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Background and Aims: Several studies showed that aberrant miRNA expression is associated with development and progression of hepatocellular carcinoma (HCC). Because of their stability in the circulation, miRNAs have been proposed as potential biomarkers of HCC.
The aim of this study was to examine whether some commonly deregulated miRNAs (miR-122, miR-21, miR-221 and miR-16) in HBV-related HCC may serve as diagnostic markers.
Methods: Serum expression of miRNA miR-122, miR-21, miR-221 and miR-16 was evaluated by real-time quantitative RT-PCR in 90 subjects: 33 patients with HBV-related HCC (age 61±10; F/M=4/29), 30 patients with HBV-related cirrhosis (age 53±11; F/M=11/19) and 27 blood donors as healthy controls (age 54±8; F/M=9/18). Relative expression was correlated with clinical features among patients and controls.
Results: Median levels of miR-16, miR-122 and miR-221 were significantly different in patients with HCC or cirrhosis than in healthy controls ($p<0.001$) whereas, only miR-122 levels differed in patients with HCC from cirrhotic patients ($p=0.024$).
Expression levels of mir-21 were similar in the 3 groups. miR-122 levels were significantly higher in patients with multifocal HCC than in patients with a single lesion ($p=0.024$).
Area under the curve (AUC) analyses showed that serum levels of miR-122, miR-122+miR-221, miR 122+miR-16 and miR-122+miR-221+miR-16, are able to differentiate patients with HCC from patients with cirrhosis (AUC=0.675; AUC=0.704; AUC=0.681; AUC=0.703, respectively). Moreover, miR-16, miR-122 and miR-221, alone or in combination, were potential markers for discriminating HCC patients from healthy controls (AUC>0.9) and for discriminating patients with cirrhosis from healthy controls (AUC>0.9). In addition, a positive correlation between miR-122 levels and HCC nodules number ($R=0.390$; $p=0.036$), and a correlation between miR-16 and miR-122 levels, and ALT values ($R= -0.464$, $p=0.034$; $R=0.449$, $p=0.536$, respectively) was found.
Conclusions: Among the four microRNAs analyzed, miR-122 significantly discriminates patients with HCC from cirrhotic patients and patients with HCC or cirrhosis from controls. miR-122 appears to reflect liver necro-inflammation, since we observed a positive correlation with ALT levels. Moreover, our study showed a correlation between miR-122 expression levels and HCC multifocality, suggesting the possible use of this miRNA for tumor stadiation. Nevertheless, miR-122 AUC values were not sufficiently high for HCC screening purposes in clinical practice.

Disclosure of Interest: None Declared