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Significant association between brain derived neurotrophic factor gene polymorphism C270T and cognitive symptoms in veterans with PTSD

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Statement of the Problem: Posttraumatic stress disorder (PTSD) is a trauma and stressor related disorder characterized with specific clusters of symptoms including cognitive disturbances. Brain derived neurotrophic factor (BDNF) is a neurotrophin with important role in modulation of neuronal growth, plasticity, neurotransmission, stress response and cognition (learning, memory), all processes are altered in PTSD.

Methodology: The study included 333 male Caucasians with combat-related current and chronic PTSD. They were evaluated using SCID, PANSS, CAPS, and two PANSS cognitive subscales: PANSS Cognition subscale 1 and PANSS Cognition subscale 2. Genotyping of the BDNF Val66Met (rs6265) and BDNF C270T (rs56164415) was done using the primers and probes from the TaqMan® Drug Metabolism Genotyping Assays on ABI Prism 7300 Real time PCR System apparatus (Applied Biosystems, Foster City, CA, USA) in DNA samples. Results were evaluated using Kruskal-Wallis ANOVA and Dunn post-hoc test, or Mann Whitney U test, or χ^2 -test.

Findings: When veterans with PTSD were subdivided into TT, TC and CC genotype carriers of the BDNF C270T, TT carriers had significantly higher scores on both cognition subscales, i.e. the most severe symptoms vs. carriers of the CT and CT genotypes. These results were confirmed when veterans with PTSD were subdivided into T carriers (the combined TT and TC genotypes) vs. CC genotype carriers. When veterans with PTSD were subdivided according to the BDNF Val66Met genotypes, their cognitive symptom scores were not significantly different.

Conclusion & Significance: This is a first study of the significant association between BDNF C270T (rs56164415) and cognitive disturbances in PTSD. Carriers of one or two of the minor T allele of the BDNF C270T were more likely to have worse cognitive symptoms compared to CC genotype carriers.

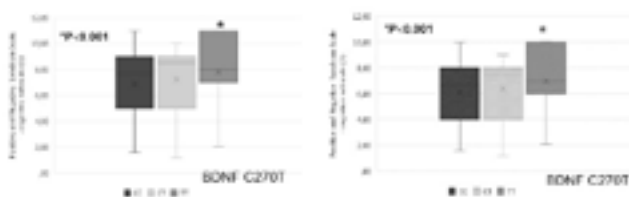


Figure 1: PANSS Cognition subscale (1 & 2) scores in veterans with PTSD subdivided into TT, TC and CC genotype carriers of the BDNF C270T.

Biography

Nela Pivac has her expertise in evaluation of molecular basis of neuropsychiatric disorders including PTSD, and in the search of biomarkers of these disorders. She is a leader of the national and international projects, and a winner of the scientific awards.

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