

M31. GENE EXPRESSION IN BLOOD OF CHILDREN AND ADOLESCENTS: INFLUENCE OF ENVIRONMENTAL STRESSORS ON MAJOR DEPRESSIVE DISORDER

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Background Studies investigating major depressive disorder (MDD) in childhood and adolescence are relevant to understand relative contributions from either genetic and environmental factors on MDD, since early stages of disease have less influence of illness exposure. We aimed to investigate peripheral mRNA expression of 12 genes related to HPA axis (NR3C1, FKBP5), inflammation (TNF, TNFR1, TNFR2, IL1B), neurodevelopment (DISC1, PDE4B, QKI), and neurotransmission (SLC1A4, GLUL, COMT) in blood of children and adolescents with MDD and to test if history of childhood maltreatment (CM) or prenatal alcohol (PA) and tobacco (PT) exposure (environmental stressors that influences psychiatry disorders risk) could affect MDD via gene expression.

Methods mRNA levels in whole blood were compared among 20 children and adolescents with MDD diagnosis (MDD group), 48 subjects without MDD diagnosis but with high levels of depressive symptoms (DS group) and 61 healthy controls (HC group). We also performed a mediation model in which CM/PA/PT exposure was the independent variable, MDD was the outcome and gene expression was the intermediary variable.

Results NR3C1, TNF, TNFR1 and IL1B expression levels were significantly lower in MDD group compared to the other groups. The direct effects of CM, PA and PT exposure on MDD were not significant. Moreover, there was not an indirect effect of PA or PT exposure on MDD. However, there was an indirect effect on the aggregation of these four genes expressions, mediating the relationship between CM and MDD.

Discussion In the largest study investigating gene expression in children with MDD, we demonstrated that the NR3C1, TNF, TNFR1 and IL1B expression are related to the MDD and conjunctly mediated the effect of history of CM on risk of developing the disorder, supporting a role of glucocorticoids and inflammation as possible effectors of environmental distress on this disorder.

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