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Ultrastructural study of hepatic steatosis associating hepatitis C virus infection

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Hepatic steatosis is an important hallmark of hepatitis C virus (HCV) infection. The underlying mechanisms of HCV-related steatosis however are not yet clarified. This study dealt with the ultrastructural study of mitochondrial changes in hepatic steatosis induced by HCV infection and its relation to serum cytochrome C , apolipoproteins and stage of fibrosis.

54 patients positive for HCV RNA PCR admitted to Theodor Bilharz Research Institute were enrolled in this study. They didn't have other confounding prosteatogenic variables. In addition, 10 apparently age- matched healthy volunteers were selected as a reference group. All patients were subjected to ultrasound-guided liver biopsy and blood sample collection. Meanwhile, only blood was harvested from health volunteers. Liver specimens were processed for light and electron microscopic examination. Measurement of apolipoproteins A, B, and CII and specific estimation of serum cytochrome –C was performed.

Intracytoplasmic fat depositions took the picture of large saturated fat droplets, unsaturated fat droplets or diffuse fat deposition with fluffy appearance. Interpretation of the results revealed significantly lowered serum cytochrome C in patients as compared to the reference mean value. There was significant correlation between serum cytochrome C, apolipoprotein B, and serum triglycerides. Concomitantly, the ultrastructural detected changes in the rough endoplasmic reticulum and mitochondrial ultrastructural alterations may be a contributing factor to this abnormal fat metabolism in HCV.

In conclusion, ultrastructural mitochondrial and RER changes seem to confirm their relation to the associated intracytoplasmic fatty acids accumulation, the decreased serum cytochrome C and apolipoproteins A1 and B. Moreover it confirms the cytopathic effect of HCV.