

The expressions of CD44, CD90 and alpha fetoprotein biomarkers in Indonesian patients with advanced liver disease: an observational study

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Abstrak

ABSTRACT

Background: increased serum alpha fetoprotein (AFP) levels are often found in patients with advanced hepatocellular carcinoma (HCC). Cluster Differentiation 44 (CD44) and CD90 are stem cell biomarkers that have been assumed as the early HCC markers and associated with onset and progressivity of HCC. The study related to HCC stem cell has not been available in Indonesia. The present study aimed to evaluate the expression of cancer stem cell markers (CD44, CD90) and AFP levels in patients with advanced liver disease. Methods: an observational study was conducted in 41 patients with chronic hepatitis B and/or C infection, liver cirrhosis, and HCC at dr. Saiful Anwar General Hospital. CD44 and CD90 expressions were measured with flow cytometry, and AFP serum levels with ELISA. Data on patient characteristics were evaluated using bivariate and multivariate statistical analysis (One-way ANOVA, Mann-Whitney, Chi-Square, Kruskal-Wallis). Data of CD44, CD90 and AFP were analyzed using Kruskal Wallis test with a significance value of $p < 0.05$, and diagnostic power was analyzed using receiver operating characteristic (ROC). Results: the subjects of our study were 16 patients with chronic hepatitis, 15 patients with liver cirrhosis, and 10 patients with HCC. There was a significant difference regarding CD44+CD90+ and AFP among those three groups ($p=0.001$; $p=0.000$) specifically in chronic hepatitis compared to liver cirrhosis ($p=0.002$; $p=0.000$) and HCC ($p=0.002$; $p=0.000$) respectively. ROC analysis showed the best diagnostic power for the combination of CD44+CD90+ and AFP (AUC=0.981; $p=0.000$). Conclusion: there are higher expressions of CD44+CD90+ and serum AFP levels in patients with HCC compared to the other two groups (those with chronic hepatitis and liver cirrhosis). The combination of both parameters has the best diagnostic power of HCC.