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Title

Assessment of Thyroid Functions in Transfusion-Dependent Beta Thalassemia Major

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Introduction

Thalassemia is defined as one of the most common monogenetic defects worldwide [1]. Managing thalassemia patients with blood transfusion and iron chelation therapy improved the quality of life. However, 80% of transfusion-dependent thalassemia major suffer from at least one endocrine complication such as hypothyroidism, hypoparathyroidism, diabetes mellitus, or hypogonadism [2]. The study aims to evaluate thyroid function by investigating thyroid function hormones, including T3, T4, and TSH, among thalassemia major patients and control samples. Also, to correlate between the thyroid function and the influence of factors such as gender, BMI, and iron chelation.

Methodolgy

Case-Control study
Madinah
King Fahad Hospital Maternity and Children Hospital

(115) BTM
(100) Control

Analysis of Thyroid hormones TSH, FT3, FT4, and ferritin levels

Analysis of Data by SPSS

Hypothyroidism classification

***Primary**
↑TSH /↓FT4 and/or FT3

***Subclinical**
↑TSH, normal FT3 + FT4.

***Euthyroid**
Normal TSH ,FT3 ,and FT4

Results

Hypothyroidism was detected in (29.6%) of thalassemia patients and (9%) of the control group. A significant correlation was found between hypothyroidism and thalassemia patients (p<.001) Figure 2. No significant difference in the frequency of euthyroid and hypothyroid in different age categories (P=.579). Furthermore, no Significant correlation was found between gender, BMI, and hypothyroidism in thalassemia patients.

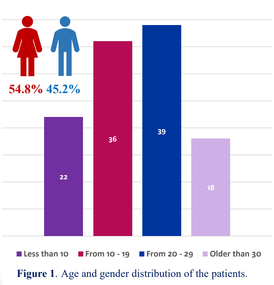

Figure 1. Age and gender distribution of the patients.

Table 1. The mean values of selected parameters in thalassemia patients and control.

	Mean ±SD		P value
	TM Patient	Control	
Number of patients, n	115	100	
Hb (g/dl)	8.01 ± 136	15.56 ±1.8	<.001*
Serum ferritin (ng/ml)	2511.30 ± 1834.5	105.22 ± 91.06	<.001*
Serum TSH (µIU/ml)	4.58 ± 4.6	2.30 ± 2.09	<.001*
Serum free T4 (pmol/l)	14.11 ± 2.96	15.51 ± 2.48	<.001*
Serum free T3 (pmol/l)	5.97 ± 1.35	5.55 ± 0.64	.004*

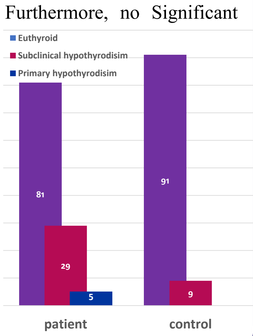

Figure 2 The frequency of euthyroid, subclinical, and primary hypothyroidism.

Conclusion

In conclusion, hypothyroidism remains a frequent complication of beta-thalassemia major, and subclinical hypothyroidism is the most common type. Symptoms are nonspecific; however, the consequences affect practically every organ in the body. Monitoring thyroid function is crucial for avoiding complications of such an inherited disorder.

Recommendation

It's recommended for thalassemia major patients to receive comprehensive medical care, including monitoring and follow-up of thyroid hormone functions. The early detection and management of thyroid function can decrease the risk of hypothyroidism and its complications.

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