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## Serum Lipids in Turkish Patients with $\beta$ -Thalassemia Major and $\beta$ -Thalassemia Minor

### Türk $\beta$ -Talasemi Majör ve $\beta$ -Talasemi Minör Hastalarının Serum Lipidleri

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#### To the Editor,

It is well-known that  $\beta$ -thalassemia is associated with changes in plasma lipids and lipoproteins [1,2,3]. To our knowledge, no data are available on lipid profiles in Turkish  $\beta$ -thalassemia major (TM) and  $\beta$ -thalassemia trait (TT) patients together. The aim of this study was to evaluate lipid profiles in two groups of patients with  $\beta$ -TM and  $\beta$ -TT and to compare them with healthy controls. The study included a total of 311 subjects. Group 1 included 131  $\beta$ -TM patients (mean age: 16.3 $\pm$ 7.58 years). Group 2 included 68  $\beta$ -TT patients (mean age: 7.25 $\pm$ 4.43 years). Group 3 consisted of 112 age- and sex-matched healthy controls (mean age: 9 $\pm$ 4.7 years). Serum ferritin level was 2487 $\pm$ 1103 (range: 661-5745) ng/mL in Group 1. In comparing the correlation between ferritin and lipid parameters, while a significantly negative relationship was detected between ferritin and high-density lipoprotein cholesterol (HDL-C) ( $p=0.000$ ,  $r=-0.602$ ), a

significantly positive relationship was detected between ferritin and triglyceride (TG) levels ( $p=0.02$ ) in TM patients. Serum lipid profiles of the 3 groups are shown in Table 1.

Previous studies have shown total serum cholesterol, HDL-C, lower low-density lipoprotein cholesterol (LDL-C), and higher TG in  $\beta$ -TM patients compared to healthy controls [1,2,3]. In our study, we found lower serum total cholesterol, lower HDL-C, LDL-C, and higher TG in  $\beta$ -TM patients compared to healthy controls. The pathophysiology of hypocholesterolemia in thalassemia remains obscure, although several mechanisms have been proposed; plasma dilution due to anemia, increased cholesterol requirement associated with erythroid hyperplasia, macrophage system activation with cytokine release, and increased cholesterol uptake by the reticuloendothelial system [4,5]. Previous studies reported different variations in lipid profiles of  $\beta$ -TT patients [6,7]. In our study, we demonstrated

**Table 1. Lipid profiles and their significance in patients with  $\beta$ -thalassemia major, patients with  $\beta$ -thalassemia trait, and controls.**

	Group 1	Group 2	Group 3	p-values		
	$\beta$ -TM (n=131)	$\beta$ -TT (n=68)	Control (n=112)	Groups 1-2	Groups 1-3	Groups 2-3
T-Chol	118.5 $\pm$ 30.6	145.6 $\pm$ 27.6	154.3 $\pm$ 31.7	0.00	0.00	NS
LDL-C	59.1 $\pm$ 27.6	82.5 $\pm$ 24.9	89.6 $\pm$ 26.1	0.00	0.00	NS
HDL-C	34.4 $\pm$ 11.2	45.7 $\pm$ 12.2	45.5 $\pm$ 11.1	0.00	0.00	NS
TG	121.8 $\pm$ 50.8	82.9 $\pm$ 34.6	97.8 $\pm$ 52.4	0.00	0.00	NS

T-Chol: Total cholesterol, LDL-C: low-density lipoprotein cholesterol, HDL-C: high-density lipoprotein cholesterol, TG: triglyceride,  $\beta$ -TM:  $\beta$ -thalassemia major,  $\beta$ -TT:  $\beta$ -thalassemia trait, NS: non-significant.

similar lipid profiles in  $\beta$ -TT patients and healthy controls. Based on statistical insignificance, we considered that the effects of lipid profile on the development of atherosclerotic vessel disease were similar in both  $\beta$ -TT patients and the healthy control group. Serum iron and iron stores, expressed as elevated ferritin levels, have been implicated in coronary artery disease. Iron overload depletes the antioxidant and HDL-C levels. Lower HDL-C level is an important risk factor for development of coronary heart diseases [8]. We found significant relationships of serum ferritin levels with TG and HDL-C in  $\beta$ -TM patients. These results indicate that  $\beta$ -TM patients who need life-long red blood cell transfusions should receive chelation therapy not only for iron overload-induced congestive heart failure but also in order to prevent cardiovascular diseases resulting from lipid profile alterations.

In conclusion, lipid profiles of  $\beta$ -TM patients differed from those of  $\beta$ -TT patients and healthy controls. The present study demonstrates that lower levels of HDL-C in  $\beta$ -TM should be a reason for concern for better evaluation of the cardiovascular risk factors in  $\beta$ -TM. In order to reduce the effects of lipid metabolism on cardiovascular disorders, an effective chelating therapy is essential in TM patients.

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