Short Communication
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Frontiers in Early Detection of Hepatocellular Carcinoma

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Description of the article

The need for more precise serodiagnosis marker for hepatocellular carcinoma (HCC) is always a must for many reasons:

1. Serodiagnosis is generally non-invasive and safe technique to have a human sample.
2. Different radiological modalities, although its accuracy is progressing, but many times its result is misinterpreted.
3. The current extensively used seromarker, alpha fetoprotein (AFP), doesn't exceed 70% for sensitivity and 90% for specificity.
4. Many of clinicians requesting AFP tests, whether in HCC management or related diseases, as, hepatitis C or B infections don't know exactly the diagnostic accuracy levels of AFP.
5. The need for spectrophotometric marker, rather than molecular or radio or Elisa parameter as a cost effective goal.
6. The earlier the detection of HCC, the longer the patient life.

Introduction

Hepatocellular carcinoma (HCC), is considered as a malignant tumor of hepatic parenchymal cells. Globally, it ranks the fifth among human cancers[1] and the second leading cause of cancer mortalities.[2] The transfer of migrating cancer cells from extra hepatic cancers into the liver, creates new confusing colonies in the hepatic tissue, making serodiagnosis is sometimes impossible, as the use of AFP in all HCC stages makes the management is so hard. This is due to a shocking fact, where AFP is only produced from primary- not- secondary hepatocarcinoma.[3] However, AFP is extensively used as a first diagnostic variable associates hepatocyte carcinogenesis, both in clinical and experimental settings.[4] We here will outline new markers with better diagnostic performance, utilizing many variables originating from hepatocytes, as, small RNAses, single nucleotide polymorphs (SNPs), survival/apoptotic ratios, DNA replication error-correcting enzymes, lysosomal membrane integrity and its released enzymes, extracellular proteins and the family of enzymes affecting its integrity.

Body of the Article

Currently, race is running to publish results suggesting more effective variables in diagnosing HCC, compared to AFP. One of these parameters was alpha-L-fucosidase(AFU). We compared between AFU to AFP at both experimental and human levels, regarding, % sensitivity, % specificity and % diagnostic accuracy%. AFU values were 90, 92 and 91 at a cut off value of 5, while AFP was 60, 76 and 68 at a cut off value of 60.[4] AFP was only higher in primary HCC but disappears in secondary hepatocarcinoma(HC) coming from colon, breast and lung, but serum 5'-nucleotidase and leucine aminopeptidase activities were significantly higher in secondary (metastatic) HC, suggesting a more efficient panel of seromarkers in different stages of HCC.[3] Biochemical staging of HCC rather than histological tools was tried in some of our works, as a more convenient tool in comparison to biopsy analysis. Thus, serum total glycosaminoglycans, free glucose amine and total sialic acid showed progressing values with single, two and multiple human HCC lesions, while AFP falls down through this curve.[5] Moreover, serum serotonin level was very useful than AFP in being correlated positively to experimental HCC progress per time.[6] Expression of both hepatic somatostatin receptor 2 RNA and protein introduced a very promising and accurate tool in perusal of HCC staging at experimental level, somatostatin receptor was intentionally used instead of somatostatin due to the very short half life of the hormone.[7] Lysosomal membrane integrity is highly correlated to the potential of cancer cell for metastasis and drug resistance/response.[8]

Conclusion

Substantially, determination of AFP serum levels for surveillance, early detection, diagnosis and follow up after treatment seems not reliable, this why liver cancer management, whether primary or secondary HC always is not promising. Different radiological methods are always used, but it is always useful only after cancer progression. Biochemical changes on the hepatocyte levels may introduce adequate tool for prevention and/or predication of HC among risk holders. As AFP is misleading, here we recommend the use of a biochemical panel to be repeated periodically for patients with risk for HC as viral hepatitis, liver fibrosis, etc. Extrahepatic sources for expected hepatic metastasis as colon, breast and lungs, even after surgical resection seem not secured either towards recurrence or metastasis to liver, where diagnosis is complicated. Our experience for more than fifteen years assumes- in addition- to AFP assessment, the patient should exposed to a panel of markers as: AFU, total glycosaminoglycans, total sialic acid, free glucosamine, gamma carboxylate, 5'-nucleotidase and leucine aminopeptidase activities, in addition to serotonin levels. We here in a screening work try to exit the biopsical invasive techniques, although addition of tissue somatostatin protein content might be greatly helpful. When a risky patient or under treatment patient is subjected to this panel, the management of the liver cancer will be more successful.

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