



CHILDHOOD AND ADOLESCENT DEPRESSION: A BIOCHEMICAL PERSPECTIVE

Clinical Biochemistry

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ABSTRACT

Depression is the primary mental health issue and the main contributor to sickness and disability globally. The pathogenesis of this disorder is yet unknown, and treatment outcomes are poor, despite the condition being significantly more common in children and adolescents than in adults. Cholesterol and other lipid parameters are associated with the depressive symptoms so lipid profile can be included in the investigation panel for better treatment outcome.

KEYWORDS

Childhood and Adolescent, Depression, Lipid profile.

Depression is the major disorder related to mental health and it is the leading cause of illness and disability throughout worldwide. The most severe form of depression may lead to suicide attempts which accounts for the leading cause of death among adolescents in Europe¹. In spite of the significant prevalence in the pediatric and adolescent age groups, the pathophysiology of this condition remains unclear, and the outcomes of the treatment are poor. The emergence of depressive symptoms begins from adolescence and lasts until middle age, and depression can affect anyone at any time in their lives.

The majority of research on depression has been conducted on adults; however, it is insufficient for use with children and adolescents. Inventing the biochemical markers associated to the pathophysiology of depression can be utilized to predict how well children will respond to treatment and pave the way for efficient therapy. According to studies, lipid profile patterns are altered in patients with depressive symptoms. In a case control study by Enko et al² individuals with depression were found to have significantly higher plasma TG (108.0 [75.8–154.1] vs. 84.0 [63.0 vs. 132.2] mg/dL, P = 0.014) and lowered HDL-cholesterol levels (55.0 [46.9–123.0] vs. 61.5 [47.4 vs. 72.6] mg/dL, P = 0.049) compared to healthy subjects. Total and LDL cholesterol levels were also slightly increased in individuals with depression. In a large-scale meta-analysis by Mariska et al³ higher levels of VLDL cholesterol, Triglycerides, diglycerides and lower levels of HDL were significantly associated with depression. In a study by Kim et al⁴, adolescent boys with borderline and higher LDL cholesterol had higher prevalence of depressive moods than with the normal LDL cholesterol levels.

Plasma membrane contains cholesterol, and the concentration of cholesterol affects the fluidity of membrane, and with the secondary effects on synaptic transmission and serotonergic neurotransmission. It has been claimed that decrease in serum cholesterol or low-density cholesterol LDL-c influences the psychological states by increasing the relative fluidity of brain cell membrane, increasing presynaptic serotonin reuptake, and decreasing postsynaptic serotonin activity⁵. Several other hypotheses have been proposed to explain the association of Triglycerides and Very low-density lipoprotein (VLDL-c).

On the basis of this, the authors recommend implementing regular lipid level measurements in the investigation panel for the children and the adolescents suffering from clinical depression, so that the clinicians can treat the patients based on the lipid profile, even the treatment can be modified for the better prognosis.

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