it depending upon the degree of parenchyma damage and probably on the amount of degeneration present in the individual subject. These two factors are variables in every instance of liver disease and together with the great liver reserve present the greatest difficulties in every and all liver-function tests.

Several facts seem obvious at this time. Whereas the galactose liver-function test of Bauer has no place in the diagnosis of liver disease in the absence of jaundice, the intravenous galactose test may show variable amount of sugar retention within the venous blood in liver disease not accompanied by jaundice as well as that with jaundice. Therein lies a greater sphere of usefulness for the intravenous galactose liver-function test. On the other hand, the old test is positive only in intrahepatic jaundice and negative in the majority of cases of obstructive jaundice. In the small number of cases of jaundice observed by us the intravenous galactose liver-function test was positive in all whether the cause was within the liver or in the extrahepatic bile ducts. The intrahepatic type of jaundice, however, presented the highest retention of galactose and, therefore, if any differentiation by this test is possible at all it must rest upon the degree of retention and not the absence or presence of it.

Negative intravenous galactose liver-function tests do not exclude minimal liver damage, but probably indicate a normal liver function. As such the test may be of value as a preoperative measure in estimating the risk of operation in gall bladder and allied operations. Further studies with this technic in large series of cases checked by surgery, autopsy or both are necessary to properly evaluate this procedure. It is of some interest to run a parallel series of jaundice cases with the intravenous galactose test and the orally administered sugar.

Our own experience as well as the observation of Döllinger and Fischel (11) demonstrate that only estimation of the galactose in the venous blood permits correct curves of utilization of this sugar. The determination of the total sugar-curve in this test is not a correct procedure and may lead to erroneous conclusions.

CONCLUSIONS

1. By injecting galactose intravenously and measuring it as such in the blood at half hourly intervals over a period of two hours, it is possible to determine the rate of utilization of galactose by the liver. These two factors are interpreted as a measure of liver function.

2. Seven subjects with normal livers and eight patients with liver pathology are reported. There is a definite decrease in the rate of utilization of the galactose in those patients who have liver pathology as compared with the normal.

3. Minimal degrees of liver damage are not disclosed by this test. The rate of utilization of galactose may be normal.

4. In the presence of demonstrable liver damage galactose is metabolized at a slower rate. With the regeneration of liver cells the rate of utilization may become normal.

BIBLIOGRAPHY


UNUSUAL CLINICAL SYNDROMES ASSOCIATED WITH STONE IN THE COMMON BILE DUCT*

By

ALBERT M. SNELL, M.D.

and

MANDRED W. COMFORT, M.D.

ROCHESTER, MINNESOTA

ONE of the first authentic accounts of stone in the common bile duct is attributed to Jean Fernel, who, in 1581, described most of the clinical symptoms of the condition in these words: "Obstruction, calculus, fullness, and emptiness attack the gall bladder. The calculus, if it is an obstruction of the duct by which the biliary bile is led away from the liver, or of that by which it is discharged from the gall bladder into the intestine. In both, the bowels are obstinate and sluggish, feces whitish, the urine is reddish and thick so that it frequently becomes dark; the bile diffused with the blood throughout the whole body disfigures the skin with jaundice. Moreover, it (calculus) should be suspected in those in whom the jaundice was severe and continued." In the three and a half centuries which have followed Fernel's description, these clinical manifestations of the condition have become familiar to every practitioner. Biliary colic, chill's, fever, and intermittent jaundice, with acholic stools and dark urine are the features on which diagnosis usually is readily established.

Irregularities in this syndrome never have attracted sufficient attention, and many an obscure abdominal
condition is explained only by the finding at necropsy of a stone in the common bile duct. Recently Jordan and Weir have described a series of these unusual syndromes from this Clinic. The purpose of the present communication is to present an additional group of the less familiar clinical pictures associated with stone and to emphasize the importance of considering the possibility of stone as an explanation for a considerable number and variety of abdominal conditions.

Even to cite all the recorded variations in the clinical symptoms of stone is beyond the scope of this paper; however, in our experience, certain of them have occurred with sufficient frequency to warrant presentation in some detail. These anomalies include: (1) contralateral abdominal pain; (2) complete cessation of biliary flow with painless jaundice, such manifestations as often are noted in carcinomatous obstructions; (3) long-continued, painless jaundice and terminal signs of an infectious process; (4) the clinical picture of subacute yellow atrophy, and (5) associated hepatic cirrhosis of marked degree. Typical examples of each group will be presented and the cardinal points of diagnosis and prognosis considered.

REPORTS OF CASES

GROUP I—CONTRALATERAL ABDOMINAL PAIN.

Case 1--A woman, aged sixty-one, registered at this Clinic February 6, 1934, complaining of pain in the left hypochondrium. For three years prior she had had attacks of pain in the upper abdominal quadrant extending through to the left scapular region. Usually these attacks had appeared a half hour to one hour after meals; they had been relieved by vomiting. The attacks, secondary to one before, had been more severe and more frequent during the past two years. A physician never had been called and narcotics had not been used. The color of the stools and urine definitely had not changed. Roentgen examination gave negative data, as did urinalysis, blood counts and the serologic tests for syphilis. Proved by a test meal, free hydrochloric acid was absent. Roentgenologic examination of the thorax and the stomach disclosed nothing of significance. Films of the upper abdomen failed to show the presence of a nonfunctioning organ. An intravenous urogram exhibited evidence of marked spasticity and contraction of the renal pelvis and of the calices of the left kidney. The patient was hospitalized for observation following a rather severe attack. At that time, mild icterus was visible, but there was no elevation of temperature or of pulse rate. The concentration of bilirubin was 6.5 mg. in each 100 c.c of blood serum; the van den Bergh reaction was direct. A galactose tolerance-test was negative. Roentgenologic examinations of the thorax and the stomach disclosed nothing significant; the gall bladder was not seen. A naso-duodenal intubation, December 21 and December 23, bile was not obtained.

Our original diagnosis was carcinoma of the pancreas. This diagnosis was somewhat shaken, however, when the patient passed a single stool which contained bile and feces. By a sharp, temporary decline in the degree of serum-jaundice. Because of the possibility of benign, calculous obstruction, admittedly remote, abdominal exploration was made December 26, after a period of preparative preparation. On examination, the gall bladder was thickened and contracted down upon many stones, varying in size from sandy gravel to large stones 1 to 2 cm. in diameter. The gall bladder was not seen; bile and less bile, and stones the size of those in the gall bladder; the liver was chocolate brown, with lobules standing out as punctate spots. The pancreas was normal.

Cholecystostomy, with removal of stones, choledochostomy, and choledocholithotomy were performed. Postoperative convalescence was complicated by mild hepatic insufficiency, but the jaundice gradually subsided. The patient was dismissed, March 9, in good condition.

Discussion: Essentially painless, nonfluctuating, complete, deep jaundice of three weeks' duration, affecting an elderly man who has steadily lost weight and strength, commonly is regarded as typical for malignant obstruction of the common bile duct. The clinical evidence was strongly against the diagnosis of intrahepatic jaundice. The history of colic two years previously, and the short, contralateral abdominal pain, following passage of a normal stool, introduced the probability of "silent" stone in the common bile duct as being the cause of jaundice. Longer observation, in this case, might have led to more certain diagnosis. The odds, however, largely were in favor of obstructive jaundice and further delay would have increased the surgical risk. Such patients provide the best possible argument in favor of exploration in cases of probable malignant obstruction of the ducts. If neoplasm is encountered, life may be prolonged and may be made more comfortable by cholecystgastrostomy, and occasionally, as in the instance here cited, the patient may be completely restored to health by removal from the common bile duct of unsuspected stones.