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Mini Review

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Comparative Analysis of Hepatocellular Carcinoma Patients with and Without Type 2 Diabetes Mellitus

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Purpose of the Study: To evaluate the clinical impact of Type 2 Diabetes Mellitus (T2DM) in patients with Hepatocellular Carcinoma (HCC) in comparison to those without T2DM.

Methods: Retrospective study, HCC data obtained from public domain (kaggle.com).

Summary of Results Obtained: Mean age in the diabetic and non-diabetic groups were 70.4 and 62.08 years respectively. There was a female preponderance seen in both groups. Mean aspartate aminotransferase and alanine aminotransferase (AST/ALT) values in diabetic group were 81.42/54.8 U/L and in non-diabetic group were 116.72/77.4 U/L (p= 0.19). Mean international normalized ratio (INR) in diabetic and non-diabetic groups were 1.51 and 1.34 respectively (p=0.32). Mean total bilirubin values in diabetic and non-diabetic groups were 2.39 and 1.95 mg/dL respectively (p=0.63). Total number of patients with varices were 33 in the diabetic and 32 in the non-diabetic group (p=0.59). Total number of patients with portal hypertension were 33 in the diabetic and 34 in the non-diabetic group (p=0.32). Portal venous thrombosis was found in 9 patients in the diabetic and 12 patients in the non-diabetic group (p=0.67). Metastatic disease was seen in 10 patients in the diabetic and 12 patients in the non-diabetic group (p=0.74).

Grade 1 ascites was seen in 36, grade 2 in 12, grade 3 in 2 in diabetic group versus 36 in grade 1 (p=0.45), 9 in grade 2 (p=0.47), 5 in grade 3 (p=0.63) in non-diabetic group. Grade 1 hepatic encephalopathy (HE) was seen in 42, grade 2 in 7, grade 3 in 1 in diabetic group versus 45 in grade 1 (p=0.31), 5 in grade 2 (p=0.35), none in grade 3 in non-diabetic group. There was no statistically significant difference in the laboratory values and clinical complication in either group.

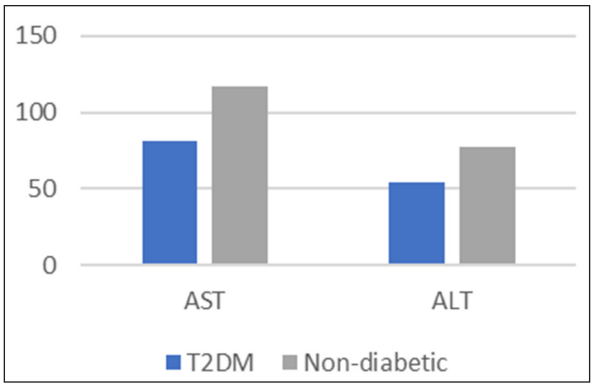

Figure 1: Comparison of AST and ALT (U/L) values in diabetic and non-diabetic groups. AST: aspartate aminotransferase; ALT: alanine Aminotransferase.

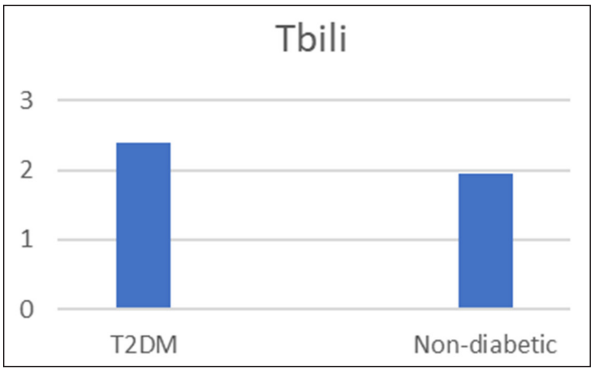

Figure 2: Comparison of total bilirubin values in diabetic and non-diabetic groups. Tbili: total bilirubin.

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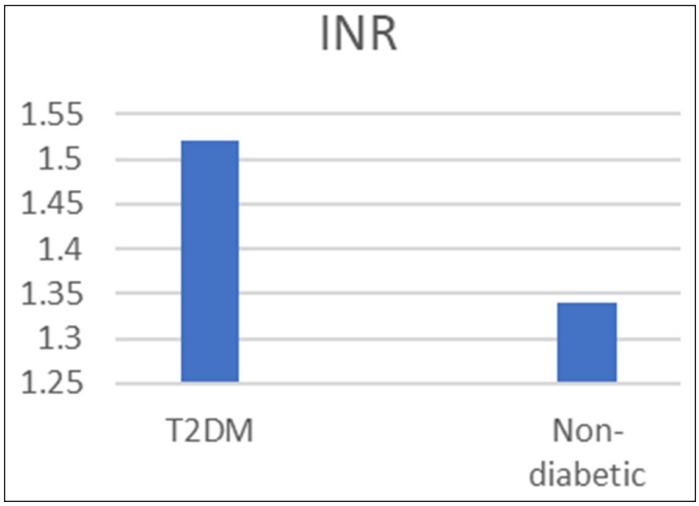

Figure 3: Comparison of international normalized ratio values in diabetic and non-diabetic groups. INR: international normalized ratio.

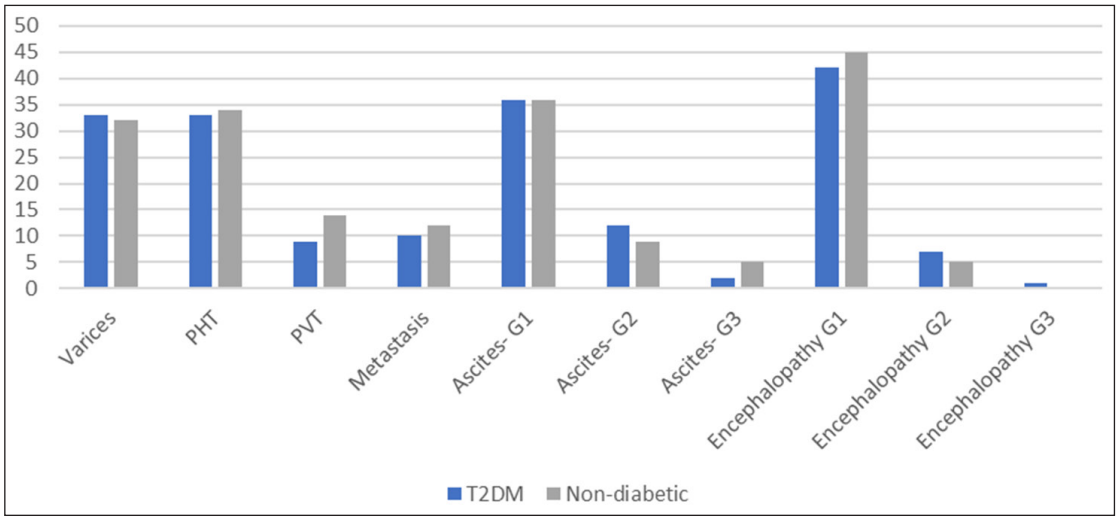

Figure 4: Comparitive analysis of clinical complications in HCC patients with and without Type 2 diabetes mellitus. PHT: Portal Hypertension; PVT: Portal Venous Thrombosis, G: Grade, T2DM: Type 2 diabetes mellitus.

Statement of the Conclusion Reached

There is a paucity of studies evaluating the clinical impact of T2DM in patients with HCC. Our study aimed at performing a comparative analysis between two groups of HCC patients with and without T2DM. We did not find any statistically significant difference in the overall epidemiological data (age and sex) and clinical profile (laboratory values and clinical complications) between diabetic and non-diabetic patients with HCC. Although T2DM has been associated with increased incidence of HCC, our study shows that T2DM is not necessarily indicative of worse clinical complications in HCC. Large, prospective trials are indicated to further elucidate this.

Re Submitting for ACG 2022

Introduction

Type 2 Diabetes Mellitus (T2DM) is associated with an increased risk of incident hepatocellular carcinoma (HCC) [1]. The underlying mechanism is complex, likely related to development of systemic insulin resistance, release of multiple pro-inflammatory and pro-oxidant cytokines. There is a paucity of studies evaluating the clinical impact of T2DM in patients with HCC. The aim of this study is to elucidate the association between T2DM and HCC in terms of clinical outcomes.

Method

A comprehensive retrospective analysis of 100 patients (50 patients with T2DM and 50 patients without T2DM) with HCC was conducted. Data was collected on demographics, laboratory values (aspartate (AST) and alanine aminotransferase (ALT), international normalized ratio (INR)), clinical complications including development of esophageal varices, portal hypertension, ascites, hepatic encephalopathy and metastasis. A comparative analysis was then performed between the two groups.

Results

Mean age in diabetic (DG) & non-diabetic (NDG) groups were 70.4 & 62.08 years respectively. There was female preponderance in both groups. Mean AST/ALT values in DG were 81.42/54.8 U/L & in NDG group were 116.72/77.4 U/L (p= 0.19). Mean INR in DG & NDG were 1.51 & 1.34 respectively (p=0.32). Mean Tbili values in DG & NDG were 2.39 &1.95 mg/dL respectively (p=0.63). Number of patients with esophageal varices were 33 in DG & 32 in NDG (p=0.59). Number of patients with portal hypertension were 33 in DG & 34 in NDG (p=0.32). Portal venous thrombosis was found in 9 patients in DG & 12 patients in NDG (p=0.67). Metastatic disease was seen in 10 patients in DG & 12 patients in NDG

(p=0.74). Grade 1 ascites was seen in 36, grade 2 in 12, grade 3 in 2 in DG versus 36 in grade 1 (p=0.45), 9 in grade 2 (p=0.47), 5 in grade 3 (p=0.63) in NDG. Grade 1 hepatic encephalopathy (HE) was seen in 42, grade 2 in 7, grade 3 in 1 in DG versus 45 in grade 1 (p=0.31), 5 in grade 2 (p=0.35), none in grade 3 in NDG. There was no statistically significant difference in the laboratory values and clinical complications.

Discussion

T2DM has been associated with increased incidence of HCC with the underlying mechanism likely related to development of systemic insulin resistance, release of multiple pro-inflammatory and pro-oxidant cytokine. However, our study shows that T2DM is not necessarily indicative of worse clinical complications in patients with HCC. Large, prospective trials are indicated to further study this association.

References

1. Mantovani A, Targher G. Type 2 diabetes mellitus and risk of hepatocellular carcinoma: spotlight on nonalcoholic fatty liver disease. Ann Transl Med. 2017. 5: 270.