ASSOCIATION BETWEEN A NOVEL METABOLIC SCORE FOR INSULIN RESISTANCE AND HbA1c IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

Fathima Afrin M, 2nd YEAR M.B.B.S, Saveetha Medical College, SIMATS, Chennai – 602105.

Deepak Rajan DS, Tutor, Department of Biochemistry, Saveetha Medical College, SIMATS, Chennai – 602105.

INTRODUCTION

Insulin resistance (IR) is a key pathophysiological characteristic of Type 2 Diabetes Mellitus (T2DM) and it is an essential component in the progression of the condition and its associated complications. Traditional blood sugar measurements, like fasting plasma glucose (FPG), postprandial blood sugar (PPBS), and glycated haemoglobin (HbA1c), are useful for understanding glycaemic control, but they don't give a precise measure of IR. As a result, it is necessary to establish reliable measures to evaluate IR in clinical environments to advance the field of diabetes management.

HbA1c reflects average blood glucose levels over the preceding two to three months and is routinely used in the diagnosis and management of diabetes. It is strongly connected to both fasting and postprandial glycemia, thereby offering a comprehensive assessment of glycemic exposure. Exploring the relationship between a novel metabolic index for insulin resistance and HbA1c in patients with T2DM may improve our comprehension of IR's role in glycemic control and long-term disease outcomes, given the interplay between IR and chronic hyperglycemia.

OBJECTIVES

1. To compare METS IR between T2DM and controls.
2. To study the association of METS IR with HbA1c and lipid profile.

MATERIALS AND METHODS

- This case-control study was conducted in the Clinical Biochemistry Lab at Saveetha Medical College & Hospital. The study comprises 172 individuals (86 - cases and 86 – controls).
- Cases are recruited from the medicine OPD based on ADA guidelines. Controls are age and sex-matched healthy individuals.
- **Inclusion criteria -** Patients diagnosed with type 2 diabetes mellitus based on ADA guidelines.
- **Exclusion criteria -** Patients diagnosed with type 1 diabetes mellitus. Use of medications that alter insulin resistance or HbA1c levels.
- Biochemistry parameters analyzed in Vitros 5600 integrated biochemistry analyzer. HbA1c was estimated by using BIORAD D10 analyzer
- Statistical Analysis was done by using SPSS version 26.0. Students t test and Pearson Correlation analysis was performed. The p value of < 0.05 was considered as statistically significant

METS IR was calculated by Ln[(2 × FBG (mg/dL)) + TG (mg/dL)] × BMI(kg/m2))/(Ln[HDL-C (mg/dL)])

RESULTS

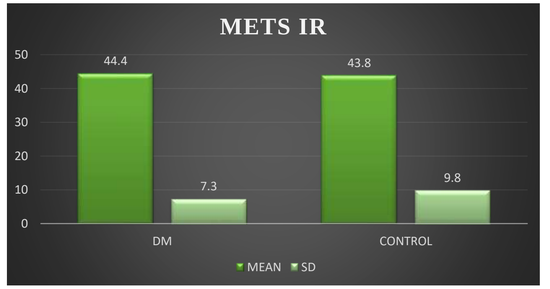
METS IR is higher in T2DM patients (44.4±7.3) when compared with controls (43.8±6.8) with a p value of 0.661. It also showed a significant correlation with glycemic control variables.

Table - 1: Comparison of anthropometric and biochemical variables between cases and controls

VARIABLES	DM	CONTROL	p value
Age	52.7±10.8	46.6±11.7	0.001
Height	163.±9.5	164±10.1	0.894
Weight	71.3±11.6	76.1±15.3	0.024
BMI	26.4±3.5	28.4±5.2	0.004
SBP	132.3±11.1	124.9±5.9	< 0.001
DBP	81.9±10.5	78.4±6.3	0.009
FBS	133.6±34.4	98.8±15.3	< 0.001
PBBS	220.6±82.6	122.2±33.4	< 0.001
HBA1C	8.7±2.3	5.6±0.4	< 0.001
TCHOL	209.9±52.7	196.1±35.2	0.046
TGL	180.6±74.6	131.2±70.3	< 0.001
HDL	39.2±9.8	48.0±24.7	0.003
LDL	131.3±46.7	143.9±161.6	0.491
VLDL	36.9±15.3	27.1±12.9	< 0.001
METS IR	44.4±7.3	43.8±9.8	0.661

Table - 2: Correlation analysis of METS IR with glycemic variables

Glycemic Variables	r value	p value
FBS	0.142	0.195
PBBS	-0.185	0.090
HBA1C	-.249*	0.022



DISCUSSION & CONCLUSION

This study highlights the potential utility of the METS-IR as a marker for assessing glycemic control in patients with Type 2 Diabetes Mellitus (T2DM). The findings demonstrated that METS-IR levels were significantly higher in T2DM patients compared to healthy controls, indicating its relevance in identifying metabolic disturbances associated with diabetes. Furthermore, METS-IR showed a significant correlation with HbA1c understanding its role in linking insulin resistance and glycemic control.

The results suggest that METS-IR could be incorporated into routine practices to enhance the comprehensive assessment of metabolic health and glycemic control in T2DM patients. Future research with higher sample size may explore its predictive value for complications.

REFERENCES

1. Mekala KC, Bertoni AG. Chapter 4 - Epidemiology of diabetes mellitus. In: Orlando G, Piemonti L, Ricordi C, Stratta RJ, Gruessner RWG, editors. Transplantation, Bioengineering, and Regeneration of the Endocrine Pancreas. Academic Press; 2020. p. 49–58.
2. Lau CS, Aw TC. HbA1c in the diagnosis and management of diabetes mellitus: an update. Diabetes [Internet]. 2020; Available from: https://www.siriusstore.com/pdf/DU-6-137.pdf
3. Klein KR, Buse JB. The trials and tribulations of determining HbA1c targets for diabetes mellitus. Nat Rev Endocrinol. 2020 Dec;16(12):717–30.

RESEARCH POSTER PRESENTATION DESIGN © 2019
www.PosterPresentations.com