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Detection of circulating lamin B1 & glypican-3 for early diagnosis of hepatocellular carcinoma patients

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Background: Hepatocellular carcinoma (HCC) is the fifth most common form of cancer worldwide and the third most common cause of cancer-related deaths. HCC often occurs in the background of a cirrhotic liver. In recent years, surveillance strategies in patients at a higher risk of HCC have led to the diagnosis of the disease at much earlier stages. Patients in early stages have a much higher chance of curative response with different treatment options.

Objective: Aim of this study is to assess circulating lamin B1 (LMNB1) mRNA and glypican-3 cytotoxic T lymphocytes (CTLs) as markers for early detection of hepatocellular carcinoma (HCC).

Methods: The study included 50 participants, 13 of them were patients with post hepatitis C liver cirrhosis (group I), 13 were patients with early stages of HCC (group II a), 14 were patients with late stages of HCC (group II b) and 10 were healthy volunteers with matched age and gender as a control group (group III). The patients were selected from the outpatient clinic and inpatient department of the National Liver Institute, Menoufiya University. Lamin B1 mRNA was assessed by RT-PCR and glypican-3 CTLs by flow cytometry and they were compared to alpha-feto protein (AFP).

Results: Higher level of glypican-3 was reported in HCC patients group than in cirrhotic group and control group ($p < 0.001$). Also, higher level of glypican-3 was reported in early HCC patients group than in cirrhotic group ($p < 0.001$). Glypican-3 CTLs can be used for early detection of HCC patients with 100% specificity and sensitivity. Also, higher level of lamin B1 was reported in HCC patients group than in cirrhotic and control group ($p < 0.001$). Higher level of lamin B1 was reported in early HCC patients group than in cirrhotic group ($p < 0.001$). Lamin B1 mRNA can be used in early detection of HCC with specificity and sensitivity 92% and 100% respectively.

Conclusion: Circulating lamin B1 (LMNB1) mRNA and glypican3 CTLs can be used as markers for early detection of HCC patients.

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