SERUM KLOTHO LEVEL DIFFERENTIATE BIPOLAR DISORDER AND MAJOR DEPRESSIVE DISORDER.

[1]DYNDAŁ K., [2]CHROBAK A., [3]PAŃCZYSZYN-TRZEWIK P., [4]JAKUBOWSKA B., [5]CZERKIEWICZ [6]K., CZECHOWSKA E., [7]SOWA-KUĆMA M.

[1,4,5]Student Scientific Club "NEURON", Medical College of Rzeszow University, Rzeszow, Poland;
[2]Department of Adult Psychiatry, Jagiellonian University Medical College, Krakow, Poland;
[3,6,7]Department of Human Physiology, Medical College of Rzeszow University, Rzeszow, Poland.

Background: Diagnosis of bipolar disorder (BD) is based mainly on the assessment of clinical symptoms (especially retrospective), which depends on the reliability of the patient's information. For this reason, approximately 40% of BD patients are misdiagnosed with major depressive disorder (MDD), which which translates into inadequate and ineffective therapy, and ultimately worsening clinical outcomes [1].Therefore, it is necessary to improve psychiatric diagnostics, including the development of screening tests. So far, there are no specific markers that would successfully differentiate BD and MDD. Klotho is a widely recognized anti-aging protein that is highly expressed in the brain. Recent reports suggest that Klotho levels are regulated by stress and depression [2, 3].

Methods: A total of 102 subjects (18 healthy controls, 32 MDD patients, and 52 BD patients, comprising 25 BD1 and 27 BD2) were enrolled in the study. Both males and females were included. All participants were of Caucasian ethnicity and Polish nationality and aged 20–68 years old. Patients were in- or outpatients admitted to the Department of Adult Psychiatry, University Hospital Krakow, Krakow, Poland. The diagnoses BD or MDD were made according to DSM-5-TR (American Psychiatric Association, 2013). The severity of depressive symptoms was measured using Montgomery–Åsberg Depression Rating Scale. The assessment of the clinical severity of BD was made using the Polish version of the Functioning Assessment Short Test according to Kapczinski et al. 2009. The study was approved by the bioethical committee of the Jagiellonian University, Krakow, Poland and all subjects gave written informed consent prior to participating in this study. Fasting venous blood was collected from all study participants and serum was collected. Serum samples were frozen at -80°C and stored until the Klotho concentration was analyzed using the ELISA kit (Elabscience) according manufacturer's protocol.

Results: One-way ANOVA showed statistically significant changes between the compared groups [$F(2,95)=4.922$, $p=0.0093$)]. Tukey's post hoc test revealed significant differences between MDD and BD patients ($p=0.0079$), and no differences between the control and MDD $p=0.66$) or BD group ($p=0.24$). The Pearson correlation test showed no significant correlations between Klotho levels and patient age, gender or clinical severity of BD.

Conclusion: Our results suggest that serum Klotho concentration may be a promising laboratory marker differentiating BD and MDD, the level of which seems to be independent of age, gender, or disease stage. However, this hypothesis requires further, in-depth studies on a larger cohort of patients.

Acknowledgement: This article was written as part of the implementation of the project by the Polish Ministry of Education and Science, "Neural exosomes as a potential source of markers differentiating bipolar disorder (BD) and depression (MDD)", grant number SSKN/SP/603081/2024 (within the framework of the program "Student scientific clubs create innovations").