Serum Lipid Levels in Patients With Dissociative Disorder

Mehmet Yücel Agargun, M.D.
Ömer Akil Özer, M.D.
Hayrettin Kara, M.D.
Ramazan Şekeroğlu, Ph.D.
Yavuz Selvi, M.D.
Buket Eryonucu, M.D.

Objective: There may be an association between a low serum cholesterol level and dissociative disorders.

Recently, an association of serum cholesterol level with psychiatric disorders, including major depression and anxiety disorders, has been suggested in the literature (1). Low serum cholesterol has been found to be a risk factor for suicidal behavior in depressive disorder, self-mutilative and homicidal behavior in personality disorders, and even violent behavior during sleep (2). It has also been suggested that a low serum cholesterol level serves as a biological marker of major depression in panic disorder (3). Serotonin plays an important role in understanding the underlying neurobiological mechanisms of the relationship of low serum cholesterol concentration with depression, suicide, and violence. In the present study, we examined the levels of serum lipid in patients with dissociative disorders, in which self-injurious behaviors and borderline features are relatively common.

Method:
The subjects of the study were 16 patients with dissociative disorder and 16 normal comparison subjects (two men and 14 women in each group). Total cholesterol, triglyceride, high-density lipoprotein, low-density lipoprotein, and very low density lipoprotein levels were compared.

Results: Patients with dissociative disorders had lower serum triglyceride, total cholesterol, low-density lipoprotein, and very low density lipoprotein levels than normal comparison subjects.

Conclusions: Low serum lipid concentrations may be related to a high incidence of self-injurious behaviors and borderline features in patients with dissociative disorders.

poprotein, and very low density lipoprotein levels than normal comparison subjects.

Discussion

In this study, we found that patients with dissociative disorders had lower serum triglyceride, total cholesterol, low-density lipoprotein, and very low density lipoprotein levels than normal comparison subjects. When we compared the patient lipid values to standard clinical reference values (6), they were quite low. This is the first study, to our knowledge, to examine serum lipid levels in patients with dissociative disorders, although it has been performed in a small group.

Serotonin has recently been attributed to an important role in the relationship between low cholesterol level and suicidal or aggressive behavior (1). Reduced CSF concentration of hydroxyindoleacetic acid (5-HIAA), the principal metabolite of serotonin, in depressed patients suggests that a low concentration of 5-HIAA may be a marker for suicidal behavior and suicide risk in depressed patients (7). Peripheral cholesterol exchanges freely with that in the CNS, which suggests that as a principal component of neuronal membranes, the concentration of cholesterol could determine the availability of the serotonin receptor and its transporter by inducing changes in their quaternary structure (8). Investigating the relation of serum cholesterol and serotonin metabolism, Steegmans et al. (9) reported that plasma serotonin concentrations were lower in men with low serum cholesterol and suggested that serotonin metabolism might be involved in the association of cholesterol and serotonin. Thus, low levels of total serum cholesterol lead to a decrease in brain serotonin and, as a consequence, to poor control of aggressive impulses and suicidal or violent behaviors (1).

Dysphoria is a hallmark of borderline personality disorder, which is often associated with the initiation of self-mutilating and suicidal behaviors (10). Comorbidity with borderline personality disorder or borderline features is high in patients with dissociative disorders, particularly dissociative identity disorder. In addition, Coons and Milstein (11) reported a high incidence of self-injurious behaviors among patients suffering from multiple personality disorder, psychogenic amnesia, and dissociative disorder not otherwise specified. An association between low serum cholesterol and borderline personality disorder (12), impulsivity (13), and self-mutilation (14) have been reported in recent studies. Thus, low serum lipid levels may be related to a high incidence of self-injurious behaviors and borderline features in patients with dissociative disorders. In conclusion, future research is needed to replicate these findings and to demonstrate a causal relationship between low cholesterol concentration and serotonin in dissociative disorders as well as in major depression and borderline personality disorder.

Received Dec. 8, 2002; revisions received Aug. 5, 2003, and Jan. 30, 2004; accepted Feb. 9, 2004. From the Department of Psychiatry, Yüzüncü Yıl University School of Medicine. Address reprint requests to Dr. Agargun, Department of Psychiatry, Yüzüncü Yıl University School of Medicine, Van 65200 Turkey; myagargun@kure.com.tr (e-mail).

References

6. Heil W, Koberstein R, Zawta B: Reference Ranges for Adults and Children: Pre-Analytical Considerations. Mannheim, Germany, Roche Diagnostics, 2000, number 133
Cholesterol Metabolism and Suicidy in Smith-Lemli-Opitz Syndrome Carriers

Aleksandra Lalovic, M.Sc.
Louise Merkens, Ph.D.
Laura Russell, M.D.
Geneviève Arsenault-Lapierre, B.Sc.
Malgorzata J.M. Nowaczyk, M.D.
Forbes D. Porter, M.D., Ph.D.
Robert D. Steiner, M.D.
Gustavo Turecki, M.D., Ph.D.

Objective: The authors examined the relationship between cholesterol metabolism and suicidality in carriers of Smith-Lemli-Opitz syndrome and their families. This population has a partial deficiency in 7-dehydrocholesterol reductase (DHCR7), the enzyme that catalyzes the last step in cholesterol biosynthesis.

Method: Suicidal behavior, depression, misuse of alcohol and drugs, and family history of psychopathology, including attempted or completed suicide, were assessed by structured interview in 51 carriers of Smith-Lemli-Opitz syndrome and 54 matched comparison subjects.

Results: There were significantly more suicide attempters and completers among the biological relatives of Smith-Lemli-Opitz syndrome carriers than comparison subjects, but family history of psychopathology did not significantly differ between the groups. More suicide attempts were reported among Smith-Lemli-Opitz syndrome carriers than among the comparison subjects.

Conclusions: These results, based on a unique study design, provide additional evidence supporting the relationship between cholesterol metabolism and suicidal behavior.

It is well established that individuals with a family history of suicide are at greater risk of attempted and completed suicide (1). This fact, combined with consistent evidence from twin and adoption studies, suggests that there is a genetic component to suicidal behavior (2). Interest in cholesterol as a biological marker of suicide risk has emerged following consistent evidence from studies that used different designs suggesting the existence of an association between low serum cholesterol and suicidal behavior (3). Investigating suicidal behavior in a population having natively low cholesterol because of a particular genetic variation is an interesting and novel approach to the further exploration and validation of this association.

Smith-Lemli-Opitz syndrome is an autosomal recessive multiple malformation and mental retardation syndrome characterized by abnormally low cholesterol levels resulting from mutations in the gene coding for the enzyme 7-dehydrocholesterol reductase (DHCR7), which is involved in cholesterol biosynthesis (4). Smith-Lemli-Opitz syndrome has an estimated incidence of between one in 10,000 and one in 60,000 births (5) and a carrier frequency estimated as high as one in 30 (6). Many patients with Smith-Lemli-Opitz syndrome exhibit behavioral difficulties (aggressive and self-injurious behaviors), and dietary cholesterol supplementation has been shown to reduce aggression in these patients and improve their behavioral problems (7). Parents of Smith-Lemli-Opitz syndrome children are obligate heterozygotes and are clinically normal but are carriers of a partial enzyme deficiency, displaying reduced DHCR7 activity in the biosynthesis of cholesterol (8).

We explored the putative relationship between low cholesterol and suicide by investigating whether suicidal behavior would be more frequent in Smith-Lemli-Opitz syndrome carriers than comparison subjects, given the influence of the genetic variant on cholesterol metabolism in this population.

Method

The subjects were individuals who were heterozygous for Smith-Lemli-Opitz syndrome. They were recruited through health care centers across the United States and Canada where Smith-Lemli-Opitz syndrome patients and their families are followed. In all instances, Smith-Lemli-Opitz syndrome carriers were identified as the biological parents of a child diagnosed with Smith-Lemli-Opitz syndrome. We took into account the important influence of caregiver stress by selecting a comparison group consisting of individu-