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## Importance of Each Hour Glucose Measurement During Oral Glucose Tolerance Test and Correlation with Insulin Secretion

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### Abstract

Background: Oral glucose tolerance test (OGTT) is currently used for determination of carbohydrate metabolism disorder state. Recommendations for diagnosis definition are for glucose measurement on 0 minute and 120th minute. Modifications of OGTT with measurement of glucose and insulin level on additional minutes gives more detailed information about glucose overload response

The aim of our study is to assess the correlation between additional glucose measurement during oral glucose tolerance test and insulin secretion and to define the meaning of 60th and 180th minute glucose

Materials and methods: 107 patients (55 women, 52 men, mean age  $44.01 \pm 12.87$  years) underwent OGTT.

Mean weight was  $99.07 \pm 18.73$  kg and mean BMI was  $34.86 \pm 6.0$  kg/sq.m. Additional measurement of glucose was performed on minute 60 and 180 as well as measurement of insulin level on 0, 60, 120, 180 minute. HOMA-IR was calculated for assessment of hyperinsulinaemia. Correlation between glucose and insulin level on different minutes was assessed.

Results: On 60th minute there was significant moderate positive correlation between 60th minute glucose ( $7.81 \pm 1.89$  mmol/l) and 180th minute insulin ( $58.05 \pm 32.01$  mU/l) level ( $r = -0.502$ ,  $p < 0.001$ ). Difference between glucose level on 60th minute and 0th minute correlates negatively with 180th minute insulin level ( $r = 0.402$ ), presenting the delay in first minute insulin response. No difference was found depending on age, gender and weight of patients.

Conclusion: Measurement of glucose level on 60th minute during OGTT presents additional information about insulin secretion curve and could be used for assessment of pathologically elevated insulin level even without insulin measurement. This modification could be used whenever insulin assessment is limited

**Keywords:** OGTT, insulin secretion

### Funding and Conflicts of Interest

No conflict of interest