

Is insulin resistance a good indicator in chronic diabetes? A case-control study between chronic diabetic subjects and non-diabetic subjects

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Objectives: Insulin resistance (IR) and fasting serum insulin (FSI) are renowned markers of type 2 diabetes (T2D). IR, an indicator of metabolic syndrome (MS), is useful as a pre-alarming sign even in non-diabetics. Therefore basal insulin secretion and FSI are important measures in diabetics as well as non-diabetics. Hence this study was carried out to identify FSI levels, fasting blood glucose (FBG) levels and its association with IR in a selected Sri Lankan T2D and non-diabetic population.

Materials and methods: A prospective, age-sex matched, comparative study was conducted in 38, volunteer T2D subjects (19 males and 19 females) for investigation of FSI, FBG and IR and compared with 38 non-diabetic volunteers selected as control (19 males and 19 females). Age range of the subjects was 35-70 years. This study was conducted at Family Practice Centre of University of Sri Jayewardenepura, after obtaining ethical clearance and informed written consent. Overnight fasting blood was obtained to measure FBG with FSI and IR was calculated using HOMA. Data were analysed using SPSS (ver.17) software and $p < 0.05$ was considered as significant.

Results and findings: The result revealed that all non-diabetic subjects had significantly higher mean FSI levels (63.1 ± 1.7 pmol/L) when compared to chronic diabetics (5.01 ± 1.8 pmol/L). In comparison with non-diabetics (4.6 ± 0.5 mmol/L), significantly higher mean FBG was found among T2D subjects (10.3 ± 3.6 mmol/L) ($p < 0.01$). No significant differences of HOMA-IR ($p > 0.05$) was found between diabetics (2.3 ± 1.4) and non-diabetics (3.0 ± 2.4). Non-diabetic males had a significantly higher mean FBG ($p < 0.01$) when compared with female non-diabetics.

Conclusion: Even though IR and hyperinsulinaemia are considered to be key features of T2D, it is not a significant indicator among chronic T2D subjects. High FSI can be considered as a marker in identifying non-diabetics with a risk of developing MS.

keywords: Type 2 diabetes, Fasting blood sugar, Fasting serum insulin