

Hepatocellular Carcinoma Development in Patients with Diabetes Mellitus: A Nationwide Case-Control Study

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Abstract Text

Background: Diabetes mellitus (DM) is a known risk factor for hepatocellular carcinoma (HCC) development. However, the incidence among DM patients is reported to be less than 0.1% per year, which is far below the threshold for surveillance. We aimed to investigate other risk factors for HCC development in Japanese DM patients.

Methods: We enrolled DM patients who were diagnosed as HCC from 2010 to 2015 and followed at teaching hospitals certificated by both Japan Society of Hepatology and Japan Diabetes Society for at least five years before HCC diagnosis. Those with chronic viral hepatitis were excluded. Clinical data at the initial HCC diagnosis and those at 5-years before the diagnosis were collected via electric data capture system. Age and gender-matched non-HCC controls were selected from a prospective cohort of Japanese DM patients with a follow-up period of 5 years at tertiary care hospitals at a 1:4 ratio. We investigated clinical characteristics of the HCC patients and analyzed risk factors for HCC development using conditional logistic regression. Fibrosis-4 (FIB-4) index was calculated and included for the analysis.

Results: A total of 264 HCC patients from 83 hospitals were registered in the database. The mean age was 72.8 ± 8.7 years, and 79.7% were males. The period from DM diagnosis and HCC diagnosis were 14.5 years on average. The BMI, fasting blood glucose, and HbA1c at five years before the diagnosis of HCC was 25.9 ± 4.5 kg/m², 159.2 ± 56.8 mg/dL, and $7.42 \pm 1.46\%$, respectively. The BMI and HbA1c significantly decreased in 5 years. The FIB-4 index also increased significantly from 3.59 ± 2.70 to 4.79 ± 3.69 . Multiple conditional logistic regression with 191 HCC patients and 764 controls without missing essential data revealed that higher BMI, lower albumin, higher GGT, higher FIB-4 index, and the presence of hypertension were significant risk factors for HCC development. Especially the hazard ratio between FIB-4 in the first quartile and the fourth quartile was 16.245 (95% confidence interval, 7.824–33.728; $P < 0.0001$). On the other hand, HbA1c and the presence of dyslipidemia were not significant.

Conclusion: In addition to previously-reported higher age and male gender, BMI and FIB-4 index can be used to identify a high-risk population for the HCC surveillance in DM patients.

Disclosures

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