



LETTER TO EDITOR

The alterations of cholesterol, HDL-cholesterol and LDL-cholesterol in Chinese with hepatocellular carcinoma: A cross-sectional study



KEYWORDS

TC;
HDL-CHO;
LDL-CHO;
HCC

To the editor,

The articles on hepatocellular carcinoma (HCC) in your journals focus on surgical approaches, liver transplantation, chemotherapy, outcomes and so on in recent 10 years. As is known, the high prevalence of hepatitis B virus (HBV) gives rise to the high incidence of HCC in China. Abnormal lipid metabolism can accelerate HCC development.¹ We conducted a study to observe the lipid alteration in Chinese with HCC.

347 HCC patients were enrolled from January 2011 to January 2015 and divided into different groups according to pathological grading, HBV infection, tumor size, alpha fetoprotein (AFP) levels and cirrhosis. 100 HBV carriers and 120 healthy controls were collected as controls. Total cholesterol (TC), high density cholesterol (HDL-CHO) and low density cholesterol (LDL-CHO) levels were significantly lower in HCC patients than healthy control ($p < 0.0001$) while TC ($p < 0.0001$) and HDL-CHO ($p < 0.05$) levels were significantly lower than HBV carriers. The statistical results revealed significantly lower levels of TC, HDL-CHO and LDL-CHO in HCC patients post-operation than that pre-operation ($p < 0.0001$) and in different HCC groups post-operation than that pre-operation ($p < 0.05$). Nonparametric Mann–Whitney U test analysis confirmed that HDL-CHO in HCC patients with pathological grading II was

significantly higher than that with pathological grading I and III ($p < 0.05$), HDL-CHO in HBV associated HCC was significantly higher than that non-HBV associated HCC ($p < 0.05$).

Liver is the main organ for the synthesis and circulation of lipids, which depends on the integrity of cellular functions of liver.² When HCC happens, the metabolism and synthesis of cholesterol are damaged, which result in a decrease in plasma cholesterol levels.³ Meanwhile, the tumor cells increase the consumption of cholesterol to sustain faster proliferation. Hepatic surgery also has serious injury to HCC patients and leads to further damage to the liver, which causes a substantial reduction in liver cells and a sharp drop in the synthesis function, and then results in decreased plasma lipid levels. Therefore, there are gradually reduced levels of TC, HDL-CHO and LDL-CHO from normal person to HCC patients pre-operation, and then to HCC patients post-operation.

HDL-CHO is just the part of cholesterol that is metabolized in liver. Recent studies reported that liver tumor tissues have a higher receptor-mediated uptake of HDL-CHO than the normal tissues and cells while low HDL-CHO is strongly associated with increased risk of HCC development.⁴ The changes of HDL-CHO in different pathological grading may be due to the fact that the metabolism ability

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of the liver decreased after HCC happened but the consumption gradually increased with HCC progression. Cui M et al reported that hepatitis B X protein (HBx) can promote the accumulation of cholesterol in hepatoma cells.⁵ Our data also displayed higher HDL-CHO level in HBV associated HCC.

In conclusion, the gradually decreased levels of TC, HDL-CHO and LDL-CHO from healthy control to HCC patients pre-operation and then to HCC patients post-operation can reflect the synthesis, metabolism and function impairment status of liver. HDL-CHO might be used as an auxiliary index to indicate HCC pathological degree.

Conflicts of interest

All authors declare there is no conflict of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.asjsur.2019.07.002>.

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