■ Sat-077 ■

Impact of antiviral therapy on risk prediction models for hepatocellular carcinoma development

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Background/Aims: Risk prediction models for hepatocellular carcinoma (HCC) development have been proposed. However, the influence of antiviral therapy (AVT) on these models in patients with chronic hepatitis B (CHB) is unknown. We investigated the dynamics of risk prediction models during AVT and the association between on-treatment values from these models and the risk of HCC development. **Methods:** Patients with chronic HBV infection who initiated antiviral therapy using entecavir or tenofovir between 2005 and 2017 at Severance Hospital, Yonsei University College of Medicine (Seoul, Republic of Korea) were considered eligible in this study. CHB was defined as a persistent presence of the serum HBV surface antigen >6 months. During the follow up period at 6-month intervals, patients visited the clinic and underwent abdomen ultrasonography and laboratory tests, including routine blood chemistry, serum HBV-DNA level, and other serologic viral markers. **Results:** Between 2005 and 2017, 6,098 patients with CHB (1,758 non-cirrhotic, 4,340 cirrhotic) in whom AVT was initiated with entecavir (*n*=3,818) or tenofovir (*n*=2,280) were recruited. The mean age of the study population was 49.1 years and 61.4% (*n*=3,742) of the patients were male. The mean CU-HCC value was 12.7 at baseline in the entire study population; it was significantly lower (mean, 8.6) after 1-year of AVT (p<0.001) and was maintained throughout 5-years of AVT (mean, 8.2–8.4; p > 0.05). The proportion of high-risk patients (CU-HCC score ≥ 20) was 28.9% at baseline, which significantly decreased after 1-year of AVT (4.8%; p<0.001) and was then maintained through 5-years of AVT (2.6–3.5%; p > 0.05). The CU-HCC score after 1-year of AVT independently predicted the risk of HCC development (hazard ratio=1.037), together with age, male gender, liver cirrhosis, and platelet count (all p<0.05). Similar findings were obtained when the REACH-B criteria were used for non-cirrhotic patients. **Conclusions:** CU-HCC and REACH-B scores were significantly lower after 1-year of AVT and were maintained thereafter. CU-HCC and REACH-B scores after 1-year of AVT independently predicted the risk of HCC development in patients with CHB in whom AVT was initiated.

Table 1. Baseline characteristics (n=6,098)

Variables	All	Non-cirrhotics (n=4,340, 71.2%)	Cirrhtoics (n= 1,758, 28.8%)	*P* value
Demographic variabels				
Age, years	49.1 ± 12.3	47.4 ± 12.8	53.2 ± 9.7	<0.001
Male gender	3,742 (61.4)	2,643 (60.9)	1,099 (62.5)	0.241
Body mass index, kg/m^2	23.3 ± 3.3	23.1 ± 3.3	23.9 ± 3.1	<0.001
Diabetes	1,004 (16.5)	643 (14.8)	361 (20.5)	<0.001
Hypertension	284 (4.7)	196 (4.5)	88 (5.0)	0.411
Liver cirrhosis	1,758 (28.8)	-	1,758 (28.8)	-
Laboratory variables				
Aspartate aminotransferase, IU/L	97.7 ± 259.6	105.4 ± 288.7	78.8 ± 167.0	<0.001
Alanine aminotrafferase, IU/L	115.7 ± 279.3	129.1 ± 315.7	82.6 ± 152.7	<0.001
Serum albumin, g/dL	4.0 ± 0.6	4.1 ± 0.6	4.0 ± 0.6	<0.001
Total bilirubin, mg/dL	1.5 ± 3.0	1.5 ± 3.2	1.4 ± 2.4	0.697
Platelet count, 10^9/L	169.2 ± 76.0	187.0 ± 77.0	125.4 ± 52.1	<0.001
Prothrombin time, INR	1.1 ± 0.4	1.1 ± 0.4	1.2 ± 0.3	0.001
HBeAg positivity	2,708 (44.4)	2,035 (46.9)	673 (38.3)	<0.001
HBV DNA, log$_{10}$IU/mL	4.7 ± 2.5	4.8 ± 2.6	4.6 ± 2.2	0.024
Entecavir/ tenofovir	3,818 (62.6)/ 2,280 (37.4)	2,703 (62.3)/ 1,637 (37.7)	1,115 (63.4)/ 643 (36.6)	0.403
Risk prediction model				
REACH-B	-	9.3 ± 3.2	-	-
CU-HCC	12.7 ± 11.6	7.5 ± 8.6	23.9 ± 9.1	<0.001

Variables are expressed as mean ± SD or n (%).
INR, international normalized ratio; HBeAg, hepatitis B e antigen.

■ Sat-078 ■

Clinical Characteristics and outcomes of Chronic Hepatitis C among the Ex-Hansen's Disease

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Background/Aims: Recently, group infection reports from some medical institutions and the introduction of direct acting antiviral agents are raising interest in hepatitis C in Korea. However, there are limited data about the prevalence and treatment efficacy in Hansen's disease patients who are traditionally known as the most vulnerable group of hepatitis C. Therefore, we aimed to elucidate of prevalence and clinical outcomes of hepatitis C in patients with Hansen's disease in Sorokdo. In addition, We compared patients who were treated with hepatitis C at Chonnam National University Hospital as a control group. **Methods:** We retrospectively reviewed medical records of 511 ex-Hansen's disease patients who were hospitalized at Sorokdo national hospital from May 2016 to March 2018. Among them, 50 patients with chronic hepatitis C were enrolled in this study. As a control group, 73 patients with hepatitis C at CNUH were registered. **Results:** Among all patients on Sorokdo national hospital, the prevalence of positivity of HCV Ab was 18.4%. The mean age of the enrolled patients was 76.5 ± 6.9 years, and 28% (14/50) of the cohort was diagnosed with liver cirrhosis. 17 patients [genotype Ib, RAS negative] were treated with daclatasvir(DCV) and asunaprevir(ASV), 3 patients [1b, RAS positive] were treated with DCV+sofosbuvir (SOF), 2 patients [Ib, Child B] were treated with DCV+SOF+Ribavirin(RBV). 28 patient [2a/c (*n*=1), 2a (*n*=27)] were treated with SOF+RBV. During the treatment period, there was only one (1/50, 2%) case in which the deterioration of Child score was noted. In the genotype 2 group, the number of patients experienced hemolytic anemia caused by RBV was 85.7% (24/28) and 28.5% (8/28) of them received blood transfusions. SVR was achieved at a rate of 90.1% (20/22) in genotype 1b, 92.9% (26/28) in genotype 2. **Conclusions:** The treatment of efficacy was not different between ex-Hansen's disease population and the general public. However, it is necessary to pay attention to the development of anemia in ex-Hansen's disease population during the treatment. Therefore, active treatment is necessary in HCV patients with ex-Hansen's disease population who are medically underserved populations.