Background: We intended to explore hepatitis B virus (HBV) reactivation after percutaneous radiofrequency ablation (PRFA) for HBV-related hepatocellular carcinoma (HCC) and the impact of antiviral therapy (AVT) on post-PRFA outcomes.

Methods: Data on 538 consecutive patients who underwent PRFA for HBV-related early HCC at the Eastern Hepatobiliary Surgery Hospital between 2007 and 2011 were studied. Propensity score matching (PSM) analysis was used to compare the outcomes between the study groups. Recurrence free survival (RFS) and tumor recurrence were endpoints. Post-PRFA viral reactivation, hepatitis, and patterns of tumor recurrence were also observed. Logistic regression, Kaplan-Meier method and Cox proportional regression were used during the analysis.

Results: Viral reactivation developed in 10.8% of patients who underwent PRFA. Patients with HBV reactivation had higher 1-, 3-, and 5-year tumor recurrence rates than patients without viral reactivation after PRFA (46.9%, 81.6% and 81.6% vs 36.0%, 63.5% and 65.4%, P = 0.004). AVT reduced viral reactivation rate (P < 0.001) and decreased 1-, 3-, and 5-year tumor recurrence rate when compared with the no-AVT (30.2%, 58.6% and 61.4% vs 44.1%, 72.6% and 73.0%, P = 0.001). The local recurrence of tumor after PRFA was only associated with tumor diameter (P = 0.010), however, viral reactivation (P = 0.015) and AVT (P < 0.001) were independent risk factors of intrahepatic distant recurrence.

Conclusions: HBV could be reactivated after PRFA. Viral reactivation and AVT had opposite impact on intrahepatic distant recurrence but not local tumor progression of HCC patients after PRFA.

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