Association between Abnormalities of Serum Lipid Profile and The Aggressiveness Of HCV Related Hepatocellular Carcinoma (HCC)

MOSTAFA S. EL KADY [1], HESHAM A. EISA (may god have mercy on him) [2], AL SHIMAA H. LOTFY[1] TAMER E. EL ERAKY [1],

1. Department of Hepatology, Gastroenterology and Infectious Diseases, Faculty of Medicine, Benha University.

2. Department of Clinical Pathology, Faculty of Medicine, Benha University.

Abstract

Hepatocellular carcinoma (HCC) represents about 90% of primary liver cancers. In Egypt, it represents the fourth common cancer. Main risk factor for HCC is cirrhosis of liver that caused by different causes including viral hepatitis, alcohol, NAFLD, metabolic (Wilson disease, hemochromatosis), autoimmune liver disease, and Aflatoxin. As many types of cancer aberrant lipid profile may be present in HCC patients which may be related to aggressiveness of the tumor.

Aim : To evaluate the association between serum lipid profile abnormalities and the aggressiveness of HCC.

Methods : 150 participant were included in the study, divided into 3 groups: sixty patients with HCC diagnosed by ultrasound and confirmed by Triphasic CT, sixty patients with HCV related chronic liver disease and thirty apparently healthy individuals as a control. All participants were subjected to: full history taking, full clinical examination, laboratory investigations (CBC, RBS, ESR, serum creatinine, liver profile and lipid profile "total cholesterol, TG, LDL, HDL, VLDL, HDL\ LDL ratio") and radiological examination (ultrasound, Triphasic CT).

Results: The results showed that HCC patients had low total cholesterol, HDL, LDL compared to normal group, LDL had weak positive correlation with the combination of all four tumor aggressiveness parameters together (the Tumor Aggressiveness Index) and mean HDL was significantly higher in those with PVT than those without.

Conclusion: HCC patients had low levels of serum lipid profile (TC, HDL, and LDL), Plasma LDL had weak positive correlation with aggressiveness index of HCC, HDL was significantly higher in those with PVT.

Introduction:

Hepatocellular carcinoma (HCC) accounts for 90% of primary hepatic malignancies. It is the sixth most commen solid tumor and the third most commen cause of cancer mortality worldwide. The overall prognosis is poor, with an estimated 5-year survival of 10% to 15% in patients unamenable to resection or liver transplantation **(CDC.2016).**

Liver cirrhosis is an important risk factor for HCC, and may be caused by chronic viral hepatitis, alcohol, inherited metabolic diseases such as hemochromatosis or alpha-1-antitrypsin deficiency, and non-alcoholic fatty liver disease **(Sangiovanni, et al. 2006).**Long-term follow-up studies have demonstrated that approximately 1–8% per year of patients with cirrhosis develop HCC (e.g. 2% in HBV-infected cirrhotic patients and 3–8% in HCV infected cirrhotic patients) **(Ioannou, et al. 2007).** Obesity, diabetes and fatty liver disease have come to be recognized as a risk factor of HCC **(El-Serag, et al. 2001)**, although the mechanisms by which these overlapping conditions contribute to cancer development remain elusive. Alternation in blood lipid profiles and metabolism have been described in the presence of chronic hepatitis infection, cirrhosis, and hepatocellular carcinoma (HCC) **(Arain, et al. 2017).**

In general, lipids are known to play a crucial role in tumor development and progression **(Hsu, et al. 2008).**

Briskly proliferating cancer cells require a constant supply of lipids for membrane biogenesis and protein modifications. Also, the cancer cells that are not rapidly proliferating require increased amounts of lipids for enhanced signaling and resistance against apoptosis. Lipoproteins are the distributors of both endogenous as well as exogenous lipids across the tissues. It is therefore plausible that lipoproteins play a fundamental role in cancer progression via supplying lipids to malignant cells and tumors **(Rysman, et al. 2010).** The global epidemic of obesity has recently shifted attention to the

increased incidence of obesity- associated and metabolic syndrome- associated non-alcoholic liver disease (NAFLD) and obesity driven cancers including HCC, that may occur in the presence or in the absence of cirrhosis **(Mittal, et al. 2016).** There are multiple reports of altered plasma lipid profiles in obesity or metabolic syndrome associated HCC **(Nderitu, et al. 2017).**

Aim of the work: To evaluate the association between serum lipid profile abnormalities and the aggressiveness of HCC.