Alpha Fetoprotein for Screening for Hepatocellular Cancer in Populations with Viral Hepatitis B: an Appraisal of Thai Reports

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Abstract

Hepatocellular cancer (HCC) is a common gastrointestinal malignancy in hepatitis cases which is difficult to detect in early stages. Alpha fetoprotein (AFP) is a tumor marker which has been introduced for screening but in Southeast Asia where the rate of hepatitis B seropositivity is very high, the diagnostic benefit is still doubtful. Here, a literature review of three Thai reports was conducted, covering 4,295 cases. The overall diagnostic activity showed sensitivity, specificity, false positives and false negatives of 73.5 %, 98.9 %, 26.5 % and 1.1 %, respectively. Thus the sensitivity is insufficient for screening purposes and serum AFP can not be recommended for hepatitis B carriers over standard tests.

Key Words: Hepatocellular cancer - AFP - Thailand

Introduction

Hepatocellular cancer (HCC) is a common gastrointestinal malignancy which is a leading cause of morbidity and mortality in many countries (Parvez et al., 2004). The epidemiology of hepatocellular cancer is characterized by peculiar geographic and ethnic trends that affect screening/early detection efforts as well as incidence and mortality rates across the globe (Parvez et al., 2004). Hepatitis virus infection is documented as an important factor leading to hepatocellular carcinoma in Asia (Wiwanitkit and Suyaphan, 2002; Wiwanitkit, 2002; Srivatanakul et al., 2004).

Alpha fetoprotein (AFP) is a tumor marker which has been introduced for HCC screening in recent years (Lee et al., 2004; Daniele et al., 2004) and in some countries it has become routinely employed (Di Bisceglie, 2004). However, use for screening in developing Asian countries is limited and the marker is not specific, being elevated in various liver diseases (Lee et al., 2004). In Southeast Asia where the rate of hepatitis B seropositive is very high, the diagnostic utility of AFP measurement is therefore doubtful. The present appraisal was performed with Thai data to cast further light on this question.

Materials and Methods

A literature review was conducted of previous reports of serum AFP measurement in comparison with standard histopathological studies for HCC screening in patients with hepatitis B in Thailand was performed with the electronic search engine PubMed (www.pubmed.com). Published work in all 256 local Thai journals, which are not included in the international citation index by the database Thai Index Medicus were also considered. Reports that did not present diagnostic properties (sensitivity, specificity, false positives and false negatives) analysis were excluded. With the three reports satisfying the selection criteria, the sensitivity, specificity, false positives and false negatives were calculated. SPSS 11.0 for Windows was used for statistical analysis.

Results

According to the literature review, 3 reports (Rinsurongkwong, 1993; Srivatanakul et al., 1984; Chudhabuddhi et al., 1985) were recruited for further analysis (Table 1), covering 4,295 cases. The overall prevalence of HCC was 31.7 % (136/4,295). The overall diagnostic activity showed sensitivity, specificity, false positives and false negatives to be 73.5 %, 98.9 %, 26.5 % and 1.1 %, respectively (Table 1).

Discussion

The present study indicated that the overall sensitivity with AFP is poor, disproving the hypothesis that this marker would be appropriate for screening for HCC among hepatitis B carriers. The results are not concordant with an earlier report that the monitoring of serum AFP level in high-risk patients
patients with viral hepatitis infection is valuable (Songsivilai et al., 1995).

Liver cancer remains one of the most common causes of cancer death globally, and its cure rate has not improved over the past 20 years (Parvez et al., 2004). Individuals with chronic viral hepatitis are at highest risk (Di Bisceglie, 2004) and in Thailand HBV infection is hyperendemic - approximately 5 million Thais are chronic HBV carriers and this is believed to be an important factor contributing to high rates of HCCs in Thailand (Wiwanitkit, 2002). Although there is no definitive evidence that hepatocellular carcinoma screening in high-risk groups improves survival, many physicians screen high-risk populations with various strategies (Daniele et al., 2004). AFP is the most widely used serum biomarker (Daniele et al., 2004).

When hepatocellular carcinoma presents with clinical symptoms, the tumor is typically very far advanced and the patient has few therapeutic options (Di Bisceglie, 2004). It is a slowly growing deadly cancer with very few signs and symptoms in the early stage (Di Bisceglie, 2004). Therefore establishment of a good marker for detection purposes is a high priority. However, the conclusion for the present study is that serum AFP cannot be effectively used for screening diagnosis for HCC among hepatitis B carriers.

### Table 1. Basic Information of Reports of using Serum AFP Measurement Comparing to Standard Histopathological Study in Screening for Hepatocellular Cancer in Thailand

<table>
<thead>
<tr>
<th>Items</th>
<th>Reference number of the studies</th>
<th>Study group</th>
<th>Character of screenees</th>
<th>Number of screenees</th>
<th>Positives</th>
<th>Positive rate (%)</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Population-based</td>
<td>Out patient cases</td>
<td>2,039</td>
<td>28</td>
<td>1.4</td>
<td>67.6</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community-based</td>
<td>General population</td>
<td>2,006</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>98.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Population-based</td>
<td>Out patient cases</td>
<td>250</td>
<td>108</td>
<td>43.2</td>
<td>75.5</td>
<td>88.7</td>
</tr>
</tbody>
</table>

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### References


