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Research paper

Predictive value of sICAM-1 and sVCAM-1 as biomarkers of affective temperaments in healthy young adults

Maja Ivković [a,b], Maja Pantović-Stefanović [a,*], Nataša Petronijević [b,c], Bojana Dunjić-Kostić [a], Milica Velimirović [b,c], Tatjana Nikolić [b,c], Vladimir Jurišić [d], Maja Lačković [a,b], Sanja Totić-Poznanović [a,b], Aleksandar A. Jovanović [a,b], Aleksandar Damjanović [a,b]

[a] Clinic of Psychiatry, Clinical Centre of Serbia, Pasterova 2, 11000 Belgrade, Serbia
[b] School of Medicine, University of Belgrade, Dr Subotica 8, 11000 Belgrade, Serbia
[c] Institute of Clinical and Medical Biochemistry, Pasterova 2, 11000 Belgrade, Serbia
[d] School of Medicine, University of Kragujevac, Svetozara Markovica 69, 11000 Kragujevac, Serbia

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ABSTRACT

Background: Affective temperaments are intermediate phenotypes for major affective disorders and are reported to have a neuroimmune etiopathogenesis. Here we investigated the role of soluble intercellular cell adhesion molecule-1 (sICAM-1) and soluble vascular cell adhesion molecule-1 (sVCAM-1) in affective temperaments and mood symptoms in healthy adults.
Methods: Healthy adults (n=94) were screened for psychiatric disorders using the nonpatient version of the Structured Clinical Interview for DSM-IV-I and II. Subjects with medical conditions associated with changes in inflammatory response were excluded, deriving the final sample (n=68). Affective temperaments were evaluated with Temperament Evaluation of Memphis, Pisa, Paris and San Diego-Autoquestionnaire (TEMPS-A). State mood symptoms were assessed using the Young Mania Rating Scale and Montgomery–Åsberg Depression Rating Scale. Serum sICAM-1 and sVCAM-1 levels were measured using enzyme-linked immunosorbent assay.
Results: After adjusting for confounders (age, gender, BMI, and smoking habits), a high negative correlation between depressive and irritable temperament TEMPS-A scores and sVCAM-1 levels was detected. Although we identified no association between sICAM-1 levels and affective temperament scores, sICAM-1 was related to the state severity of manic symptoms. In a multiple linear regression model, sVCAM-1 remained a significant predictor of depressive but not irritable temperament scores.
Limitations: The temperaments were estimated on the basis of self-report questionnaire.
Conclusions: Our findings suggest that sVCAM-1 is related to affective temperaments, and it is a trait marker for liability to mood disorders. This relationship between alterations in cellular adhesion and affective temperament may be important for vulnerability to affective disorders.

1. Introduction

Affective temperaments are inheritable traits and are biologically determined cores of personality that can play a causal role in the psychopathology of major mood disorders. Their genetic and neurochemical base is considered to be strong and founded in separate neurobiological systems, which are similar to those associated with mood disorders (Eory et al., 2011; Whittle et al., 2006). Biological factors that are repeatedly linked to mood disorders and affective temperaments are the alterations of immune mediators such as cytokines, cortisol reactivity, markers of general inflammation, and genes of the innate immune system (Dowlati et al., 2010; Hori et al., 2013; Kapczinski et al., 2014; Millar et al., 2013; Modabbernia et al., 2013; Suchankova et al., 2009).

Evidence firmly indicates that soluble vascular cell adhesion molecule-1 (sVCAM-1) and soluble intercellular cell adhesion molecule-1 (sICAM-1) also belong to the group of immune markers responsible for the mediation of the clinical presentation of mood disorders and their neurobiological performance (Thomas

Abbreviations: BMI, body mass index; ELISA, enzyme-linked immunosorbent assay; MADRS, Montgomery–Åsberg depression rating scale; SCID-I, Structured Clinical Interview for DSM-IV-Axis I Disorders; TEMPS-A, Temperament Evaluation of Memphis, Pisa, Paris and San Diego-Autoquestionnaire; YMRS, Young Mania Rating Scale

* Corresponding author.
E-mail address: majapantovic@yahoo.it (M. Pantović-Stefanović).

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