Current clinical uses of the biomarkers for hepatocellular carcinoma

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Hepatocellular carcinoma (HCC) is a severe condition that is found worldwide. The current methods of HCC screening and diagnosis depend mainly on tumor imaging techniques. Using tumor biomarkers to detect cancer has helped to screen for disease and avoid wasting medical resources. Serum alpha-fetoprotein (AFP), a glycoform of AFP that reacts with Lens culinaris agglutinin (AFP-L3), and des-gamma carboxyprothrombin (DCP) are biomarkers commonly used to detect HCC in medical practice around the world. However, each of these biomarkers is imperfect when used alone and each has limitations in terms of the sensitivity and specificity with which it detects HCC. Presumably, a combination of these biomarkers is a practical way to improve their performance. That said, novel biomarkers of HCC are being sought to diagnose the disease and also to optimize the treatment modality, to predict prognosis or recurrence, and to discover novel targets for therapeutic interventions.

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Commentary
and GPC3), enzymes and isoenzymes (including DCP, GGT, AFU, and Human Carbonyl Reductase 2), growth factors and their receptors (including TGF-β, TSGF, EGFR, and HGF/SF), molecular markers (mRNAs), and pathological biomarkers. Clinical uses of these established HCC biomarkers are shown in Table 1. Unfortunately, no single biomarker can adequately provide a sufficient level of sensitivity and specificity for HCC. A combination of these biomarkers is a practical way to improve their performance. A combined assay of AFP with AFPL3 or des-g-carboxyprothrombin (DCP), which is widely used in Asia and especially in Japan, has better performance than either biomarker alone (4). The current study and use of biomarkers is far from comprehensive. Novel biomarkers of HCC could be used to screen for the disease and potentially helpful to optimize the treatment modality, to predict prognosis or recurrence, and to lead to novel targets for therapeutic interventions in the near future.

References


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