NODULAR TRANSFORMATION OF THE LIVER: REPORT OF A CASE

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Abstract

Cases of portal hypertension, other than those caused by cirrhosis, are uncommon. We report a rare disorder of the liver parenchyma causing portal hypertension, which can be difficult to diagnose ante mortem, even with a full liver work-up including biopsy.

CASE HISTORY

A 60 year old male was admitted to the hospital in December 1972 complaining of abdominal distention and dysphagia. He was found to have a large volume of ascitic fluid and splenomegaly. Pallor was also noted. Investigations on this and on four subsequent admissions to the hospital were hampered because of lack of cooperation from the patient. However, the following investigations were performed. A biochemistry screening (SMA 12) was normal except for a low serum albumen level (2.2 gm. per 100 ml.). The hemoglobin level was 5 grams per 100 ml. with a hypochromic microcytic red blood cell morphology. Alpha-fetoprotein, Australia antigen, and antinuclear factor determinations were negative. Esophagoscopy revealed a tight postcricoid stricture. A barium swallow also demonstrated gross esophageal varices. A liver scan showed diffuse irregular uptake suggestive of cirrhosis. Liver biopsies performed on two occasions were reported as normal. The patient died in November 1974 after massive hematemesis due to bleeding esophageal varices.

POSTMORTEM FINDINGS

Gross Examination

At autopsy the body was that of a thin emaciated elderly male, who looked older than the stated age. On opening the abdomen examination revealed several liters of ascitic fluid and splenomegaly. Pallor was also noted. On superficial examination, the liver parenchyma could have passed as relatively normal. Many of the micronodules had a small central scar containing dilated portal venous radicles and bile ducts. Surrounding the scar were micronodules composed of a mass of hepatocytes without a central vein. Away from the center toward the periphery of the nodule, the micronodules were delimited by a thin rim of condensed reticulin rather than fibrous tissue (Fig. 2). Some of these micronodules had small branches of the bile duct system at the periphery with no central vein, whereas other nodules had what appeared to be a branch of a hepatic vein at the periphery, giving the impression of reversed lobulation. The individual hepatocytes were arranged in cords or trabeculae one or two cells thick and appeared relatively normal, except for cells at the periphery of a nodule, which appeared to be undergoing pressure atrophy. A mild chronic inflammatory cell infiltrate was seen in some of the central scarred areas with an occasional unexpected sarcoid-like granuloma.

DISCUSSION

The description of the liver in this case differs from the findings in cirrhosis in an essential respect. Although nodules that are probably regenerative in nature are present as in cirrhosis, there are no delimiting scars or fibrous bands present. Four similar cases were described as partial nodular transformation of the liver by Sherlock et al.; all four cases were characterized by portal hypertension. The

weighed 1265 grams and was smaller than normal, but the external surface was smooth and showed no evidence of cirrhosis. The major intrahepatic radicles of the portal vein contained recent fresh thrombi. Serial sectioning of the liver revealed multiple 1 to 2 cm., tan or pale nodules situated both in the hilum and in the periphery of both lobes (Fig. 1). The parenchyma between the nodules appeared normal and not cirrhotic. In many areas the edges of several nodules surrounded a branch of the portal vein, apparently compressing it. The spleen was grossly enlarged, weighing 940 grams, and the cut surface was deeply congested.

Examination of the cricoid areas revealed a severe degree of stenosis of the lumen of the esophagus by a dense fibrous band or web. There was no evidence of postcricoid carcinoma.

Microscopic Examination

The microscopic findings were much less striking than the gross findings, and indeed, on superficial examination, the liver parenchyma weighed 1265 grams and was smaller than normal, but the external surface was smooth and showed no evidence of cirrhosis. The major intrahepatic radicles of the portal vein contained recent fresh thrombi. Serial sectioning of the liver revealed multiple 1 to 2 cm., tan or pale nodules situated both in the hilum and in the periphery of both lobes (Fig. 1). The parenchyma between the nodules appeared normal and not cirrhotic. In many areas the edges of several nodules surrounded a branch of the portal vein, apparently compressing it. The spleen was grossly enlarged, weighing 940 grams, and the cut surface was deeply congested.

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Figure 1. Cross section through liver. Note multiple nodules varying in diameter from 1 to 2 cm. They occur at the hilum of the liver where they are ill defined and at the periphery (discrete). Note thrombus in large branch of portal vein.

Figure 2. Reticulin stain to demonstrate a micronodule. Note reticulin condensation at periphery of micronodule with absence of central vein. Large holes are tear artifacts.
livers were not enlarged but on section contained multiple large nodules. The perihilar distribution of the nodules was emphasized. Earlier Steiner described a lesion of the liver that he called nodular regenerative hyperplasia. The description was of a diffuse involvement of the liver by tiny nodules. However, the histological description of the nodules was similar to that of the larger nodules of so-called partial nodular transformation, but the diffuse involvement of the liver and the small size of the nodules and absence of portal hypertension were points of difference. More recently Blendis et al. described five cases of “nodular regenerative hyperplasia” in association with Felty’s syndrome. Some of the nodules were up to 2 cm. in size and portal hypertension was present in three of the cases. Harris et al. reported a case of “nodular noncirrhotic” liver disease, which was associated with portal hypertension and with inactive rheumatoid arthritis. The liver was smaller than normal; nodules up to 1.3 cm. in diameter were present throughout the liver but were more prominent around the hilum.

The cases described to date as “partial nodular transformation,” “nodular regenerative hyperplasia,” and “nodular noncirrhotic liver” share many major features in common with each other and with the case we present, e.g., histological similarity of the nodules and the presence of portal hypertension. There is variation in size and the distribution of the nodules described. The widespread distribution with prominence of the nodules in the hilar region as in the case described by Harris et al. most closely fits the case we report. Obviously it is possible that all the descriptions represent variations of a single disease or variations of a single type of liver response to various injurious agents.

In practical terms it is important to remember that diagnosis of this condition is extremely difficult by needle biopsy because of the apparently normal architecture in a small biopsy specimen. The condition should obviously be thought of by a clinician whose patient presents with evidence of portal hypertension and whose liver is reported as normal by the pathologist.

The mechanism for the production of portal hypertension proposed by Sherlock et al. in the discussion of their cases of partial nodular transformation was the impingement of liver nodules on central veins, producing postsinusoidal hypertension as occurs in cirrhosis. Two of the cases reported by Sherlock et al. were complicated by portal vein thrombosis, which was a finding also in the case we present.

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References