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SERUM CORTISOL AND INSULIN HORMONE LEVELS AND THEIR ROLE IN NORTH INDIAN MEN AND WOMEN

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ABSTRACT

Objective

To study cortisol and insulin hormone serum levels and their role in north Indian men and women having Type 2 Diabetes.

Research Design and Methods

For the analyses, (n=200) subjects including (n=94) males and (n=106) females, out of which 100 diagnosed cases and 100 age and sex matched healthy controls were studied. Only diagnosed cases of diabetes type 2 (50 men and 50 women) aged 45–75 years undergoing glucose profile testing in outdoor clinics in the hospital PGIMS, Rohtak (2011-2013) were included following a detailed protocol. Patients with acute complications like coma and acidosis, pregnant women, postmenopausal women on hormone replacement therapy, use of steroids since past six months, type 1 diabetes were excluded. Early morning fasting samples were collected and serum analysed for cortisol, insulin, fasting blood glucose and HbA1c. Serum Insulin[1,2] levels (normal healthy adults <25 µlU/ml) were done using solid phase sandwich Enzyme linked immunosorbent assay, serum Cortisol levels3,4 (Reference range: 50-230 ng/ml) were done using DRG Cortisol ELISA kit -a solid phase enzyme linked immunosorbent assay, and HbA1c levels (normal=4-5.6% in normal people, <6.5% -target for control in diabetics) were measured on Auto analyser via Immunoassay Kits. The results were analysed and compared.

Results

Overall analysis showed that diabetic men had low testosterone values (287.50±61.09) ng/dL as compared to controls (409.38 ±113.23) ng/dL (p<0.001) and raised HbA1c, whereas diabetic women had raised testosterone (52.35 ± 41.09) ng/dL values (p<0.001) and raised HbA1c as compared to controls (25.00±16.99) ng/dL (p<0.001). Diabetic Women had mean estradiol levels (47.00 ±53.36) pg/ml lower as compared to control females (69.31±57.51) pg/ml, (p <0.05), also they negatively correlated with HbA1c. Men showed no significant difference in estradiol levels in diseased and controls and showed no correlation between estradiol and HbA1c levels.

Conclusions

In North India - Diabetes type 2 is associated with Cortisol and Insulin levels significantly higher in cases as compared to controls, also fasting blood glucose and HbA1c levels were higher in diabetics irrespective of sex. Such associations suggest possible clinical applications of hormone biomarkers in potentially adding prospective risk information. More prospective studies are needed to better define risk levels.

KEYWORDS: Serum Cortisol and Insulin Hormone Levels