Mallory's ("Alcoholic") Hyaline in Hepatocellular Carcinoma

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Abstract

One hundred and forty autopsy cases of hepatocellular carcinoma were studied microscopically for the presence of Mallory's alcholic hyalin in the cytoplasm of tumour cells and nonmalignant liver cells. Five of the cases (3.6 per cent of the total) were found to contain intracytoplasmic Mallory bodies in the tumour cells. All five tumours were associated with hepatic macro nodular cirrhosis; in two of them Mallory Bodies were also present in the cytoplasm of the nonmalignant liver cells. Four tumours contained both Mallory and globular hyaline bodies.

Mallory's ("alcoholic") hyaline or Mallory bodies (MBs) have been found in benign and malignant hepatocellular tumours. Michel, Limacher and Kimoff recently reported the presence of MBs in the cytoplasm of pulmonary adenocarcinoma cells, arising in a scar. Since hepatocellular carcinoma (HCC) is a common malignant neoplasm in Thailand, this report concern the presence of MBs in the cytoplasm of HCC cells in five autopsy cases with HCC.

MATERIAL AND METHOD

The years 1967 to 1978 inclusive were chosen for the study. During this period, 8,271 autopsies were performed. Our survey of the 8,271 autopsies revealed 140 cases of HCC, a prevalence of 1.7 per cent. The age of patients ranged from 4 to 80 years (mean age was 46.5 years.) There were 124 males and 16 females. One hundred and thirty patients were Thai; nine Chinese; and one Burmese. One hundred and fifteen tumours were associated with...
hepatic cirrhosis, the majority of which were the macronodular type. Haematoxylin and eosin-stained sections from all cases were evaluated. Both liver and tumoural tissues were examined. The sections were studied microscopically for the presence of MBs in the cytoplasm of tumour cells and nonmalignant liver cells. Special stains, including Masson trichrome, periodic acid-Schiff (PAS) and PAS-diastase, were also examined.

RESULT

Irregular hyaline masses with tinctorial properties, indistinguishable from those of the Mallory bodies seen in cases of human alcoholic liver disease, were seen in the cytoplasm of the HCC cells in five cases (Fig. 1-3), an incidence of 3.6% per cent. The patients were Thai males aged 34, 47, 48, 57 and 65 (average 50.2 years). All tumours were associated with macronodular cirrhosis. MBs were also present in the cytoplasm of the non-neoplastic liver cells in two cases. Four tumours contained both Mallory and globular hyaline bodies. The MBs were PAS-negative and did not stain distinctively with the trichrome stain.

Three of the patients were non-alcoholic; two were alcoholics, one of whom had had presumed hepatitis with jaundice and right upper quadrant abdominal pain four years earlier.

DISCUSSION

Since the initial report of the discovery of MBs in the liver cells of alcoholic patients,6 MBs have been found in Wilson's disease (hepatolenticular degeneration),7 cirrhotic conditions such as infantile,8 Indian childhood,9 posthepatic10 and primary biliary cirrhosis,11,12 HCC1-3 and pulmonary adenocarcinoma arising in a scar.4

Histochemical studies have shown that the matrix of MBs consists of a basic protein complex containing ribonucleoprotein residues in the form of histones.13-14 Histochemically, MBs in the HCC cells and non-neoplastic hepatocytes of patients with alcoholic cirrhosis are identical.14

The ultrastructural characteristics of MBs have been studied. As seen with the electron microscope, MBs appear as irregular cytoplasmic areas devoid of organelles and occupied exclusively by a filamentous material of medium electron density.15-16

On the basis of their occasional association with altered cytoplasmic organelles, MBs have been considered to derive from endoplasmic reticulum, rough endoplasmic reticulum, or rough endoplasmic reticulum of mitochondria. It has been suggested that MBs represent aggregates of
cytoplasmic material deposited as a consequence of degenerative or reparative hepatic cellular processes. However, the origin, nature and significance of MBs have not been completely elucidated.

Recently, biochemical and immunologic studies showed that MBs are cyto keratins and their formation may represent pathologic keratinization. MBs may be a marker for neoplastic transformation of the liver in carcinogenesis. The Mallory body formation, in the light of present biochemical, immunocytochemical and ultrastructural knowledge, may represent abnormal assembly of the hepatic intermediate filaments.

The clinicopathological review by MacSween of 100 cases of primary malignant tumours of the liver revealed that MBs were noted in only three of 75 tumours, an incidence of 4.0 per cent. No such inclusions were present in the normal liver cells. None of the cases were alcoholics. In no case was there a history of alcoholism. In one, the patient had presumably viral hepatitis eight years earlier; in another the tumour developed in a non-cirrhotic liver. In the present series, MBs were noted in five of the 140 tumours, an incidence of 3.6 per cent. This is in agreement with MacSween's figure. However, two patients in the present study were alcoholics and all tumours developed in cirrhotic livers. In two cases, MBs were also present in the non-neoplastic hepatocytes.

Globular hyaline bodies may be extracellular or intracellular. They are homogeneous, strongly acidophilic, weakly PAS-positive and stain orange to red with most trichrome stains. They are frequently seen in HCC and in other tumours such as endodermal sinus tumour. Globular hyaline bodies and MBs may be found together in an HCC.

REFERENCES