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ELEVATED VISCERAL ADIPOSITY INDEX AS A MARKER OF DIABETIC NEPHROPATHY MARKED BY PROTEINURIA AMONG PATIENTS WITH TYPE 2 DIABETES

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INTRODUCTION

Diabetic nephropathy (DN) is the leading cause of end-stage renal disease worldwide. Proteinuria is the first sign of renal involvement in type 2 diabetes mellitus (T2DM). The visceral adiposity index (VAI) is considered to represent the amount of visceral fat which is associated with oxidative stress, inflammation, and endothelial dysfunction, resulting in proteinuria. Our present study aimed to explore the performance of VAI as a marker for proteinuria in patients with T2DM.

METHODOLOGY

One hundred and sixty-eight adult patients with type 2 diabetes in the diabetes outpatient clinic at the Dr. Soetomo General Academic Hospital were recruited from July to December 2019 in this cross-sectional study. All participants underwent complete history taking and physical examination. Lipid profiles, glycosylated hemoglobin (HbA1c) levels, and urinalysis parameters were collected from all subjects. The VAI was calculated using the following formula, male: [waist circumference (cm)/(39.68+1.88 x BMI)] x [TG (mmol/L)/1.03] x [1.31/HDL (mmol/L)] and female: [waist circumference (cm)/(36.58+1.89 x BMI)] x [TG (mmol/L)/0.81] x [1.52/HDL (mmol/L)]. The subjects were divided into two groups: with proteinuria and without proteinuria. The VAI cut-off value, sensitivity, and specificity were calculated using a receiver operator characteristics (ROC) curve. Bivariate logistic regression analysis was used to construct the risk analysis model.

RESULTS

There were 125 subjects in the group with proteinuria and 43 subjects in the group without proteinuria. Subjects in the group with proteinuria were older, and had a longer duration of diabetes, higher prevalence of hypertension, HbA1c levels, and higher VAI; however, there were no significant differences between the two groups, except for the duration of diabetes and VAI. The VAI can be used to predict the presence of proteinuria with a cut-off value of 3.05 (sensitivity 40.8% and specificity 83.7%). Subjects with elevated VAI showed a significantly higher risk of developing proteinuria (OR: 4.391, 95% CI: 1.727 – 11.165, $p = 0.002$) even after adjusting for sex, age, duration of diabetes, hypertension, and HbA1c levels.

CONCLUSION

The VAI is elevated in patients with T2DM and proteinuria, and it is a potential marker for proteinuria in patients with T2DM.

KEYWORDS

visceral adiposity index, diabetic nephropathy, proteinuria, type 2 diabetes