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**Synergistic association of Sodium-glucose cotransporter-2 inhibitor and metformin on liver and non-liver complications in patients with type 2 diabetes mellitus and metabolic dysfunction- associated steatotic liver disease**

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Metabolic dysfunction-associated steatotic liver disease (MASLD) is associated with increased risk of liver-related outcomes such as liver cirrhosis and non-liver complications such as chronic kidney disease. Coexistence of type 2 diabetes mellitus (T2DM) and MASLD (diabetic MASLD) leads to even worse clinical outcome.

This retrospective population-based cohort study aimed to evaluate the long-term effect of sodium-glucose contransporter-2-inhibitor (SGLT-2i) on liver and non-liver outcomes among patients with diabetic MASLD.

Data was obtained from Merative Marketscan Research Databases between April 2013 and December 2021. From this large USA based database, 399126 eligible patients with diabetic MASLD and private health insurance were identified. The mean age of the group was 54.4 years. Patients with diabetic MASLD who had received SGLT-2i prescriptions were compared to those who took oral glucose-lowering drugs (oGLDs).

Primary outcomes were liver complications including hepatocellular carcinoma (HCC) and liver cirrhosis as well as non-liver complications such as cardiovascular disease (CVD), chronic kidney disease (CKD) and non-liver cancer.

Among the matched cohorts, when compared with oGLD users, SGLT-2i users had significantly lower incidence and risk of liver related complications and non-liver cancer. The result remained consistent in most cases (77 of 88) when the patients were further stratified according to other subgroups such as age and sex. This study also found that SGLT2i in combination with metformin results in an even greater risk reduction in liver and non-liver complications compared to metformin or SGLT-2i use alone and when compared with oGLD use.