Hepatocyte-derived microRNAs as serum biomarkers of rejection after liver transplantation.

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SUMMARY

Hepatocellular carcinoma (HCC) ranks among the most common cancers worldwide and is the third leading cause of cancer death overall accounting for more than half a million yearly deaths.

Liver transplantation is a lifesaving and effective treatment of end-stage liver failure. However transplant recipients can suffer from serious side effects of long-term immunosuppression and rejection after transplantation.

Recently, an increasing number of reports have described a new class of small regulatory RNA molecules termed microRNAs (miRNAs) that are implicated in cancer progression.

Deregulation of miRNAs has been observed in a wide range of human diseases, including cancers. In human cancer, miRNAs can function as oncogenes or tumor suppressor genes during tumor progression.

Some specific miRNAs were found to be associated with the clinico-pathological features of HCC, such as recurrence and prognosis.

In humans, it has recently been shown that the hepatocyte-derived microRNAs (HDmiR) miR-122 can be detected in serum, and its level was found to be elevated in patients with hepatocyte injuries caused by viral hepatitis, alcoholic, or chemical-related hepatotoxicity.

The aim of the present study is to evaluate the expression of serum miR-122, miR-194 and miR-148a as biomarkers for diagnosis of rejection after liver transplantation.

The present study was conducted on 80 subjects divided into 30 patients who prepared to liver transplantation process and 50 healthy subjects.

The following were done: history taking, general examination, complete blood picture, liver function tests, hepatitis markers by ELIZA. Serum was separated for detection of: miR-122, miR-194 and miR-148a gene expression by real time PCR.

Statistical analysis showed that there were significant differences as regards the mean values of miR-122 and miR-148a between rejected and non- rejected patients after liver transplantation [($p=0.001$) & ($p=0.027$) respectively]. Also the mean values of miR-122, miR-194 and miR-148a were significantly overexpressed in HCC patients compared with healthy control subjects [($p<0.001$) & ($p=0.002$) & ($p=0.0019$) respectively].