
Prognostic Role of Serum PIVKA-II in Patients who underwent Living Donor Liver Transplantation for HBV Related Hepatocellular Carcinoma

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Background and Aims: Protein induced by vitamin K absence or antagonist (PIVKA-II) has been reported to be associated with recurrence of hepatocellular carcinoma (HCC). However, prognostic role of PIVKA-II in HBV-related HCC remains clarified because most studies were performed in HCV-related HCC. The aim of this study was to evaluate the prognostic role of PIVKA-II and to investigate postoperative role for detecting tumor recurrences in HBV-related HCC in living donor liver transplantation (LDLT).

Methods: From August 2005, patients with HCC were prospectively checked by PIVKA-II pre- and post-transplant periods. A total of 49 patients who underwent LDLT for HBV-related HCC between August 2005 and December 2007 were enrolled. The patients were grouped according to pre-transplant serum PIVKA-II (<100 mAU/ml vs. ≥100 mAU/ml). Various clinicopathological characteristics were compared between groups. The events that PIVKA-II increased over 40 mAU/ml during follow-up were also evaluated.

Results: The mean age was 53.6 years and there were 43 male and 6 female. The median values of serum PIVKA-II level was 29 mAU/ml (2~2,197). Overall 3-year survival and disease-free survival rate were 85.4% and 76.3% respectively. According to comparison between high and low PIVKA-II groups, high PIVKA-II (≥100 mAU/ml) were significantly associated with CTP class C ($p=0.008$), positive PET image ($p=0.003$), vascular invasion ($p=0.009$), intrahepatic metastases ($p<0.001$), Edmondson-Steiner grade III or IV ($p=0.013$) and tumor recurrences ($p=0.004$). Overall 3-year survival rate of low and high PIVKA-II were 97.0% and 53.3% respectively ($p=0.002$). Overall 3-year disease-free survival rate of low and high PIVKA-II were 85.2% and 45.5% respectively ($p=0.003$). The increase of PIVKA-II during follow-up was observed 39 times in 33 patients. Among these, only 10 events were related with tumor recurrence ($p=0.058$).

Conclusions: Serum PIVKA-II levels were related to the tumor invasiveness in patients who underwent LDLT for HBV-related HCC and pre-transplant high PIVKA-II level was associated with poor prognosis. Post-transplant role of PIVKA-II was limited for detecting tumor recurrence because of frequent increase of PIVKA-II related to abnormal liver function.