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# Glucose Tolerance Test results during pregnancy and the risk of developing future diabetes mellitus

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## Objective

To evaluate the association of 3 hours 100 gram Glucose Tolerance Test (GTT) results and the development of future diabetes mellitus.

## Methods

Retrospective cohort study of women between 18 to 45 years of age who underwent a 3 hours GTT during pregnancy and delivered in a tertiary affiliated medical center between the years 2007-2014. According to GTT values, patients were divided into three groups: Group A - Normal GTT, Group B - Impaired Gestational Glucose Tolerance (single pathological GTT value, IGT) and Group C - Gestational Diabetes Mellitus (two or more pathological values, GDM). General cardiovascular risk factors and future diagnosis of diabetes mellitus were recorded.

## Results

Overall, 5011 parturients that underwent a 3 hours GTT were detected and followed for a median period of 64 months (interquartile range of 32). The cohort was divided as follows: 3592 (72%) in group A, 679 (13. 5%) in group B and 740 (14. 5%) in group C. Compared with normal GTT controls (group A), women with GDM (group C) or IGT (group B) tended to be older (age 32. 3, 31. 3 and 30. 8 for GDM, IGT and controls, respectively, p<. 001); had a higher rate of ART treatment (18. 4%, 16. 3% and 12. 7% for GDM, IGT and controls, respectively, p<. 001) and were less likely to be primipara (49%, 56% and 53% for GDM, IGT and controls, respectively, p<. 001). When cardiovascular risk factors were compared, women with GDM and IGT had a higher rate of obesity (27. 2%, 22. 7% and 18. 7% for GDM, IGT and controls, respectively, p<. 001) and hyperlipidemia (18. 1%, 14. 7% and 12% for GDM, IGT and controls, respectively, p<. 001) compared to controls, but rates of chronic hypertension, ischemic heart disease and cerebrovascular disease were not significantly different. Future diabetes mellitus was diagnosed at a higher rate in women with GDM or IGT (7. 0% for GDM, 2. 7% for IGT compared with 0. 6% for normal GTT, p<. 001). Using a survival multi-variable analysis, GDM and IGT were significantly associated with a higher rate of future diabetes (adjusted HR 3. 7 for IGT and 12. 2 for GDM, P<0. 001). In a sub-analysis of the IGT group, all single pathological values were found to be associated with a higher chronic Diabetes Mellitus rate, though abnormal fasting glucose had the highest rate (8. 8% compared with 5. 8% for GTT_60, 5. 5% for GTT_120 and 6. 6% for GTT_180).

## Conclusion

Although their effect is influenced by other contributing factors, our study shows that both GDM and IGT during pregnancy are independently associated with a significant higher rate of future diabetes mellitus.