INSULIN RESISTANCE IN PATIENTS WITH DEPRESSION BEFORE AND AFTER TREATMENT

D. Janicevic Ivanovska[1,3], N. Manuseva[2], B. Stefanovski[2],
A. Spasovska Trajanovska[2], S. Domazetovska[1],

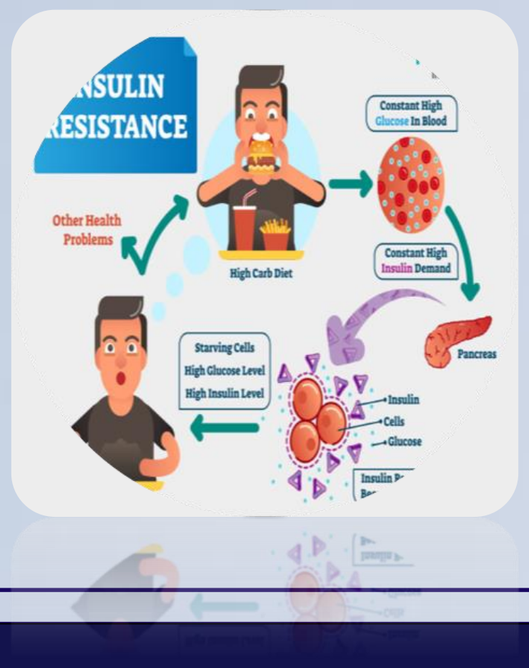
University Institute of Clinical biochemistry[1], University Psychiatric Clinic[2]
Faculty of Medicine University "Ss. Cyril Methodius" Skopje, University "Goce Delcev"Stip[3],
Republic of North Macedonia

ABSTRACT

Depression and diabetes mellitus often occur together, and insulin resistance has been observed in patients with depression.
A high proportion of patients with depression develop glucose intolerance accompanied by hyperinsulinemia, suggestive of reduced insulin sensitivity (insulin resistance).
The aim of this study was to evaluate insulin sensitivity in patients with depression and its changes during the clinical course and treatment of depression.

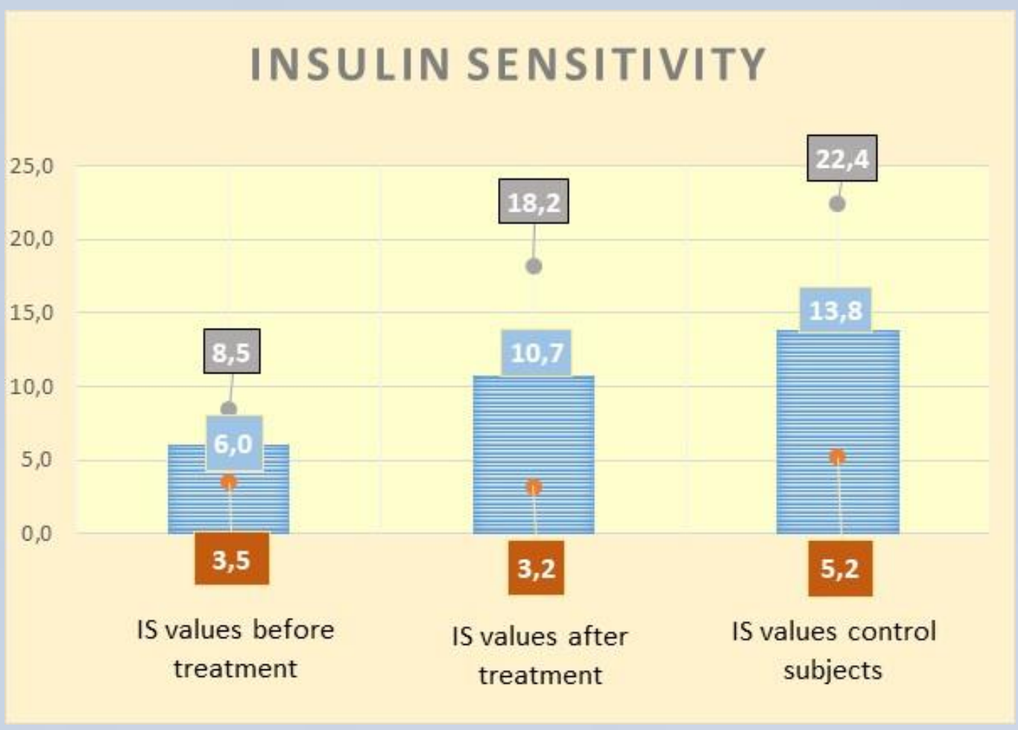
METHODS

Serum insulin level was measured in the Institute of clinical biochemistry at the Medical University in Skopje, N.Macedonia. Serum sample of insulin was collected between 8 a.m. and 9 a.m. hours after 20 min of rest. All participants were instructed to abstain from unusual physical activity or stress for a period of 24 h prior to blood sampling. Insulin was measured by the Immulate 2000, competitive chemiluminescent enzime immunoassay.
We examined oral glucose tolerance test (OGTT) before and after psychopharmacological treatment of depression in duration of 6-8 weeks. Metabolic indices measuring glucose effectiveness at basal insulin and insulin sensitivity were derived from minimal model analysis. Each patient was treated with antidepressant and diet with 2,000 kcal/day food intake and underwent no exercise therapy.



RESULTS

Study group consisted of 43 nondiabetic patients with depression (23 males and 20 females aged 40 ± 10 years), body mass index BMI was 23.2 ± 2.8 kg/m2 and an age, sex, and BMI-matched control group (n = 40).
Insulin sensitivity was significantly lower in patients before treatment versus control subjects (6.0 ± 2.5 mmol/l vs 13,8 ± 8,6 mmol/l P < 0.01). After treatment of depression, a significant increase in insulin sensitivity in treated patient (10.7 ± 7.5 mmol/l P<0.01) followed by clinical improvement with reduction .
Depressive patients showed decreased glucose tolerance, enhanced insulin secretion, and diminished insulin sensitively during OGTT.



CONCLUSIONS

The association between insulin resistance and depression is a sparsely studied area.
Insulin resistance and severity of depressive symptoms is present already in subjects with impaired glucose tolerance before the outbreak of type 2 diabetes mellitus.
We can conclude that patients with depression have impaired insulin sensitivity and resultant hyperinsulinemia. These abnormalities were resolved after their recovery from depression without changes in body weight or diet.

REFERENCES

1. Lawlor DA, Smith GD, Ebrahim S.Association of insulin resistance with depression: cross sectional findings from the British Women's Heart and Health Study.BMJ2003; 327:1383–4.
2. Musselman DL, Betan E, Larsen H, Phillips LS.Relationship of depression to diabetes types 1 and 2: epidemiology, biology, and treatment.Biol Psychiatry2003; 54:317–29.
3.Rajala U, Laakso M, Paivansalo M, Pelkonen O, Suramo I, Keinanen-Kiukaanniemi S.Low insulin sensitivity measured by both quantitative insulin sensitivity check index and homeostasis model assessment method as a risk factor of increased intima-media thickness of the carotid artery.J Clin Endocrinol Metab2002; 87:5092–7.
4.Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J.An inventory for measuring depression.Arch Gen Psychiatry1961; 4:561–71. CrossRefPubMedWeb of ScienceGoogle Scholar
5. Nouwen A, Winkley K, Twisk J, Lloyd CE, Peyrot M, Ismail K, Pouwer F; for the European Depression in Diabetes (EDID) Research Consortium. Type 2 diabetes mellitus as a risk factor for the onset of depression: a systematic review and meta-analysis. Diabetologia 2010; 53(12): 2480–6.
6. Lustman PJ, Clouse RE. Depression in diabetic patients: the relationship between mood and glycemic control. J Diabetes Complications 2005; 19(2): 113–22
7. Dodd S, Berk M. (2004) Predictors of antidepressant response: A selective review. Int J Psychiatry Clin Pract 8: 91–100.