**Investigation of the apelin’s activity in hypertensive patients with dysglicaemia and obesity.**

**Demydenko G, Ashcheulova T., Kovalyova O.**

Co-morbid hypertension and obesity is a multifactorial disorder, but mechanisms leading to weight gain in hypertensive persons are not completely known.

Aim of the study was to investigate apelin’s expression in patients with essential hypertension (EH) with obesity in Ukraine patients.

Material and methods: 96 patients with EH were recruited in the investigation. Apelin-12 was estimated in blood plasma using ELISA technique (Kit Apelin-12, Phoenix, USA), IL-6 ELISA. Patients were categorized into 4 cluster groups based on k-means according apelin and BMI data.

Results: The most amount of lean patients were in 1st cluster (21,7 %); 78,3 % were pre obese. The prevalent amount of the 2nd cluster – 59,1 %, were hypertensive patients with 2st of obesity. 50 % patients of 3rd cluster had obesity of 1st and 45 % - were pre obese. In 4th cluster the 70,3 % of patients with hypertension had 1st of obesity, and 24, 3 % - pre obese. The significant increasing level of apelin in all the patients with EH was detected.

The smallest percentage of accompanied carbohydrate disorders 60,8 % was in hypertensive patients of 1st cluster. In the 2nd cluster there was 68,4 % patients with EH and dysglicemia. Patients of 3d and 4th clusters had hypertension and comorbid carbohydrate pool abnormalities in 85,6 % and 91,8 % correspondingly.

Numerous positive correlations of apelin were found: with fasting insulin (R=0,29, p<0,05), -post OGTT glucose and insulin levels (R=0,39 and R=0,41 respectively, p<0,05), -HOMA index (R=0,24, p<0,05) and HbA1c (R=0,24, p<0,05). In patients of cluster 1 the significant correlation of apelin and HbA1c was estimated (R=0,53, p<0,05). In patients of 2nd and 4th clusters significant negative correlations of apelin with BMI were detected (R=-0,72 and R=-0,41 respectively, p<0,05).

Conclusion: our study shows the increased level of apelin in hypertensive patients. Obesity is not always associated with expression of adipokine, but depends from pronunciation of accompanied dyslipidemia and carbohydrate metabolism disturbances. Significant dyslipidemia with high atherogene index, dysglicemia, hyperinsulinemia, and pronounced expression of pro-inflammatory cytokine are accompanied with decreasing of apelin level and negative correlation of BMI with peptide. Overexpression of apelin in hypertensive patients with moderate abnormalities in lipid and carbohydrate metabolism is considered as compensatory reaction. Further investigations of apelin activity will lead to clarifying the potential links of metabolic parameters with peptide expression.