ULTRASTRUCTURAL CHANGES OF THE LIVER TISSUE IN THALASSEMIC PATIENTS

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ABSTRACT

Thalassemia are a group of hereditary disturbance of hemoglobin synthesis. Increased iron deposition represents a characteristic condition in patients with thalassemia. It is well known that iron is found mainly in hepatocytes and can be identified by electron microscopy because of the electron density of iron-containing particles. This present study was undertaken to investigate the ultrastructural changes of the liver which is in progress.

The liver tissue from 30 thalassemic patients was processed for electron microscopy, 26 biopsies and 4 autopsies. The patients were diagnosed as having beta thalassemia/hemoglobin E in 21 cases, hemoglobin H disease in 6, and beta thalassemia major in 3.

Since this study was carried out on the patients in advanced stages of disease. In all cases regardless of the type of hemoglobin, electron microscopic observations gave identical results. These revealed liver cell ballooning, hemosiderin and various forms and arrangements of lysosomal ferritin, hemosiderin in dilated sinusoids, as well as inter-hepatocyte collagen were also visualized.

The ultrastructure of ferro-acidophilic bodies (FAB) or the acidophilic bodies usually seen in viral hepatitis but with heavy deposit of iron, ferro-acidophilic degeneration (FAD) of hepatocytes are similar to those seen in viral hepatitis, but no viral particles and found.

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Fig. 1 Single ferritin molecules are scattered within lysosome, hexagonal crystalline arrangements (arrows) and ferritins as finger-print fashion are also noted.

$\times 110,000$
Fig. 2  Multiple array of ferritin (arrow) in clumps of hemosiderin.

× 88,000
Fig. 3 Ferro-acidophilic body (FAB) is seen among ballooned hepatocytes. FAB lying in the space of Disse, a dark-staining, round hepatocyte with high iron content.

× 4,400
Fig. 4 Heavy deposits of hemosiderin seen in kupffer cell along dilated sinusoids (S). Collagen (C) and a part of Ito cell are demonstrated.

× 8,800
Fig. 5  Hepatocellular lysosome (Ly). Lysosomal and mitochondrial membranes are ruptured (arrows) possibly an early stage of autophagocytosis.

× 13,200