INFLUENCE OF CARBOHYDRATE-RESTRICTED DIET ON SOME HEMOSTASIS PARAMETERS IN ARTERIAL HYPERTENSION PATIENTS WITH INCREASED BODY MASS INDEX

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Background. A reduction in the prevalence of raised blood pressure (BP) and a halt in the rise in diabetes and obesity are among key targets of WHO [1]. Undoubtedly, such comorbidity effects significantly hemostasis [2, 3]. The role of healthy diet cannot be underestimated in management of AH patients with increased body mass index (BMI) [4]. Benefits of carbohydrate-restricted diet have
already described [5, 6, 7]. However, the data of its influence on vascular hemostasis and coagulation is limited.

The objective of our study was to assess the influence of a carbohydrate-restricted diet up to 250 g per day for 12 weeks on collagen-, adenosine 5'-diphosphate- (ADF), ristocetin-induced platelet aggregation (PA), the concentration of von Willebrand factor (vWF) and soluble fibrin (SF).

Material and methods. Our study included 50 AH patients with increased BMI. The approval of the local ethics committee was obtained. All patients signed written consent. They were divided into 2 groups. Patients of group 1 (n=26) were treated according to the ESC guidelines 2017 for the management of AH patients [4]. Patients of group 2 (n=24) maintained the diet with carbohydrate restriction up to 250 g per day for 12 weeks as the addition to the standard antihypertensive therapy. We used carbohydrate counting tables to control daily intake of carbohydrates. However, we recommended the compensation of daily caloric intake by increase in the consuming of proteins and fats. We excluded patients with history of heart defects, arrhythmia, heart failure stage II-III, endocrine disorders (except diabetes mellitus), malignancy, myocardial infarction and stroke, surgery or trauma within recent 6 months, chronic diseases in period of exacerbation, active infections.

We defined the nutritional state of patients according to the WHO guidelines after calculation of BMI (weight in kilograms divided in meters squared). The treatment effectiveness was controlled by BP levels. We measured BP according to the standard protocol.

We took blood in patients during the first visit and after 12 weeks of treatment. Whole blood samples were collected by phlebotomy in sodium citrate (38 g/l at a final ratio of 9:1 vol/vol) with further centrifugation. We used vWF:CBA ELISA kit to measure the binding of vWF to collagen and high molecular weight multimers of vWF according to the manufacturer’s instructions (Technoclone, Austria). SF in blood plasma was quantified by double-sandwich ELISA with monoclonal antibody FnI-3C as a “catch”-site [8]. We studied PA with the Born spectrophotometric method at aggregometer “Thromlite” [9]. We used ADP disodium salt in concentration 2,0·10^{-6} M (“Sigma-Aldrich”/”Merck”, Canada), collagen in dilution 1:2, ristocetin in concentration 0,8 mg/ml as inductors of aggregation.

We performed statistical analyses with “Stata-12”. Numerical variables were presented as mean±standard deviation for normal type of distribution. Nominal variables were presented in absolute values (percentage) and compared using chi-squared test. We used Student t-test for comparison of independent samples and paired t-test for paired samples. P value <0,05 was considered statistically significant.

Results. Group I consisted of 26 patients (15 females (58%)) with mean age of 62,5±4,3 years, BMI 29,1±2,8 kg/m², systolic BP 164,2±3,2 mmHg and diastolic BP 97,4±5,2 mmHg. Group II consisted of 24 patients (14 females (58%)) with mean age of 59,4±3,9 years, BMI 29,9±2,5 kg/m², systolic BP 165,6±4,4 mmHg and diastolic BP 99,2±5,3 mmHg. Groups were comparable in age, gender, BMI, BP.

The values of hemostasis parameters and levels of BP before and after 12 weeks of treatment are presented in Table 1. Significant lowering of BP levels was registered in both groups. We revealed significant decline in the concentrations of vWF and SF in group 2. PA-ADP after treatment in both groups changed for the
better significantly. The improvement in PA-ristocetin after course of treatment was significant only in group 2. There were no significant changes in PA-collagen after 12 weeks follow-up in both groups. Such trends may be the signs of vascular hemostasis improvement and decline in blood procoagulant activity.

**Table 1**

| Characteristic | Group I (n=26) | Group II (n=24) |
|----------------|----------------|-----------------|
|                | Before treatment | After treatment | Before treatment | After Treatment |
| SBP, mmHg      | 164.2±3.2       | 141.4±3.6*      | 165.6±4.4       | 139.6±3.5*      |
| DBP, mmHg      | 97.4±5.2        | 85.9±2.6*       | 99.2±5.3        | 84.6±2.2*       |
| vWF, IU/l      | 0.65±0.17       | 0.45±0.1        | 0.71±0.19       | 0.32±0.13*      |
| PA-ADP, %      | 33.2±3.4        | 41.4±2.1*       | 31.3±3.5        | 40.5±3.4*       |
| PA-collagen,%  | 40.7±3.9        | 42.3±4.6        | 43.2±4.7        | 45.5±4.6        |
| PA-ristocetin, % | 32.3±2.2       | 33.5±3.1        | 30.6±3.1        | 37.4±2.1*       |
| SF, mcg/ml     | 1.26±0.4        | 1.03±0.3        | 1.32±0.36       | 0.77±0.21*      |

* - p< 0.05, comparison of the data before and after treatment

**Conclusions.** A carbohydrate-restricted diet up to 250 g may be recommended to AH patients with increased BMI as additional measure of cardiovascular events prevention.

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RETRO- AND PROSPECTIVE ANALYSIS COURSE OF PREGNANCY AND CHILDBIRTH IN WOMEN WITH POSTPARTUM DEPRESSION

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Introduction.
Postpartum depression (PPD) is a special medical and social problem that can significantly affect the health of women and their children [1]. There is a lot of data on the negative effects of maternal depression for cognitive and social development of the child. These children often experience emotional and behavioral disorders [2].

PPD can be defined as an episode of major depression during the first 6 months postpartum, but the episode PPD may appear at any time during the first year after delivery (O’Hara & McCabe, 2013). Usually, PPD begins with the first days of the first two weeks after the birth of the baby and can last from 1 to 6-7 months [2]. But there is evidence that PPD may appear 3 years after childbirth [3]. The concept of PPD includes heterogeneous nosological affective disorders of varying severity, starting from short-term lower mood to severe depression with anxiety, fear, indifference, hostility to the child, sleep disturbances, possible manic manifestations, hallucinations, and panic fears. PPD leads to a violation of social adaptation, a decrease in the quality of life, the emergence of suicidal thoughts [3]. With each subsequent delivery, the risk of PPD increases, especially if psychotic disorders (manic manifestations and hallucinations (mostly auditory) are observed in the structure of this affective state [3].