Thyroid dysfunction in Beta-thalassemia patients

M. Noumi [1], MS. Ladj [1] , R. Terrak[1], L. Aissat[1] , R.Boukari[1]
1. CHU Mustapha Pacha, Algiers, Algeria

ESPE 2021
The 59th Annual Meeting Online
22-26 September 2021

INTRODUCTION

- B-thalassemia is a hereditary chronic hemolytic anemia characterized by a defect in the synthesis of beta-globin chains, particularly common in the Mediterranean region, southern Asia, and the Middle East
- Transfusion programs and chelation therapy have greatly extended the life expectancy of patients. This has led to an increase in the prevalence of endocrine complications, linked to iron overload
- The hypothyroidism is one of the most commonly reported complications in patients with polytransfused beta thalassemia.
- Thyroid dysfunction is directly linked to the degree of iron overload.

AIM

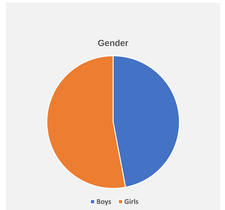
- **Main:** Describe the frequency of hypothyroidism in patients with polytransfused β-thalassemia.
- **Secondary**: Study the linking between hypothyroidism and :
  - Ferritinemia rate
  - Average transfusion volume (VTA)
  - Duration of transfusion therapy,
  - Splenectomy,
  - Compliance with chelating therapy.

METHOD

- It is a descriptive, analytical and mono-centric cross-sectional study which was carried out in the pediatric department of CHU Mustapha and which involved 87 patients (46 Girls and 41 Boys), followed for several years on a regular basis and treated by a transfusion regime (more than 10 transfusions) combined with a chelating treatment.
- All patients were evaluated by a clinical history, a somatic examination, and then a determination of free T4 (FT4) and thyroid stimulating hormone (TSH).

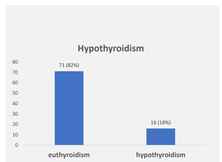
RESULTS

- Primary hypothyroidism is present in 16 (18.4%) patients, this hypothyroidism is subclinical in 12 (13.8%) patients and obvious in 04 (4.6%) patients.
- The average age of patients with hypothyroidism was 12 ± 5.3 years (12, VS 11) ; (p=0,54).
- Hypothyroidism was observed in 11 boys and 05 girls, No gender predominance (p = 0.055).
- Hypothyroidism was asymptomatic in all β-thalassemia patients at the time of diagnosis, no patient had goiter, and no central hypothyroidism was observed.
- There is a significant correlation between hypothyroidism and ferritinemia level in our study (p=0,001).
- A positive correlation was found between TSH and serum ferritin (p = 0.002) but not with FT4 (p = 0.13).
- A significant correlation was found between VTA and hypothyroidism , (p = 0.016).
- After logistic regression, only ferritinemia was retained as a prognostic factor for hypothyroidism. (ORa = 6.1. P = 0.003 for a ferritinemia threshold of 2500 µg / l).



N=87
SEX Ratio=0,9
Girl/Boy =46/41

Tranche /Age Year	n	%
< 5	10	11,5
5-10.	32	36,8
10-15.	23	26,4
> 15	22	25,3



	Hypothyroïdism	Euthyroïdie	P
Age	12±5,3 ans	11±6 ans	0,54

		Hypothyroïdie n=16	Euthyroïdie n=71	OR	P	Multi-varie
Age (year)		12	11		0,54	
Sexe	Boys	11(68,8)	30(42,3)	3	0,055	
	Girls	5(31,3)	41(57,7)			
Ferritinémie µg/l	> 2500	8(50)	10(14,1)	6,1	0,001	**0,003**
	<2500	8(50)	61(85,9)			
Splénectomy	Yes	5(31,3)	28(39,4)		0,542	
	No	11(68,8)	43(60,8)			
VTA ml/kg/an	Yes	9(56,3)	18 (25, 4%)	3,78	0,016	
	No	7 (43,8%)	53(74,6%)			
Duration Transfusion (year)	> 10 y	7(20,6%)	27 (79,4%)		0,67	
	<10 y	9(17%)	44(83%)			
Compliance	yes	13(81,2)	61(85,9)		0,636	
	No	3 (18,8)	10(14,1)			

CONCLUSIONS

- Hypothyroidism in thalassemia develops as a result of siderosis of thyroid cells, usually seen in the second decade of life.
- An annual assessment of thyroid function is recommended in polytransfused β-thalassemic patients from the age of 10 years.
- Recognizing and treating hypothyroidism early in thalassemia help improve the quality of life for these patients.

REFERENCES

1. Cunningham MJ. Update on Thalassemia: Clinical Care and Complications. Pediatr Clin North Am. avr 2008;55(2):447-60.
2. Brissot P. Optimizing the diagnosis and the treatment of iron overload diseases. Expert Rev Gastroenterol Hepatol. 3 mars 2016;10(3):359-70.
3. Italian Working Group on Endocrine Complications In Non-endocrine Diseases. Multicentre study on prevalence of endocrine complications in thalassaemia major. Clin Endocrinol (Oxf). juin 1995;42(6):581-6.
4. De Sanctis V, Soliman A, Elsedfy H, Skordis N, Kattamis C, Angastiniotis M, et al. Growth and endocrine disorders in thalassemia: The international network on endocrine complications in thalassemia (I-CET) position statement and guidelines. Indian J Endocrinol Metab. 2013;17(1):8.
5. Soliman AT, Khalafallah H, Ashour R. Growth and Factors Affecting it in Thalassemia Major. Hemoglobin. janv 2009;33(sup1):S116-26.

ACKNOWLEDGEMENTS

I would particularly like to thank:
- Professor Boukari Rachida who supervised me in this work.
- The staff of the laboratories of the Biochemistry Laboratory of CHU Mustapha Pacha , particularly Professor Yergui.
- The staff of the hormonology units of the CPMC (Center Pierre-et-Marie-Curie) particularly Professor Griene, Dr Himer.

CONTACT INFORMATION

E-mail : noumimus@gmail.com