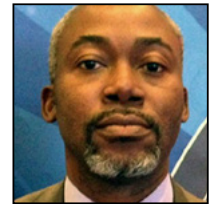


Performance of surrogate markers in identifying insulin resistance among patients with type 2 diabetes mellitus in lagos, nigeria



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Biography

Fasanmade OA is a consultant physician, professor of medicine, FMR chairman AACE Nigeria, president, endocrine and metabolism society of Nigeria, former editor diabetes link and care, executive committee member transplant association of Nigeria, honorary consultant luth, head, endocrine unit, luth, FMR chairman, medical advisory committee, luth, visiting consultant, vantage medical centre, serenity hospital and several other clinics.



Abstract

Background: Insulin resistance (IR) is characterized by deficient response of peripheral tissues to insulin action, leading to metabolic and hemodynamic disturbances. IR is known to occur early in the pathogenesis of type 2 diabetes mellitus (T2DM) and the group of cardiovascular disorders known as metabolic syndrome (MS). The gold standard method to measure IR, the hyperinsulinemia euglycaemic clamp and hormonal based methods of measuring IR like the Homeostasis model assessment of IR (HOMA-IR) are not readily available. The study identifies cost effective, reliable and readily available simple surrogate markers of IR. This will help in the easy detection of IR in low resource settings.

Aim: The aim of this study was to determine the role of surrogate markers in identifying IR among T2DM subjects.

Methods: This was a study involving 125 T2DM and 55 control participants. A questionnaire was used to obtain information on socio-demographic variables, anthropometric indices and other relevant information. Blood was drawn for fasting insulin, fasting C-peptide and other biochemical indices. The definition of IR used in this study was derived from the IR score using six different methods of measuring IR.

Results: The prevalence of insulin resistance among T2DM subjects and controls in this study were 41.6% and 21.8% respectively. The prevalence of MS among T2DM subject was 63.2%, 76.8%, 87.2%, 87.2% using the modified WHO, NCEP ATP III, IDF and Joint Interim Statement (JIS) criteria respectively. Impaired beta cell function was seen in 70.4% of T2DM and 13.5% of the control group.

Of the 6 surrogate markers of IR used in this study, lipid accumulation product (LAP), waist circumference (WC) and waist to height ratio (WHtR) all had strong positive correlation with body mass index (BMI). Visceral adiposity index (VAI) and triglyceride to high density lipoprotein cholesterol ratio (THR) had strong positive correlation with triglyceride. WC and WHtR also had strong positive correlation with WHR. Total bilirubin had weak correlation with all components of the MS. All the simple surrogate markers of IR apart from total bilirubin had moderate positive correlations with the glycaemic status of all the study participants. Among only the DM subjects however, the surrogate markers did not have significant correlations with the glycaemic status of the subjects. VAI was the best surrogate marker to predict the presence of IR among males studied while WC was the best to predict the presence of IR among the females studied.

Discussion: There was a high prevalence of IR and MS among those with T2DM and significant relationship between the simple surrogate markers of IR, different components of the MS, glycaemia and beta-cell function except for serum bilirubin. VAI and WC were noted to have strong predictive value in identifying those with IR.

Conclusion: The study showed that IR is common among subjects with T2DM and there is relationship between most of the studied simple surrogate markers, components of the MS, glycaemia and beta cell function except for total bilirubin. Simple surrogate markers such as VAI and WC can be used to predict the presence of IR in routine clinical practice.

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