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Hepatocellular Carcinoma with Portal Vein Invasion: Non-Surgical Treatment

Bo Hyun KIM

Center for Liver and Pancreatobiliary Cancer, National Cancer Center, Korea

Lecture : A substantial proportion of patients with hepatocellular carcinoma (HCC) present with portal vein invasion (PVI). The extent of portal vein tumor thrombosis (PVTT) can be classified into 4 categories: Vp1, existence of PVTT distal to the second-order branches of portal vein; Vp2, existence of PVTT in the second-order branches of portal vein; VP3, PVTT in the first-order branches of portal vein; and VP4, existence of PVTT in main portal trunk or portal branches contralateral to primary involved lobe. The degree of PVTT has shown the close association with prognosis of HCC across all treatment options.
Clinical practice guidelines recommend systemic therapy for advanced HCC with PVI based on the highest level of evidence. Sorafenib has firstly shown to improve overall survival of patients with advanced HCC in 2007.1 Among 299 sorafenib-treated patients, 108 (36%) had macrovascular invasion. Subgroup analysis consistently demonstrated significantly longer overall survival (8.1 vs. 4.9 months; hazard ratio [HR], 0.68; 95% confidence interval [CI], 0.49-0.93) and time to progression (4.1 vs. 2.7 months; HR, 0.57; 95% CI 0.39-0.84) in sorafenib-treated patients with macrovascular invasion.2 Lenvatinib, another 1st-line systemic agent, has proven non-inferiority to sorafenib in advanced HCC.3 The REFLECT study included patients with macroscopic portal vein invasion (199/954, 21%); however, it excluded patients with main portal vein invasion. Recently approved systemic agents, atezolizumab plus bevacizumab was superior to sorafenib in overall survival and progression-free survival.4 Of 336 atezolizumab-bevacizumab treated patients, 38% had macrovascular invasion. Atezolizumab with bevacizumab also showed significant efficacy in patients with microvascular invasion (HR 0.58 [95% CI, 0.38-0.89] for overall survival; HR 0.53 [95% CI, 0.37-0.76] for progression-free survival).
Transarterial therapy and/or radiotherapy can also be an option for HCC with PVI. A single-center randomized controlled study has demonstrated that transarterial chemoembolization with external beam radiotherapy significantly improved progression-free survival and overall survival compared with sorafenib in patients with macroscopic vascular invasion.5 Earlier studies reported that transarterial chemoembolization improved overall survival of HCC patients with PVTT compared to supportive care.6,7 Recent meta-analysis indicated that radioembolization was safer and more effective than sorafenib in HCC with PVI.8