Evaluation of Joint Detection of CA19-9, AFP and CEA for Identification and Diagnosis of Cholangiocarcinoma

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Background: Research has shown that the sensitivity of CA19-9 is most reliable marker for diagnosis of cholangiocarcinoma, but still varies in different types of liver cancer. In recent years, the joint detection of multiple tumor markers met the requirements of the elevating sensitivity and the high accuracy of diagnosis. Nonetheless, there is no previous data collection in Chonburi Hospital.

Objective: To explore the application of joint detection of serum CA19-9, AFP and CEA for identification and diagnosis of cholangiocarcinoma.

Materials and Methods: A descriptive prospective and retrospective study was conducted from January 2012 to August 2017 in patients with a diagnosis of cholangiocarcinoma and hepatocellular carcinoma (HCC) at Chonburi Hospital. Diagnosis of all patients was confirmed by imaging or histopathology.

Results: The levels of serum CA19-9 and CEA in cholangiocarcinoma patients were significantly higher than those in HCC patients. Whereas, the level of serum AFP was significantly lower. The area under ROC curve of single detection of serum CA19-9, AFP, and CEA were 0.89, 0.13, and 0.70, with the optimal cut-off values of 125.17 U/ml, 16.67 ng/ml, and 12.25 ng/ml correspondingly. However, single marker yielded diagnosis accuracy less than 77%. With joint detection, the combined diagnostic outcome of serum CA19-9, AFP and CEA was highest.

Conclusions: In cases with suspected cholangiocarcinoma and HCC, the joint detection of serum CA19-9, AFP and CEA can be helpful for diagnosis. The cut-off values for cholangiocarcinoma are serum CA19-9 > 125.17 U/ml, AFP < 16.67 ng/ml, and CEA > 12.25 ng/ml, with 84.8% sensitivity, 87.1% specificity, and 85.9% diagnosis accuracy.

Keywords: Cholangiocarcinoma, Hepatocellular carcinoma, Tumor markers, Identification and diagnosis, ROC curve