Beta Thalassemia Minor: Patients Are Not Tired but Depressed and Anxious

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Keywords

Beta thalassemia minor · Fatigue · Anxiety · Depression

Abstract

Objective: We aimed to investigate whether the severity of fatigue and the incidences of depression and anxiety of patients with beta thalassemia minor (BTm) are different from healthy individuals using the Fatigue Severity Scale (FSS) and Hospital Anxiety and Depression Scale (HADS). **Subjects and Methods:** BTm patients who were followed at the University of Health Sciences Istanbul Training and Research Hospital Hematology Clinic between 2016 and 2017 and who had normal biochemical parameters, thyroid function tests and C-reactive protein levels, and did not use any medications, consume alcohol or tobacco, have any chronic diseases or sleep disturbances were included in the study. Healthy control subjects who were matched with age, sex, marital status, educational status, and body mass index (BMI) were also included for comparison. **Results:** Thirty-nine BTm patients and 25 healthy controls were included in the study. The BTm and the control groups were comparable in terms of gender, age, BMI, educational status and marital status ($p = 0.368, 0.755, 0.851, 0.785, \text{ and } 0.709$, respectively). FSS

score was ≥ 4 in 23 (59.0%) BTm subjects and in 15 (60%) control subjects ($p = 1.0$). HADS anxiety score was ≥ 10 in 20 (51.3%) BTm subjects and in 5 (20.0%) control subjects ($p = 0.018$), and HADS depression score was ≥ 7 in 20 (51.3%) BTm subjects and in 6 (24.0%) healthy control subjects ($p = 0.039$). There was no correlation of hemoglobin with FSS score ($p = 0.526, r = -0.105$), HADS anxiety score ($p = 0.703, r = -0.063$), or HADS depression score ($p = 0.718, r = -0.06$) in the BTm group. **Conclusion:** We found that both depression and anxiety were higher in BTm patients than in healthy individuals, but this difference was not feasible for fatigue.

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Introduction

Beta thalassemias are a group of genetic blood disorders, characterized by disrupted and inadequate production of the beta-globin chains of hemoglobin, due to various mutations in the beta-globin genes [1–3]. As a result from this abnormal hemoglobin synthesis, hypochromic microcytic anemia might develop [4]. Beta thalassemias are divided into 3 groups according to the clinical and laboratory findings, which are beta thalas-

Table 1. Comparison of the characteristics of the patient and control groups

Characteristics	BTm patients (<i>n</i> = 39)	Control subjects (<i>n</i> = 25)	<i>p</i> value
Gender, <i>n</i> (%)			
Female	28 (71.8)	21 (84.0)	0.368
Male	11 (28.2)	4 (16.0)	
Median age (range), years	30 (18–69)	25 (19–59)	0.755
Median BMI (range), kg/m ²	22.7 (18.2–29.3)	22.7 (19.2–29.8)	0.841
Median Hb (range), g/dL	11.3 (9.8–13.8)	12.9 (11.4–16.0)	<0.001
Educational status, <i>n</i> (%)			
No education	1 (2.6)	0 (0)	0.785
Primary school	14 (35.9)	8 (33.3)	
High school	10 (25.6)	7 (29.2)	
Graduate	14 (35.9)	9 (37.7)	
Marital status, <i>n</i> (%)			
Married	18 (46.2)	9 (36.0)	0.709
Single	20 (51.3)	15 (60.0)	
Divorced	1 (2.6)	1 (4.0)	
Hb, hemoglobin; BMI, body mass index; BTm, beta thalassemia minor.			

semia minor (BTm), beta thalassemia intermedia (BTI), and beta thalassemia major (BTM). While BTM and BTI patients are usually symptomatic with frequent blood transfusion requirements, individuals with BTm occasionally have a mild asymptomatic microcytic anemia, which is usually incidentally encountered [3–5].

Quality of life is influenced unfavorably, and the prevalence of either depression or anxiety is increased in BTM and BTI patients [6–9]. Yet, studies including quality of life in BTm subjects are limited, and only depression was demonstrated to be frequent in individuals with BTm compared to the healthy population [10, 11]. Likewise, data regarding the presence of fatigue and anxiety in adult BTm subjects are insufficient. In this study, we aimed to investigate the association between BTm and fatigue, depression and anxiety.

Subjects and Methods

BTm patients who were followed at the University of Health Sciences Istanbul Training and Research Hospital Hematology Clinic between 2016 and 2017 and had normal biochemical parameters, thyroid function tests and C-reactive protein levels, did not use any medications, consume alcohol or tobacco, and have any chronic diseases or sleep disturbances were included in the study. Healthy control subjects who were matched with age, sex, marital status, educational status, and body mass index (BMI) were also included for comparison.

The Fatigue Severity Scale (FSS) was developed by Krupp et al. [12] and was validated in the Turkish population by Armutlu et al. [13]. Patients and control subjects were asked to rate 9 questions, each from 1 to 7, where 1 represented strong disagreement and 7 represented strong agreement. The final score was achieved by dividing the total score by the number of questions. A score of ≥ 4 was defined as severe fatigue [12, 13].

The Hospital Anxiety and Depression Scale (HADS) is a questionnaire developed to assess anxiety and depression in patients. The questionnaire consists of 14 questions; even-numbered questions aim for depression while odd-numbered questions aim for anxiety. The answers are scored on a scale of 0–3. The scale was validated in the Turkish population by Aydemir [14]. The cutoff score for anxiety was 10, while the cutoff for depression was 7 [15].

Results

Thirty-nine BTm patients and 25 healthy controls were included in the study. The characteristics of the BTm and control subjects are presented in Table 1. The median age of BTm subjects was 30 years (range 18–69). Twenty-eight (71.8%) BTm subjects were female and 11 (28.2%) were male. The median BMI was 22.7 kg/m² (range 18.2–29.3), and the median hemoglobin level was 11.3 g/dL (range 9.8–13.8). One BTm subject (2.6%) had no education; 14 (35.8%) graduated from primary school, 10 (25.6%) graduated from high school, and 14 (35.9%) had a graduate degree. Eighteen (46.2%) BTm subjects were married, 20 (51.3%) were single, and 1 (2.6%) was

Table 2. Comparison of the patient and control groups regarding FSS and HADS

Characteristics	BTm patients (n = 39)	Control subjects (n = 25)	p value
Fatigue severity scale score, n (%)			
≥4	23 (59.0)	15 (60.0)	1.0
<4	16 (41.0)	10 (40.0)	
HADS anxiety score, n (%)			
≥10	20 (51.3)	5 (20.0)	0.018
<10	19 (48.7)	20 (80.0)	
HADS depression score, n (%)			
≥7	20 (51.3)	6 (24.0)	0.039
<7	19 (48.7)	19 (76.0)	

HADS, hospital anxiety and depression scale; BTm, beta thalassemia minor.

divorced. The BTm and the control groups were comparable in terms of gender, age, BMI, educational status, and marital status ($p = 0.368, 0.755, 0.851, 0.785$, and 0.709 , respectively). The BTm subjects had significantly lower hemoglobin levels compared to the control subjects (1.3 vs. 12.9 g/dL, $p < 0.001$, Table 1). FSS score was ≥ 4 in 23 (59.0%) BTm subjects and in 15 (60%) control subjects ($p = 1.0$). HADS anxiety score was ≥ 10 in 20 (51.3%) BTm subjects and in 5 (20.0%) control subjects ($p = 0.018$), and HADS depression score was ≥ 7 in 20 (51.3%) BTm subjects and in 6 (24.0%) healthy control subjects ($p = 0.039$, Table 2). There was no correlation of hemoglobin with FSS score ($p = 0.526, r = -0.105$), HADS anxiety score ($p = 0.703, r = -0.063$), and HADS depression score ($p = 0.718, r = -0.06$) in the BTm group.

Discussion

In the current study, we compared the prevalence of depression, anxiety, and fatigue between BTm patients and age-, sex-, marital status-, educational status-, and BMI-matched healthy control subjects using FSS and HADS. We found that the prevalence of depression and anxiety was higher in BTm patients. However, there was no significant difference between 2 groups in terms of fatigue. Due to the biological impact of chronic diseases and/or behavioral mechanisms as a consequence of these chronic diseases, depression is more common in these patients compared to the healthy population [16, 17]. Depression has been evaluated in adult BTM and BTI patients, and its prevalence was found to be in-

creased [8, 9], which is a predictable outcome considering the chronicity of BTM and BTI. Although BTm is not a disease state, it may be perceived as an illness by the individuals with BTm. In a case-control study performed using the Hamilton Depression Rating Scale, Keşkek et al. [10] found that depression was increased in individuals with BTm. Marvasti et al. [11] found similar results by evaluating BTm subjects with the Beck Depression Inventory questionnaire. Compatible with the previous studies, we also found that depression was more common in BTm subjects, but differently from other studies, we used HADS. Because depression is reported to be higher among individuals who are single and/or unemployed and/or have a lower socioeconomic status [18, 19], the BTm group was compared with healthy subjects with matching marital, vocational, and socioeconomic status. Although data regarding anxiety in BTm subjects is not adequate, we further evaluated anxiety in BTm patients with HADS in addition to depression and showed that anxiety was also increased in BTm subjects compared to the healthy controls. There may be 2 reasons for this anxiety: (1) genetic inheritance of beta thalassemia and the possibility of having a child with thalassemia major might provoke anxiety; and (2) health anxiety, a specific type of anxiety in which the individual believes that they can suffer from changes due to serious illnesses, may be a source of anxiety for individuals with BTm [20]. Fatigue is a nonspecific symptom with a wide variety of etiologies. Lifestyle practices including poor eating habits, alcohol and tobacco use, and many diseases including anemia, thyroid diseases, chronic inflammatory diseases, malignancies, obesity, and hypertension may be the underlying reasons. One of the most common causes of fatigue is anemia [21, 22]. Although BTm subjects who may have mild anemia are known to present with fatigue [1–4], the relationship between fatigue and BTm has not been previously investigated. In this study comparing BTm individuals with matched control subjects, both BTm individuals and the healthy subjects were found to be similar in terms of fatigue. This similarity occurred despite the significantly decreased hemoglobin levels in BTm individuals. The major limitation of our study is the relatively small sample size. Because of wide exclusion criteria, a significant number of patients had to be excluded. In conclusion, we found that both depression and anxiety were higher in BTm patients than in healthy individuals, but this difference was not present for fatigue. Our findings indicate that individuals with BTm require guidance and counseling along with healthcare

services. Hence, it is substantially important to inform the BTm subjects elaborately about their condition to relieve their anxiety and depression.

Statement of Ethics

The study protocol was approved by the institute's Ethics Committee on Clinical Research.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest to disclose.

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