A Rational Alternative for the Diagnosis of Diabetes Mellitus in High Risk Individuals
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Abstract

Introduction: To facilitate early, accurate diagnosis, tests should be easy, cheap and reproducible. We studied volunteers with an increased risk of developing diabetes mellitus (DM) to see if HbA1c levels could replace the oral glucose tolerance test (OGTT) in diagnosing DM. Materials and Method: One hundred and eleven individuals were studied, using the standard oral glucose tolerance test, and simultaneous measurement of HbA1c levels. Receiver operator characteristic (ROC) analysis was performed to assess the sensitivity and specificity of various HbA1c cut-off levels for diagnosing DM. The relationship between fasting plasma glucose (FPG) and DM diagnosis was also investigated. Results: The majority of DM and impaired glucose tolerance (IGT) cases were diagnosed on the basis of two-hour OGTT glucose values. If FPG alone had been used, 29% of the study population with DM or IGT would have been missed. HbA1c cut-off of 6.2% or 6.3% gives the optimal sensitivity and specificity. In linear regression analysis, FPG was found to be a significant predictor of 2-hour OGTT, but only accounted for 45% of the variability of 2-hour OGTT glucose value. Conclusions: Our data support the view that although HbA1c alone cannot replace the OGTT in the diagnosis of DM, it can still provide a useful guide to rational, cost-effective screening for diabetes mellitus.

Key words: Diabetes mellitus, Diagnosis, HbA1c, Oral glucose tolerance test.