Present Fundamentals of Some Liver Function Tests

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It must be emphasized that every liver function test is only of supplemental nature and should be evaluated in close correspondence with results of the case history and results of the clinical examination. This is so much more important as the liver has many functions which may be involved more and less, or in a very selective way. There exist in other words no liver function test, but a series of partial tests, each of which is related to some specific function of the liver.

Chromatographic Function

One important function of the liver is to produce and excrete bile. Investigation of the serum bilirubin level and examination of the duodenal content for bile is of distinct value for diagnosis and differential diagnosis of jaundice. The same holds true for tests based on introduction of dye stuffs which are supposed to be almost exclusively eliminated by the liver with the bile. The limitation of conclusions which may be drawn from such tests must, however, be clearly understood. To illustrate this, let me refer to figure 1, 2 and 3.

Fig. 1. tends to illustrate the normal function of a liver lobule with a central biliary channel lined by normal liver cells and again limited from the capillary vessels by Kupffer cells.

Fig. 2. tends to illustrate the condition when these cells are affected which lie close to the portal area. The degenerated cells permit the passage of bile produced by almost the whole lobule into the blood capillaries. Intensive icterus is the result, whereas the
Fig. 1. — Schematic illustration of an intact liver lobule with a central bile canaliculus surrounded by tubular glands, the double blood supply and the Kupffer cells which lie along the portal vascular capillaries. The bile is emptied in one direction into a bile duct, whereas the blood flows in the opposite direction towards the central vein.

Fig. 2. — Toxic or infectious hepatitis where the cells situated close to the portal area are involved which makes it possible for the bile to pass into the blood capillaries. Most of the hepatic tissue, however, is intact. The result is severe icterus, whereas the parenchymatous lesion is far from extensive. Benign hepatitis.

Fig. 3. illustrates the condition of a centrolobular affection. Icterus is here less pronounced, in spite of a rather severe affection of liver tissue synonymous with: “Petit ictère, grande maladie.”

Fig. 4. tends to illustrate the severity of affection which is characteristic in icterus gravis or acute liver atrophy. Little bile is produced due to the extensive cellular degeneration so icterus is not pronounced in spite of the very severe liver parenchymal lesion.

It is further easily understood that occlusion icterus by stone is a high grade icterus, but evidently not synonymous with a serious damage of liver cells and their functions. Some damage may, however, arise from mechanic obstruction of long standing.

These examples should clearly demonstrate how easily false conclusions may be drawn from estimation of bilirubin index alone. As is evident, a high grade icterus of short standing is usually not indicative of serious hepatic damage, whereas moderate icterus of long standing generally is.

Of great practical importance is the fact, which is relevant from what has been described above, that every type of liver function test based on the elimination of dye stuffs by the liver through the bile has a somewhat limited value. In cases of acute, non-infectious bile occlusion a high retention of bromsulfalein is not indicative of reduced liver function. The latter may on the contrary be completely normal. Common to all liver function tests based on use of dye stuffs is the necessity of eliminating the possibility of mechanical bile obstruction before positive conclusions are allowed. But even then it is not permitted to regard high dye retention as synonymous with highly reduced hepatic function and vice versa. Here precisely the same considerations hold true which have been related earlier. It must further be kept in mind that no conclusions may be drawn with regard to cholecystopathy in cases of hepatitis or parenchymatous lesion of the liver after administration of tetradophenolphthalein in cholecystography. In conditions with or without icterus but with pathologic bromsulfalein retention there will not be eliminated enough dye into the gall bladder to make the latter visible. Much confusion and misinterpreting of results has been occasioned through misconception of this point.

**HYMANS V. D. BERGH TEST**

Much work and paper has been wasted on the direct and indirect diazo reaction which according to our experience is without much value in differential diagnostic work in connection with jaundice.

The same holds true for qualitative and quantitative determination of urobilinogen and urobiline. Their value is often overestimated. What has been