

MELD Score is a Predictor of Early Deterioration of Liver Function and Overall Survival in patients with Hepatocellular Carcinoma Receiving Radiotherapy

Y. Lai, Y. Kuo, Y. Wang, J. Liang, S. Chen,

Department of Radiation Oncology, China Medical University Hospital, Taichung, Taiwan

Purpose/Objective(s):

Hepatocellular carcinoma (HCC) is commonly associated with cirrhosis. Radiotherapy (RT) is a treatment of choice in patient with a large tumor burden, or portal vein tumor thrombosis. To avoid early deterioration of liver function (EDLF), selection of patient for hepatic RT is imperative. This study was to compare the predictive ability of various pretreatment scoring systems including Child-Turcotte-Pugh (CTP) score, Model for End-Stage Liver Disease (MELD) score, staging systems for TNM seventh edition, Barcelona Clinic Liver Cancer (BCLC), and Cancer of the Liver Italian Program (CLIP).

Materials/Methods:

Between January 2010 and August 2013, 103 consecutive patients diagnosed with advanced HCC and receiving hepatic RT were included for this retrospective analysis. Eighty-six (83.5%) had chronic hepatitis B or C virus-related HCC. The majority of patients were BCLC stage C (A-5, B-11, C-82, D-5) and CTP score A (A-68, B-31, C-4). Portal vein thrombosis was found in 83 patients. The EDLF was defined as any event of grade 3 or above liver toxicities occurring within 2 months after the commencement of RT. The surveillance markers for the EDLF included serum bilirubin, aspartate aminotransferase/alanine aminotransferase, and albumin. The toxicities were graded according to the Common Terminology Criteria for adverse events Version 4. The data of dose-volume histogram (DVH) were also retrieved for the analysis. Logistic regression analysis was used to recognize the predictors of the EDLF. Prognosticators for survival were identified by Cox regression analysis.

Results:

The median follow-up of alive patients was 9 months. 30 patients (29.1%) developed the EDLF. MELD score > 10 is the predictor for the EDLF (Odds ratio 4.67, 95% confidence interval 1.87-11.51, $p=0.001$). The incidence in patients with MELD score > 10 and ≤ 10 was 47.6% and 16.4%, respectively. The parameters of DVH were not associated with the EDLF. MELD score > 10 and CLIP score > 2 were two prognostic factors associated with inferior overall survival (Hazard ratio 1.930, $p = 0.011$; Hazard ratio 3.984, $p < 0.001$, respectively). Patients with MELD score > 10 had a lower median survival compared to those with MELD score ≤ 10 (4 months vs. 9 months). The median survival for patients with CLIP score > 2 and ≤ 2 were 3 months and 14 months, respectively.

Conclusions:

To optimize case selection for patients with advanced HCC requiring RT, MELD score > 10 is the most informative scoring systems in predicting the EDLF. Together with CLIP score, MELD score can be also used for predicting overall survival.