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Study of Triglyceride Glucose Index and Total Cholesterol/HDLc for Assessment of Cardiovascular Outcomes in Patients with Diabetes and Hypertension

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Abstract

Study of Triglyceride glucose index and Total cholesterol/HDLc for assessment of cardiovascular outcomes in patients with diabetes and Hypertension Sushil Baral¹, Shyam kumar B.K² Rupesh kshetri³ Introduction Triglyceride glucose (TyG) index is a novel and surrogate marker to demonstrate and predict cardiovascular disease morbidity and mortality in general population as well as in diabetes and hypertension patients. The progress of cardiovascular disease (CVD) is determined by multiple contributing factors including glycemic abnormality and lipid disorder. Plasma TG levels are strongly associated with raised glucose levels because of the interactions between fat, muscle and function of pancreatic β -cells. Probable studies have revealed that plasma TG is an independent risk factor for developing T2DM. Furthermore, various study has been reported that both fasting glucose and TG within the high normal range may predict CVD risk. Hence, this study aims to evaluate the combined value of TG and fasting glucose to assess the cardiovascular outcome in diabetes and hypertension patients. Method It was observational, descriptive hospital-based study conducted in Bir hospital, Nepal. Patients with a diagnosis of diabetes for three years or more duration were selected. This study was designed to correlate TyG with Non-HDLc and TC/HDLc and its relationship with other lipid parameters. TyG index was calculated according to the following equation: $\text{Ln}[\text{FBS}(\text{mg/dl}) \times \text{TG}(\text{mg/dl})/2]$. Normal cut-off values reported for the TyG in the literature are roughly around 4 and 8. The data were analyzed by SPSS version 22. Mean values of different variables, standard deviations and p-values were calculated. Result A total of 300 patients were enrolled in this study with diagnoses of diabetes with or without hypertension. Among them 58.3% of diabetes had hypertension and under medication. The mean age was 55.65 ± 11.42 (34-81 yrs). The mean FBS \pm S.D and HbA1c \pm S.D were 181.43 ± 58.05 (89-334 mg/dl) and 9.61% (6.7-14%). Similarly mean serum Cholesterol, Triglyceride, LDLc and Non HDLc were 207.82 ± 44.44 mg/dl, 202.30 ± 70.25 mg/dl, 124 ± 39.85 mg/dl and 164.87 ± 43.30 mg/dl. The Mean TyG was 5.18 ± 0.32 (2-5.76 mg/dl) and all patients had elevated TyG more than 4. There was a significant positive correlation of TyG with Non-HDLc ($r = 0.274$, $p < 0.01$), TC/HDLc ($r = 0.222$, $p < 0.01$) and HbA1c ($r = 0.355$, $p < 0.01$). Conclusion In our study TyG index was positively associated with Non-HDLc and TC/HDLc, suggesting that TyG may be a useful marker for predicting cardiovascular outcomes in patients with diabetes and hypertension in poor country like Nepal Key words: Diabetes, Hypertension, TyG, Non-HDLc, cardiovascular outcome

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None