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Research Article,

Analysis of Alpha Fetoprotein Levels in Hepatocellular Carcinoma Patients in West Sumatera, Indonesia.

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Abstract:
Hepatocellular carcinoma (HCC) is a malignant tumor derived from hepatocyte cells including primary malignant epithelial tumors. Hepatocellular carcinoma is the second most common cause of cancer-related deaths worldwide, and events are expected to increase in the future and the incidence of HCC will continue to increase until 2030. Early detection of HCC is very important to improve prognosis and long-term survival. late detection of HCC and lack of care. This study aims to determine serum AFP levels in HCC patients in DR. M. Djamil Hospital, Padang, West Sumatra, Indonesia. This research is a descriptive study, which consisted of 30 serum samples of HCC patients. The examination method is Enzyme Linked Fluorescent Assay (ELFA). In this study, the incidence of hepatocellular carcinoma in men was higher than in women. For both sexes, the incidence of HCC increases with ages between 26-60 years. The increased presence of AFP can alert doctors to the possibility of a diagnosis of HCC.

Key words: Alpha fetoprotein serum, Hepatocelular carcinoma, West Sumatera, Indonesia

Introduction:

Hepatocellular carcinoma (HCC) is the second most common cause of cancer-related death in the entire world, and events are expected to increase in the future(1). The Incident HCC will continue to increase until 2030, with the highest increase in Hispanics, followed by blacks, and then whites, with a decline noted among Asian-Americans According to estimates from the Surveillance Epidemiology End Result (SEER) program of the National Cancer Institute (NCI),(2) Research in Indonesia, Dr. Kariadi Semarang Indonesia, during 2013-2015, there were 205 people diagnosed with HCC [4], while in Immanuel Bandung Hospital Indonesia from January 2013 to December 2014, the number of HCC patients was 46 patients (3) HCC risk factors have been identified based on Epidemiological studies of chronic HBV and HCV infections and prolonged exposure to alfatoxin (4)(5) Early detection of HCC is very important to improve prognosis and long-term survival. late detection of HCC and lack of care, resulting in more than two thirds of HCC patients being diagnosed at an advanced stage of HCC, thus The 5-year survival rate is less than 10%(6). The diagnosis of HCC is obtained from the patient's history, examination of the patient, by imaging (ultrasonography, MRI or CT scan) and elevated serum tumors alpha fetoprotein biomarker (AFP) (> 400 ng mL). Early diagnosis is important to improve the patient's life expectation and only 30-40% of patients are diagnosed at an early stage. Biomarkers at HCC do not just help diagnose but also predict the prognosis or recurrence and in choosing therapy(5). This study aims to determine serum AFP levels in HCC patients at DR. M. Djamil Hospital, Padang, West Sumatera, Indonesia.

Procedures and Methods:

This research is a descriptive study, consisting of 30 serum samples of patients who have been diagnosed with HCC by a specialist in internal medicine at M. Djamil Hospital in January 2019-

April 2020. This examination method is Enzyme Linked Fluorescent Assay (ELFA), the principle is that the antigen contained in the sample binds to the monoclonal antibody which is superimposed on the interior of the solid phase receptacle (SPR) and to the antibody with biotin. The results of the examination were not affected by jaundice samples (bilirubin concentrations up to 196 µmol/L), hemolysis (hemoglobin concentrations to 300 µmol/L) and lipemic (triglycerides > 2gr/L). Samples stored at 2-80C can last for 7 days while at -25 ± 60C, can last up to 2 months.(7)

Result:

The number of serum samples with HCC patients in this study were 30 serum samples, consisting of 20 men (67%), 10 women (33%) (*Diagram 1*).

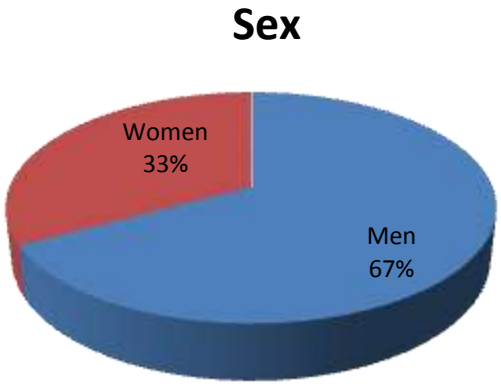

Figure 1. Proportion of HCC Patients by Sex

This study showed that the mean age of HCC patients were 48.6 ± 17.47 years old, with a minimum age was 8 years, and a maximum age was 76 years. The proportion of HCC patients based on age, divided into 4 age groups, including children <12 years, adolescents 12-25 years, adults 26-60 years, and elderly> 60 years. The results of this study showed that there were 1 (3%) child patients, 3(10%) adolescents' patients, 18(60%) adult patients, and 8(27%) elderly patients (*Diagram 2*).

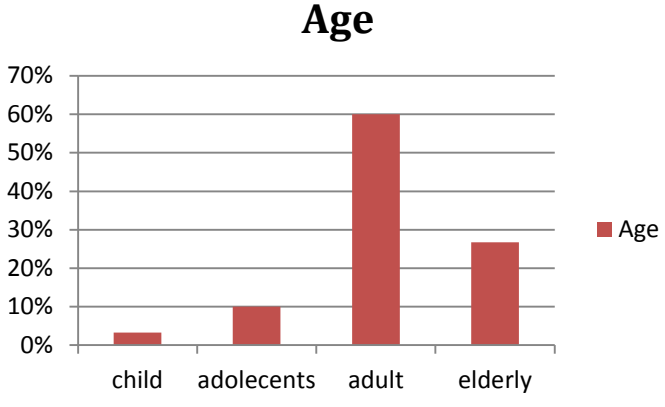

Figure 2. Proportion of HCC Patients by Age

The mean serum AFP levels in HCC patients in the General Hospital. DR. M.Djamil Padang, West Sumatera was 30582.73 ng/mL, with median 14029 ng/mL, with a lowest level was 671 ng/mL, and highest level was 80000 ng/mL (*Table 1.*)

Table 1. AFP levels in HCC patients

Parameter	Mean ± median	Lowest Level	Highest Level
AFP Serum (ng/mL)	30582.73 ± 14029	671	80000

In this study, 87% of HCC patients have serum AFP levels> 1000 ng / mL, and 13% <1000 ng / mL and AFP serum markers may be adjunctive to guide HCC prognosis (*Diagram 3.*)

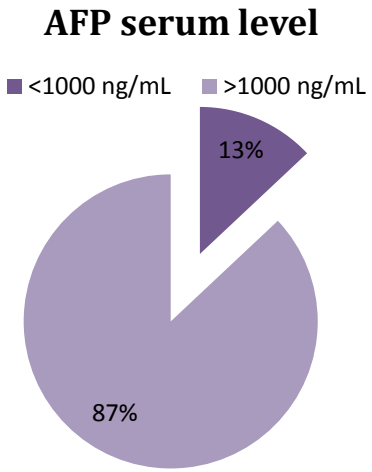

Figure 3. Proportion of HCC Patients by AFP Level

Discussion:

The study consisted of 30 serum samples of HCC patients including 67% men and 33% women. the same as a study in South America at fourteen research centers from 6 countries with a large sample size of 1.336 patients found 68% of HCC patients were male (8).This is similar to the 2016 Chinese study of the incidence of HCC in men higher than women, with the ratio of men to women ranging between 2: 1 and 4: 1, with the difference being much greater in high-risk areas(9). Research in Houston, Texas 2018 reports that HCC patients are dominated by men reaching 95.6% (10). This study showed that the mean age of HCC patients were 48.6 ± 17.47 years old, including there were 3% in <12 years old, 10% in 13-25 years old, 60% in 26-60 years old, and 27% in >60 yaers old. In Texas, the mean age at the time of the HCC diagnosis was 59.2 ± 9 years in African Americans, 61.2 ± 8 years in whites and 59.7 ± 9 years in Asian Pacific Islanders (10).

The mean serum AFP levels in HCC patients in the

General Hospital. DR. M.Djamil Padang, West Sumatera was 30582.73 ng/mL, with median 14029 ng/mL An increase in serum AFP levels increases, can remind doctors about the possibility diagnosis of HCC; However, more importantly, the results of normal or low serum AFP examination may be due to new HCC lesions, especially for patients at risk (11)(12)(13). Serum markers may be adjunctive to guide HCC prognosis. High AFP levels (eg, >1000 ng/mL) are predictive of poorer post–liver transplant survival for patients with HCC, allowing stratification independently of traditional characteristics such as tumor size(11).

Conclusion:

Incidence of hepatocellular carcinoma in men is higher than that in women. For both genders, the incidence of HCC increases with age among 26-60 years. The presence of an elevated AFP, can remind doctors about the possibility diagnosis of HCC.

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