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THE RELATIONSHIP BETWEEN BDNF RS6265 (VAL66MET) POLYMORPHISM AND SERUM BDNF LEVEL IN ANXIETY DISORDERS

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BACKGROUND AND AIM: Our study aims to investigate serum BDNF levels and BDNF rs6265 (Val66Met) polymorphism in individuals with anxiety disorders and healthy volunteers and uncover the role of serum BDNF levels and Val66Met polymorphism in the etiology of anxiety disorders, evaluate their relationship with symptom severity, and determine the effects of Val66Met polymorphism on serum BDNF levels.

METHODS: The study included 64 patients diagnosed with at least one of the disorders under the umbrella of anxiety disorders, according to DSM V-TR criteria, and 64 healthy volunteers. Participants were recruited from the Psychiatry Policlinic of Balıkesir University Health Application and Research Hospital. Blood samples collected from participants were analyzed in biochemistry and genetics laboratories using ELISA and RT-PCR methods. Prior to participation, informed consent was obtained from all participants. They were then asked to fill out a Sociodemographic and Clinical Information Form, and all participants underwent SCID-5-CV, HAM-A, HADS, and Level 2 Somatic Symptom Scales. The ethical approval for the study was granted by the Clinical Research Ethics Committee of Balıkesir University, Turkey, on May 10, 2023, under decision number 2023/71.

RESULTS: The median (min-max) serum BDNF levels in the patient and control groups were found to be 1.50 (0.19-3.28) ng/mL and 1.62 (1.05-9.50) ng/mL, respectively, with a statistically significant difference between the two groups (p=0.007). A negative correlation was identified between serum BDNF levels and HAM-A, HADS, and Level 2 Somatic Symptom Scale scores (rs= -0.386, rs= -0.317, rs= -0.224, respectively). When the diagnostic performance of serum BDNF levels was evaluated using the ROC curve, a cutoff value of 1.54 ng/mL was found to have a sensitivity of 59.4% and a specificity of 57.8%, indicating significant discriminative power for disease detection. No significant difference was observed between the patient and control groups regarding the presence of Val66Met polymorphism (p=0.843). Additionally, no statistically significant relationship was found between serum BDNF levels and Val66Met polymorphism (p=0.215).

CONCLUSIONS: In our study, serum BDNF levels were found to be associated with anxiety disorders and symptom severity. This finding supports the idea that BDNF is related to the biological basis of anxiety disorders, and due to its relationship with symptom severity, serum BDNF levels could be used as a helpful biomarker in the diagnosis and treatment of these disorders (Suliman et al. 2013). In our study, the presence of Val66Met and other variants (Val/Val and Met/Met) was not associated with anxiety disorders. Therefore, the genetic risk associated with Val66Met and other variants was not considered to be specific to anxiety disorders. Although the presence of any genomic variant in anxiety disorders has not been definitively established, we believe that our findings could contribute to future studies comparing the Val66Met polymorphism across populations. The findings from our study reveal that the rs6265 (Val66Met) polymorphism and other allele variants do not affect serum BDNF levels in either healthy controls or anxiety disorder patients. The inconsistent results found in different studies regarding the effect of the Val66Met polymorphism on serum BDNF levels suggest that other factors influencing the synthesis and secretion of BDNF may exist (D'Sa et al. 2012). It should be considered that there may be other sources of BDNF in the serum that are not affected by the Val66Met polymorphism (Terracciano et al. 2013). The unique aspect of our study is that it includes patients with newly diagnosed anxiety disorders who have not yet received psychiatric treatment. This ensures that the potential effects of pharmacological interventions on biochemical and genetic outcomes are excluded. The inability to significantly confirm the effect of the Val66Met polymorphism on BDNF levels indicates that genetic variations should be examined in larger sample groups and different populations.

Keywords: Anxiety disorder, BDNF, polymorphism, rs6265, Val66Met