RESEARCH COMMUNICATION

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

Viroj Wiwanitkit

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

Asian Pacific J Cancer Prev, **6**, 535-536

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 tocaast 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 hesptitis 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 (Rinsurongkawong, 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

Department of Laboratory Medicine, Faculty of Medicine,Chulalongkorn University, Bangkok Thailand 10330, email: wviroj@yahoo.com

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

Items	Reference number of the studies		
	(Rinsurongkawong, 1993)	(Srivatanakul et al., 1984)	(Chudhabuddhi et al., 1985)
Study group	Population-based	Community-based	Population-based
Character of screenees	Out patient cases	General population	Out patient cases
Number of screenees	2,039	2,006	250
Positives	28	0	108
Positive rate (%)	1.4	0	43.2
Sensitivity (%)	67.6	100	75.5
Specificity (%)	100	98.6	88.7

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 slowing 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.

References

Chudhabuddhi C, Srivatanakul P, Boonyapisit S, Anukarahanonta T (1985). Diagnostic value of alpha-fetoprotein and gamma-glutamyl transpeptidase in hepatocellular carcinoma. *Intern Med*, **1**, 21-4.

Daniele B, Bencivenga A, Megna AS, Tinessa V (2004). Alpha-fetoprotein and ultrasonography screening for hepatocellular carcinoma. *Gastroenterology*, **127(5 Suppl 1)**, S108-12.

Di Bisceglie AM (2004). Issues in screening and surveillance for hepatocellular carcinoma. *Gastroenterology*, **127(5 Suppl 1)**, S104-7.

Lee HY, Jung JH, Kang YS, et al (2004). Clinical significance of transiently elevated serum AFP level in developing hepatocellular carcinoma in HBsAg positive-liver cirrhosis. *Korean J Gastroenterol*, **43**, 252-9.

Parvez T, Parvez B, Pervaiz K, et al (2004). Screening for hepatocellular carcinoma. *J Coll Physicians Surg Pak*, **14**, 570-5.

Rinsurongkawong S (1993). Search for hepatocellular carcinoma in the Thai population with viral B hepatitis by using ultrasonography and alpha-fetoprotein level. *Thai Cancer J*, **19**, 14-18.

Songsivilai S, Dharakul T, Senawong S (1995). Hepatitis B- and hepatitis C-associated hepatocellular carcinoma: evaluation of alpha-fetoprotein as a diagnostic marker. *Asian Pac J Allergy Immunol*, **13**, 167-71.

Srivatanakul P, Sriplung H, Deerasamee S (2004). Epidemiology of liver cancer: an overview. *Asian Pac J Cancer Prev*, **5**, 118-25.

Srivatanakul P, Tanprasert S, Sombooncharoen S (1984). Serum alpha-fetoprotein in healthy carriers of hepatitis B virus. *Thai Cancer J*, **12**, 9-14.

Wiwanitkit V, Suyaphan A (2002). High prevalence of HBsAg seropositivity in Hilltribers in the Mae Jam district in northern Thailand. *MedGenMed*, **4**, 26.

Wiwanitkit V (2002). An overview of hepatitis B serology screening check-up program among Thai workers. *Viral Immunol*, **15**, 647-9.