Summary

Introduction: Pharmacotherapy with antidepressants can cause a metabolic risk, can be neutral in terms of metabolism or can perform a metabolic benefit for the treated patients.

Objective: The aim of the presented study is to assess the effects of long-term use of sertraline on the particular laboratory and anthropometric parameters in somaticaly healthy or compensated outpatients treated for unipolar depression.

Methods: The study was performed in cooperation of Centre of Preventive Cardiology (CPC) of 2nd Department of Internal Medicine and Department of Psychiatry of Charles University in Prague, Faculty of Medicine in Plzeň (Pilsen) and University Hospital Plzeň, Czech Republic. A screening of risk factors in relation to the development of cardiovascular (CV) diseases and metabolic syndrom was carried out in 350 people from the cohort Pilsen Longitudinal Study III (PILS III) at CPC. The participants filled in a Czech version of the Zung Self-Rating Depression Scale (SDS) simultaneously with the screening. Those of them scoring up the threshold set for the suspicion of depression in SDS were invited to the department of psychiatry outpatient´s office in order to undertake a psychiatric examination. There were 31 persons in total fulfilling the following criteria: (1) aduld patients diagnosed with unipolar depression according to the International Classification of Diseases 10 (ICD 10) criteria (codes F 32 or F 33), who never have been

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systematically treated either with medication or psychotherapy before; (2) sertraline was the most feasible first choice medication; (3) there was no other serious psychiatric condition in the patients besides the symptoms of anxiety. The design of the study was as the assessment of the particular laboratory and anthropometric parameters during the course of long-term use of sertraline in the scheduled times, which were (1) up to 1 week before the start of the medication (screening), (2) after 3 weeks of sertraline treatment and (3) after 10 months of continuous sertraline treatment.

The anthropometric parameters were assessed by an experienced physician at CPC in the morning (7:00 – 10:00 AM) according to the standardized procedure of The Metabolic Syndrome Institute. Waist circumference, hip circumference, the height and weight were measured. Systolic and diastolic blood pressure and pulse were measured according to the standard method after 5 minutes of calm sitting. Body mass index (BMI), waist to hip ratio (WHR) and homeostasis model assessment index (HOMA index) were calculated. Venous blood samples were withdrawn in the morning (7:00 – 10:00 AM) after 12 hours of fast. Serum levels of total cholesterol, HDL cholesterol, glycaemia as well as triglycerides were assessed in fresh blood specimens by use of commercial kits Unimate (Roche Diagnostics, Manheim, Germany) on Cobas Mira S Autoanalyser (Roche Diagnostics). LDL cholesterol was calculated by Friedewald equation. Serum C-peptide was assessed by immunoradiometric assay (IRMA kit, Immunotech, Czech Republic). Serum immunoreactive insulin was assessed by chemiluminescent immunoassay on UniCel DxI 800 Autoanalyser (Beckman Coulter, USA). Serum thyroid-stimulating hormone (TSH) was assessed by IRMA (Immunotech kit, Czech Republic). Free tyroxine (FT4) as well as thyroid peroxidase antibodies (aTPO) were assessed in serum by radioimmunoassay (RIA, Immunotech kit, Czech Republic). Serum uric acid was assessed in fresh blood specimens by use of commercial kits Unimate (Roche Diagnostics, Manheim, Germany) on Cobas Mira S Autoanalyser (Roche Diagnostics). Morning serum cortisol was assessed with chemiluminescent immunoassay on UniCel DxI 800 Autoanalyser (Beckman Coulter, USA).

The efficacy of sertraline treatment was assessed with SDS according to the same schedule i. e. (1) up to 1 week before the start of the medication, (2) after 3 weeks of

sertraline treatment and (3) after 10 months of continuous sertraline treatment.

Results: 31 patients completed the 3-week assessment. 22 patients completed the 10-months assessment. Regarding the lipid metabolism, there was a singnificant decrease of 32

HDL cholesterol levels both after 3 weeks and 10 months ($p < 0.02899$). The treatment did not influence the levels of total cholesterol, LDL cholesterol and triglycerides. There was no influence of sertraline treatment on the glucose metabolism. We did not find any changes in the levels of glucose, C-peptide, immunoreactive insulin and HOMA index. There was a significant decrease of BMI ($p < 0.00016$) after 3 weeks, however we found a significant increase of BMI ($p < 0.0243$) after 10 months. Waist circumference did not change after 3 weeks yet there was a significant increase of waist circumference after 10 months ($p < 0.01743$). We found a significant decrease of both systolic and diastolic blood pressures after 3 weeks as well as after 10 months. FT4 decreased significantly after 10 months of treatment ($p < 0.00829$) while TSH and aTPO did not change throughout the treatment. There was a significant decrease of morning serum cortisol after 10 months of sertraline treatment ($p < 0.01057$). The levels of uric acid decreased after 3 weeks as well as after 10 months of treatment ($p < 0.001$). We found a statistically significant negative correlation between the treatment response as measured by SDS and WHR after 3 weeks of treatment (Spearman correlation coefficient $= -0.40184$; $p = 0.025$).

The treatment with sertraline lead to a significant decrease of SDS index of the Zung Self-Rating Depression Scale from baseline mean value ($\pm$SD) 58.27 ($\pm$ 6.59) to 50.65 ($\pm$ 7.57) after 3 weeks of treatment ($p < 0.0001$), and further to the value of 47.67 ($\pm$ 9.87) after 10 months of treatment ($p = 0.0162$).

Conclusion: There was a predominantly positive effect of sertraline antidepressant treatment on the assessed parameters. We found a significant decrease of both systolic and diastolic blood pressures, decrease of morning serum cortisol and decrease of uric acid levels. The statistically significant decrease of FT4 after 10 months of treatment was observed as a neutral effect. On the other hand, the significant decrease of HDL cholesterol as well as the significant increase of BMI and waist circumference after 10 months we can observe as a negative effect.