

## JAUNDICE AND ITS SIGNIFICANCE.

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*Definition.*—By jaundice, or icterus, is meant the presence of bile pigment in the blood, with the consequent yellowish discoloration of the skin, mucous membranes, and other tissues, and the secretions of the body. It may be an acute condition, developing rapidly, or it may be a very slow process. Jaundice is not a disease, per se, but a symptom or complication of many diseases and pathological conditions.

*Classification.*—Formerly jaundice was classified as hepatogenous and hematogenous. Under the former were grouped all the conditions of the liver and gall bladder which could cause obstruction to the flow of bile into the intestines; and under the latter, those conditions in which there was destruction of the red blood cells with yellowish discoloration of the skin, etc. It is interesting to note that it has not been very many years since the view was held that in the so-called hematogenous jaundice, the liver failed to take the bile from the blood. This view was abandoned, to be replaced by the idea that the icterus was due to hemolysis with the formation of the bile pigment in the blood itself, with the subsequent deposit of the pigment directly into the tissues. Now, we know that in those diseases in which there is destruction of the red blood cells, the liberated hemoglobin increases the amount of bile pigment, the bile becoming more viscid, and the inspissated bile plugs up the gall ducts causing bile to be dammed back into the lymphatics and into the blood; so that, in reality, the so-called "hematogenous" jaundice is partially of the obstructive type. Some authorities class those cases of jaundice in which there is hemolysis, as toxicemic; but this

term gives but little idea of the real nature of the condition.

The classification of Neusser seems to me to be the most rational, since it gives the best idea of the origin of the different types of jaundice. He defines three types, (1) *obstructive*, (2) *hemo-hepatogenous*, and (3) *hepatogenous* or "*diffusion*" jaundice.

*Obstructive jaundice* is due to an obstruction of the bile passages, either from within or without, causing the blood pressure in the portal vessels to become less than that in the bile ducts, the blood then becomes charged with bile. This is the view which is accepted by many authorities, but the theory of Eppinger seems to me to be more plausible. He maintains that the distended bile capillaries give way and permit the escape of bile into the lymphatic vessels whence it is carried into the thoracic duct and thence into the general circulation.

The bile passages become obstructed from (a) within, by gall stones, catarrhal or suppurative inflammation of the bile ducts or common duct, and by cicatricial strictures resulting from such inflammation; thick or inspissated bile, parasites (principally the ascariides), tumors within the ducts and liver, gumata, hydatid cysts and abscess of liver; from (b) without, by compression of a large number of bile ducts as in cirrhosis of the liver, by pressure upon the gall bladder or common duct from tumors of the gall bladder, duodenum, colon, pancreas, right kidney, and pyloric end of the stomach; and syphilis of the liver with contracting bands of adhesions. Fecal concretions have also been said to cause obstruction of the common duct, and spasm of

the gall duct is given as a possible cause of obstructive jaundice. The severe form of icterus neonatorum in many cases is due to congenital stenoses, or occlusion, of the bile passages.

(2) *Hemo-hepatogenous* jaundice has its origin in changes both in the blood and liver. It is dependent upon hemolysis from any cause, which on account of the free hemoglobin of the blood increases the amount of bile pigment, with the resultant thickening and stasis of bile, the ducts or common duct becoming plugged with inspissated bile, the bile is dammed back into the lymph vessels and thence into the general circulation. The principal causes of this hemo-hepatogenous jaundice are the infectious diseases that produce hemolysis, as yellow fever, malaria, and sepsis, probably Weil's disease, and poisons which destroy red blood cells, as snake venom and the chlorates. It may be also due to the absorption of pigment from extravasated blood and from extensive burns. The jaundice of pernicious anemia is of the hemo-hepatogenous type. The so-called physiological jaundice of the new born also belongs to this class.

(3) *Hepatogenous*, or "*diffusion*" jaundice, refers to those conditions of the liver in which the diseased liver cells are unable to direct all the bile into the bile capillaries. The normal liver cell has the function of directing glycogen, sugar, and urea into the blood vessels and the bile into the bile capillaries. Under certain conditions, the liver cell loses its controlling power and all of the bile does not enter the bile capillaries, but a part of it goes directly into the blood, causing a "*diffusion*" jaundice. Acute yellow atrophy of the liver, hypertrophic cirrhosis, syphilitic cirrhosis, and phosphorus and mushroom poisoning, cause jaundice of this type.

*Symptoms.*—The symptoms of jaundice depend upon the presence of bile in the blood

and the absence of bile in the intestinal tract. The most characteristic symptom is the yellowish color of the skin which varies in intensity from a light lemon yellow to a brownish yellow or saffron tint, and sometimes, in the most severe cases, to a dark brown or greenish yellow color. Large ecchymoses and purpuric spots occur in some cases and rarely there is bleeding from the mucous membranes. In long standing and severe cases, the blood coagulates very slowly, and severe or fatal hemorrhage may follow injury or operation. Pruritis is often a distressing symptom, even when no skin lesion is present; but urticaria, furunculosis, and other skin diseases may ensue. The mucous membranes first show the discolorization and jaundice may be demonstrated in the conjunctiva and mucous membranes under the tongue and of the anterior portion of the floor of the mouth, before the yellowish color of the skin appears. The secretions become colored with bile pigment, particularly that from the sweat glands, and if there is pneumonia, the sputum is yellow. Ascitic, pleuritic, and other serous effusions show the yellow color. The urine is dark, sometimes resembling dark beer, and the presence of bile pigment can be demonstrated by the various tests for bile in the urine. When the obstruction is complete, there is no bile in the intestinal tract, and the stools may be almost white or clay-colored. In hepatogenous jaundice, the feces may be normal in color or even more highly colored than usual, because the amount of bile in the intestines is normal or increased. Constipation is usual, though diarrhoea may result from absence of bile, with increased bacterial action in the intestines. Mental depression is a prominent symptom, and in the severe cases, delirium, convulsions, or coma may occur before death from cholemia. The tongue is usually coated, and, in the severe form, is dry, cracked, and brown. The pulse is low, sometimes ranging from 40 to 20. The temperature is usually

subnormal, but in the severe cases, there may be high fever. The respirations are usually slow.

*The Significance of Jaundice.*—This depends upon the causes which have been mentioned above, though it may be well to go a little into detail regarding the various conditions in which jaundice is a prominent symptom.

*Catarrhal Jaundice* or *Icterus Simplex*, as it is sometimes called, is usually an extension of an acute gastro-duodenitis into the common duct, which becomes more or less occluded from the swelling of its mucous membrane. It is usually preceded by symptoms of acute catarrhal gastritis, i. e., anorexia, nausea, vomiting, constipation, and slight fever. There is sometimes pain over the gall bladder. The jaundice usually persists for several weeks, though it is nearly always a mild affection. Catarrhal jaundice is sometimes epidemic.

Jaundice from *gall stones* is present only when the stones become impacted in the common or cystic duct, and is said to occur in about one-third of the cases. The paroxysms of gall stone colic are frequently followed, sometimes in a few hours, by a transient jaundice which may be noted only in the mucous membranes. Of course, when the stone becomes permanently impacted in the common duct, usually near the opening into the duodenum, in what is called the diverticulum of Vater, the jaundice will persist until the stone slips back into the gall bladder, passes into the intestine, or is removed by operation. The operation for gall stones, with jaundice as a symptom, should not be delayed too long, for the reason that severe jaundice predisposes to hemorrhage and shock, and, in the severe cases, even if the cause of the jaundice has been removed, there may be a sufficient degree of cholemia to cause death.

The jaundice in *Weil's Disease*, or *infective jaundice*, or bilious typhoid, as it is sometimes called, occurs after two or three days of the

premonitory symptoms of an infectious disease; i. e., malaise, headache, perhaps delirium, high fever, muscular pains, and gastro-intestinal disturbance. It is usually due to eating infected meats or drinking water which has been infected by animals dying with a similar disease.

Jaundice, with enlarged and tender liver and irregular fever, frequently indicates *abscess of the liver*, but if the tenderness is over the gall bladder, a *cholangitis* may be suspected. Jaundice, with an enlarged liver, particularly of one lobe, without tenderness and without fever, is seen in *gumma* of the liver. It should be remembered that jaundice may be due to compression of the common duct by a gumma of the pancreas or by syphilitic retroperitoneal glands. In jaundice of obscure origin, particularly if there is a history of syphilis, the iodides may determine the cause of the obstruction. Jaundice, with enlarged, smooth liver, if slight, may be due to hyperemia of the liver from *cardiac weakness*; but, if the jaundice is profound, *Hansen's* or *hypertrophic cirrhosis*, or *biliary cirrhosis* may be suspected. Jaundice, with enlarged liver and symptoms of cholemia developing in a few weeks, is significant of *acute yellow atrophy of the liver*. The jaundice associated with *malignant disease*, is usually accompanied by rapid emaciation, pain and tumor in the region of the gall bladder. The jaundice developing in a few hours, with symptoms of toxemia, may be from *snake bite*, *phosphorus*, or *mushroom poisoning*; but usually there is a history to that effect. Jaundice may also occur from *acetanilid poisoning*. Jaundice is rare in atrophic cirrhosis, though it may be present. Jaundice rarely occurs in malaria, except in *hemoglobinuria* and in *biliary cirrhosis* due to malaria, when it is profound.

*Treatment.*—Since the symptoms of jaundice are due to the presence of bile in the blood, and to the absence, or deficiency, of bile in the intestinal tract, the treatment should be

directed towards decreasing, or diluting, the toxins in the blood; and in giving a diet, and employing remedies to keep down intestinal putrefaction, which ordinarily results from the absence of bile in the intestines. Large quantities of water, preferably the alkaline mineral waters, should be given, with the idea of diluting the blood, increasing elimination of the kidney and skin, and of rendering the intestinal contents alkaline. The diet is of great importance, and should be directed to prevent intestinal fermentation. Since the bile is necessary for the emulsification of fats, foods containing fats, except milk, should be avoided. The carbohydrates should be restricted, and that which is given should be of a form which is easily digested, as rice, oatmeal, barley, and arrow root gruel. Fish and

other easily digested white meats may be given. Alcohol and the condiments should be interdicted. Milk usually agrees, particularly if diluted with lime water or the alkaline mineral waters. Daily irrigations of cold water (60 degrees F.) often are beneficial, by producing violent peristalsis, thus favoring the expression of mucous from the gall duct. Massage of the gall bladder has been used for the same purpose. Of drugs, the administration of small doses of calomel every two or three days, tends to keep down bacterial action in the intestine and seems to aid in emptying the gall duct. Of the other intestinal antiseptics, salol is perhaps best. It should be given in five grain doses every three or four hours. Phosphate of soda is also useful, particularly if there is constipation.