

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 HbA_{1c} 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 HbA_{1c} levels. Receiver operator characteristic (ROC) analysis was performed to assess the sensitivity and specificity of various HbA_{1c} 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. HbA_{1c} 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 HbA_{1c} 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.

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