shade in hepatitis patients used to be defined as **rubin jaundice**; the lemon yellow with a reddish hue observed in haemolysis was known as **flavin jaundice** (*flavus* = Latin for *yellow*) and the greenish shade observed in long-term cases of obstructive jaundice was called **verdin** or **green jaundice**. In obstructions lasting for several months, greyish-green to greenish-black tints were observed with jaundice, resulting in the term **melas jaundice** (from the Greek word *melas*, meaning *black*). (s. p. 80) • These colour differences, as interesting as they might be in the individual case, are of little help in differentiating between the various types of jaundice — *nearly every shade is possible in every single jaundice patient!*

Differential diagnosis: Jaundice has to be clearly delimited from **carotene jaundice** or **xanthoderma**, which may appear after an abundant ingestion of carrots, blood oranges and mangoes or the use of medication and cosmetic agents containing carotene. • **Lycopenaemia** can occur after an excessive ingestion of tomatoes. • A yellowing of the skin similar to that seen with increased serum bilirubin levels can also occur after an intake of quinacrin or busulfan.

4 Clinical classification of jaundice

► The **classification of jaundice** introduced by J.W. MCNEE (1923) still holds true today. It distinguishes between (1.) haemolytic, (2.) parenchymal, and (3.) obstructive. (s. p. 6) • Equally important is the classification of jaundice put forward by H. DUCCI (1947), which comprises various forms (1.) prehepatic, (2.) intra-hepatic, and (3.) posthepatic.

Three types of bilirubin are found in the serum: unconjugated (indirect), conjugated (direct), and covalent albumin-bound bilirubin. (see chapter 3.3)

(1.) **Unconjugated bilirubin IX α** is almost insoluble in water and therefore reversibly bound to albumin in the