

Diagnostic value of serum Glypican-3 alone and in combination with AFP as an aid in the diagnosis of liver cancer.

Authors: Shuxia Liu, Minjie Wang, Cuiling Zheng, Qiaofeng Zhong, Yuankai Shi, Xiaohong Han

Journal: Clinical Biochemistry 79 (2020) 54–60

Summary: This study aimed to assess preoperative values of serum Glypican-3 (alone and in combination with AFP) for liver cancer diagnosis. For this cross-sectional retrospective study, a total of 264 patients with liver cancer - attending at the Cancer Hospital, Chinese Academy of Medical Sciences, Beijing, China (from December 2011 and December 2018) - were enrolled. Patients were further divided into four sub-groups: hepatocellular carcinoma (HCC) group (N= 210; 176 males and 34 females), intrahepatic cholangiocarcinoma (ICC) group (N= 36; 21 males and 15 females), combined hepatocellular-cholangiocarcinoma (cHCC-CC) group (N= 8; 6 males and 2 females), metastatic liver cancer (MLC) group (N=10; 6 males and 4 females). 134 healthy individuals (105 males and 29 females) were also included as a normal control (NC) group.

Results: For Glypican-3 alone, the area under the curve (AUC) in HCC versus NC was 0.879, with a sensitivity of 79.52%, and a specificity of 85.07%, at an optimal cutoff value of 41 pg/mL. When Glypican-3 was combined with AFP, the AUC in HCC versus NC increased to 0.925, with a sensitivity of 88.10% and a specificity of 82.68%. When comparing HCC to ICC, the AUCs for Glypican-3 alone and Glypican-3+AFP were respectively 0.788 and 0.853.

HCC vs NC	AUC	Sens	Spec
Glypican-3	0.879	79.5%	85.1%
Glypican-3+AFP	0.925	88.1%	82.7%

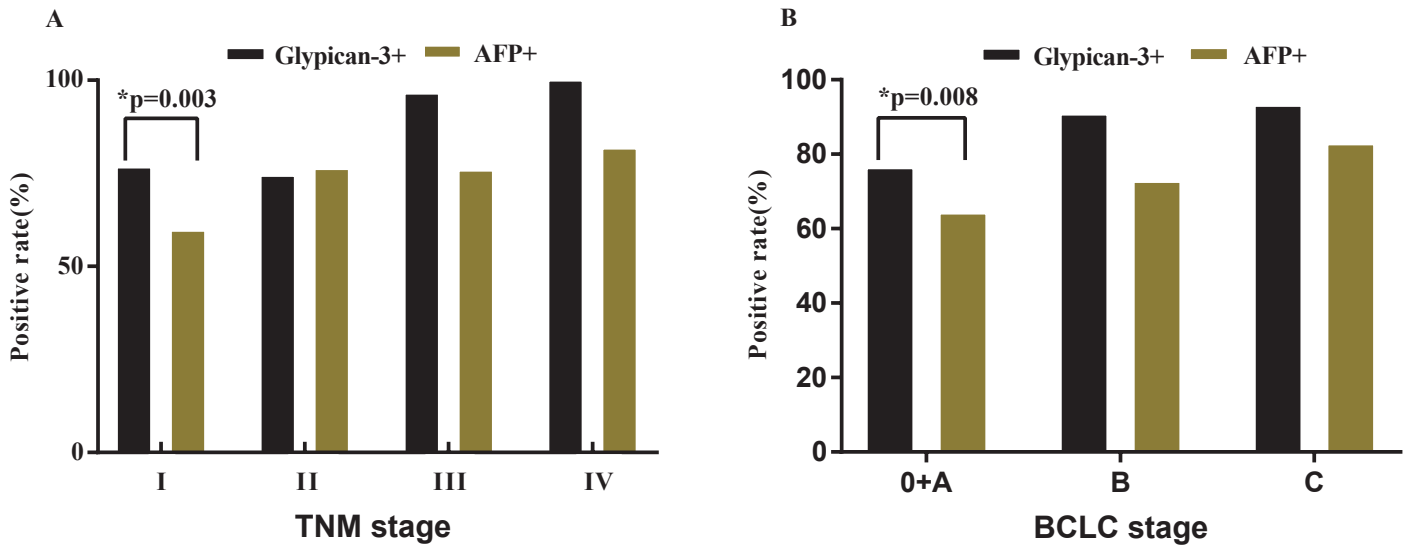
HCC vs ICC	AUC
Glypican-3	0.788
Glypican-3+AFP	0.853

Moreover, of the 68 AFP- HCC patients, 63% had elevated Glypican-3 levels, indicating that serum Glypican-3 may be complementary to AFP for the diagnosis of HCC.

Concordance of serum Glypican-3 and AFP detection for HCC.

	Glypican-3 + (n%)	Glypican-3 - (n%)	Total (n%)
AFP + (n%)	124 (59.0%)	18 (8.6%)	142 (67.6%)
AFP - (n%)	43 (20.5%)	25 (11.9%)	68 (32.4%)
Total (n%)	167 (79.5%)	43 (20.5%)	210 (100%)

Finally, in early stage HCC, positivity rate for serum Glypican-3 was significantly higher than AFP. Specifically, in BCLC stages 0 and A, the positive rate of Glypican-3 and AFP was respectively 76.4% and 64.3%. In TNM stage I, the positive rate of Glypican-3 was also significantly higher than that of AFP.



Conclusions: Serum Glypican-3 was superior to AFP for the diagnosis of early-stage HCC and may be complementary to AFP for distinguishing HCC from NC.