Anthropometric Indicators Predictivity of Metabolic Syndrome in Patients On HD

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ABSTRACT

OBJECTIVES:

We aimed to compare the predictive ability of the anthropometric indices reflecting general, central and visceral obesity for identification of metabolic syndrome (MetS) in maintenance hemodialysis (MHD) patients.

METHODS:

A cross-sectional study that consisted of 200 adult MHD patients (54.6 ± 16 years) was conducted in Nasr City Health Insurance hospital. Eight anthropometric obesity indexes including body mass index (BMI), waist circumference (WC), waist-height ratio (WHtR), conicity index (Ci) and visceral adiposity index (VAI), lipid accumulation product (LAP), a body shape index (ABSI) and body roundness index (BRI) were recorded. MetS was defined based on the criteria of the International Diabetes Federation. Participants were categorized into four groups according to quartiles of different obesity indices. Binary logistic regression analyses were used to evaluate the associations between the eight obesity parameters and MetS. Receiver operator curve (ROC) analyses were used to identify the best predictor of MetS.

RESULTS:

The eight anthropometric obesity indexes were independently associated with MetS risk, even after adjustment for age, sex, educational status and history of smoking. The ROC analysis revealed that all the eight obesity indices included in the study were able to discriminate MetS [all area under the ROC curves (AUCs) > 0.6, $P < 0.05$]. LAP showed the highest AUC and according to the maximum Youden indexes, the cut off values for men and women were 27.29 and 36.45, respectively. The AUCs of LAP, VAI, ABSI, BRI, WC, WHtR, Ci and BMI were 0.88, 0.87, 0.60, 0.78, 0.79, 0.78, 0.69 and 0.76 for men, and 0.87, 0.85, 0.65, 0.79, 0.81, 0.79, 0.73 and 0.76 for women, respectively. There was no significant difference in the AUC value between LAP and VAI, BRI/WHtR and BMI in men and between BRI/WHtR and BMI in women. The AUC value for WHtR was equal to that for BRI in identifying MetS.

CONCLUSION:

Visceral obesity marker LAP followed by VAI was the most effective predictor of MetS while ABSI followed by CI was the weakest indicator for the screening of MetS in MHD patients. BRI could be an alternative obesity measure to WHtR in assessment of MetS. LAP may be a simple and useful screening tool to identify individuals at high risk of MetS particularly in middle-aged and elderly MHD patients.

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