TITLE

Beta thallassemia : the relation between ferritin and hypothyroisdism and the suppressing effect of ferritin on autoimmune disorders (a hypothesis)

Authors `= setila dalili
17 shahrivar hospital

OBJECTIVES

•Thallassemia is a genetic disease with recessive autosomal pattern of inheritance which occurs as a result of disorders in hemoglobin structure.(1)it classifies into Alfa and beta types.(2-4) beta thallassemia is the most common form of thallassemia in mediatreanian region. (5-8) regular and repeated blood transfusion and accurate iron chelating can increase life exp ectancy and quality of life in patients with thallassemia major. (9-11)

•According to previous investigations , iron overload can threaten appropriate function of endocrine gland and may cause pituitary gland disorders, hypogondism, diabetes, hypothyroidism, and hypo-parathyroidism especially consequent to lack of enough chelator therapy. In patients with thallassemia, 3 types of disorders in thyroid gland including sub clinical, mild, and definite hypothyroidism can be expected. (12) Thyroid functional disorder in patients with thallasssemia major is well documented and primary hypothyroidism is the most leading complication in patients with thallassemia. It can cause short stature, low weight and negative effect on quality of life. Although some previous investigations mentioned significant relation between ferritin level and hypothyroidism (8), yet there is no consensus on this issue. As , clinicians assess endocrine function in patients with thallassemia in various intervals and distinguishing appropriate time for assessment can decrease the mentioned complications and promote their health, researchers aimed to investigate the prevalence of hypothyroidism and the relation between thyroid hormones and ferritin in patients with thallassemia major referred to 17 shahrivar hospital.

METHODS

•This is an analytic cross-sectional study which was conducted on records of patients with thallassemia major aged less than 20 years. All records of patients referred to blood and oncology clinic of 17 shahrivar hospital during Jan 2012- Dec2013 were assessed. Patients with first electrophrosis indicating beta thalassemia major were included. Overt hypothyroidism was noted by TSH>6.8and T4<4.5 and subclinical hypothyroidism was indicated by TSH>6.8 and T4>4.5. Data were gathered by a form including age, sex, weight, height, body mass index, the initiation time of blood transfusion, thyroid test results, and 3 consecutive hemoglobin and ferritin levels. Mean ferritin and hemoglobin levels were assessed.

•Data were reported by descriptive statistics (mean, number, standard deviation, and percent) and analyzed by one sample T test, Mann Whitney U test, Pearson correlation coefficient and ROC curve in SPSS v19. P-value less than 0.05 indicated statistical significance and 95% confidence interval was noted.

RESULTS

•In this article, Sixty seven patients were evaluated .The mean age of the study population was 15.37 ± 3.73 years. (table 1) The frequency of sub clinical hypothyroidism was 10.4 % and no clinical hypothyroidism was noted. Results showed significant linear correlation between first and mean ferritin with TSH ($p<0.05$) but no significant correlation was noted between levels of ferritin with T4 levels. in patients aged 10-15 years, with male sex and history of transfusion, significant correlation was noted between ferritin and TSH. But no significant correlation was noted between FT4 and ferritin in different sex and age

Based on this chart increasing level of TSH can increase serum ferritin level. It can be caused by the changes in the rate of serum • ferritin and can be predicted by increasing 10.2% in TSH (R^2=. 102) This increase was seen in male patients more than females.

•Since ferritin was significantly correlated with TSH, results showed that in Mann Whitney U test , mean average serum level of ferritin in beta thalassemia major patients with hypothyroidism (TSH> 6.4, T4 = nl) were higher than Beta thalassemia major patients with normal thyroid status (P = 0.013).Compare mean ferritin in in beta thalassemia major patients with hypothyroidism and normal thyroid status (Mann Whitney U test) (table 3)Receiver operating characteristics curves (ROC) analyses were performed in order to define the diagnostic profile of serum ferritin in identifying thyreopathy among thalassaemic patients. The Area Under the Curve (AUC) for ferritin was 0.788. The cutoff point for ferritin was 1953ng/ml (sensitivity=85.7%, specificity=60%)

•

CONCLUSIONS

•Although, recent research mentioned serum ferritin as an important inflammatory disease marker,(5) it seems that further investigations may be necessary in patients especially with thallassemia and compare it with normal population.

•According to results, clinicians should consider complications of iron overload such as hypothyroidism by reaching the ferritin cut off point (1953ng/ml) and it seems that shorter interval for laboratory endocrine examinations can be recommended.

References

•1. Forget BG. Thalassemia syndromes. In: Hematology: Basic Principles and Practice, 3rd ed, Hoffman R, Benz EJ Jr, Shattil SJ, et al. (Eds), Churchill Livingstone, New York 2000. p.485.

•2. Olivieri NF. The beta-thalassemias. N Engl J Med 1999; 341:99.

•3. Adams JG 3rd, Coleman MB. Structural hemoglobin variants that produce the phenotype of thalassemia. Semin Hematol 1990; 27:229.

•4. Forget BG, Pearson HA. Hemoglobin synthesis and the thalassemias. In: Blood: Principles and Practice of Hematology, Handin RI, Lux SE, Stoesel TP (Eds), JB Lippincott, Philadelphia 1995. p.1525.

•5. Schwartz E., Benz EJ Jr. Thalassemia

55ESPE 958--P2

Thyroid

setila dalili

DOI: 10.3252/pso.eu.55ESPE.2016

Poster presented at: ESPE 2016 PARIS

PosterSessionOnline.com