

CLINICAL AND LABORATORY FEATURES OF HYPOTHYROIDISM

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ABSTRACT

Background: Hypothyroidism is a significant syndrome of thyroid dysfunction. Although the abnormal status of the thyroid represents a subtle disease it may affect dramatically the quality of life. All clinicians should take deep care of clinical and laboratory features of hypothyroidism to recognize this disease at an earlier stage. **Objectives:** (1) Describe clinical features of hypothyroidism; (2) Describe laboratory features of hypothyroidism. **Materials and methods:** This cross-sectional study was carried out in 39 patients who have been diagnosed as hypothyroidism for the first time and managed at Can Tho City Cancer hospital from 2017 to 2018. **Methods:** descriptive study; substances of research were general factors, clinical factors, the concentration of hormones related to thyroid. **Results:** 84.6% of all participants felt fatigue. Other common symptoms of hypothyroidism were nervous, scare cold and weight gain (66.7%; 53.8% and 53.8%, respectively). Specific symptoms standing for the endocrine system rarely appeared (menorrhagia, less menstruation, decreased libido). Remarkable laboratory results were being under the below limitation of blood FT4 concentration and increasing level of blood TSH level. FT4 outside the reference range was found in 74,4% of those suffering from hypothyroidism. The laboratory assays for assessment of thyroid function illustrated an outstanding elevating of the amount of TSH in blood (76,3%). **Conclusions:** Clinical signs and symptoms of primary hypothyroidism are variable and atypical. The specific diagnosis should confirm by laboratory tests.

Keywords: hypothyroidism, FT4, TSH.

I. INTRODUCTION

Hypothyroidism, also called underactive thyroid or low thyroid is a disorder of the endocrine system in which the thyroid gland does not produce enough thyroid hormone. It can cause a number of symptoms, such as the poor ability to tolerate cold, a feeling of tiredness, constipation, depression, and weight gain. An untreated hypothyroidism during pregnancy can lead to delays in growth and intellectual development in the baby or cretinism [1].

Hypothyroidism patients often come to the hospital late due to the fact that many medical facilities are unable to perform screening tests, when the disease is mild, they are often overlooked so the patients often come to the physician when the clinical picture is clear. However, if the clinical symptoms of the disease are mastered, the disease can be detected early, and the treatment is very simple and effective. Therefore, we research the

topic "Clinical and laboratory features of hypothyroidism at Can Tho Oncology Hospital in 2017-2018" with 2 goals: 1. Describe the clinical features of hypothyroidism. 2. Describe the laboratory features of hypothyroidism.

II. MATERIALS AND METHODS

2.1. Materials

Materials: 39 patients

Subjects of the study included all patients who were examined and treated at Can Tho Oncology Hospital from July 2017 to May 2018.

2.1.1. Standard sampling

Patients were diagnosed with hypothyroidism according to the Guidelines of the Japan Thyroid Association in 2010:

The patient has one of the following syndromes:

- Metabolic reduction syndrome.
- Skin and mucosa syndrome.
- Neuromuscular syndrome.

Subclinical

- TSH blood concentration increases above 5.5 μ U/mL.
- Normal TSH concentration with FT4 decreases below 12 pmol/L.
- TSH decreases below 0.35 μ U/mL with FT4 decreases below 12 pmol/L.

Patients with complete subclinical results with adequate archival records.

2.1.2. Exclusion criteria

- Patients with nephrotic syndrome, malnutrition, mental illness...
- Patients did not agree to participate in the study.

2.1.3. Time and place of research

Time: July 2017- May 2018.

Place: Can Tho Oncology Hospital.

2.2. Methods

2.2.1. Research design: Cross-sectional descriptive study.

2.2.2. Sampling method: convenient sample selection.

2.2.3. Research content

General characteristics of research target groups (age, gender).

Clinical characteristics of patients with hypothyroidism.

Concentrations of FT3, FT4, TSH in patients with hypothyroidism.

III. RESULT

3.1. General characteristics of research target groups

Age

Table 1. Age characteristics of the study subjects

Age group	Frequency (n=39)	Percentage (%)
<40	13	33.3
40-50	10	25.6
51-60	10	25.6
>60	6	15.5
Total	39	100

Under 40 years old accounted for 33.3%, from 40-50 years old and from 51-60 years old accounted for 25.6%, over 60 years old accounted for 15.5%. The average age of the study patients was 44.8 ± 14.4 . The youngest age was 18 years old, the oldest was 71 years old.

Gender

Table 2. Gender characteristics of research subjects

Gender	Frequency (n=39)	Percentage (%)
Male	5	12.8
Female	34	87.2
Total	39	100

Results of the study on 39 patients, the proportion of women accounted for 87.2% and the proportion of men accounted for 12.8%. Female to male ratio = 6.8/1.

3.2. Clinical characteristics of patients with hypothyroidism

Reason to visit

Pre-neck tumor is the most common reason patients visit.

Common clinical symptoms

Fatigue was the most common symptom, accounting for 84.6%. Other symptoms such as weight gain, slowness, and round face accounted for a lower proportion.

3.3. Concentrations of FT3, FT4, TSH in patients with hypothyroidism

FT3

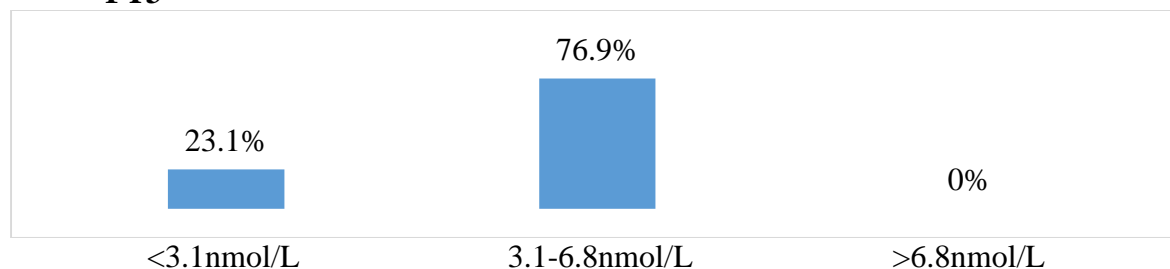


Figure 1. Concentrations of FT3 in patients with hypothyroidism
Patients with FT3 from 3.1-6.8nmol/L accounted for the highest proportion of 76.9%.

FT4

Table 3. Concentrations of FT4 in patients with hypothyroidism

FT4	Frequency (n=39)	Percentage (%)
<12pmol/L	29	74.4
12-22 pmol/L	10	25.6
Total	39	100

Patients with FT4 <12 pmol/L accounted for 74.4%.

TSH

Patients with TSH less than 0.35μU/mL accounted for 20.5%; TSH from 0.35-5.5μU/mL accounted for 5.1%, TSH from 5.5-10μU/mL accounted for 41% and TSH above 10μU/mL accounted for 33.3%. The median value of TSH was 6.15μU/mL, the minimum value was 0.007μU/mL, and the maximum was 62.04μU/mL.

Table 4. Concentrations of TSH in patients with hypothyroidism

TSH	Frequency (n=39)	Percentage (%)
0.35 μ U/mL	8	20.5
0.35-5.5 μ U/mL	2	5.1
5.5-10 μ U/mL	16	41
>10 μ U/mL	13	33.3
Total	39	100

IV. DISCUSSION

4.1. General characteristics of research target groups

Age

In our study, the average study age was 44.8 ± 14.4 . The youngest age was 18 years old, the oldest was 71 years old [4], [7].

Gender

Our research results show that there was a difference in the ratio between the two sexes, women with hypothyroidism more than men. According to the research of Hoang Tien Hung, the female was 7 times more male, according to Tran Duc Tho the female / male was 7/4 and according to Nguyen Thanh Thao the female/male was 6,8/1 [4], [7]. The authors suggest that this difference was due to the fact that the majority of cases of hypothyroidism were the result of an autoimmune disease in which autoimmune diseases occurred more in women than in men.

4.2. Clinical characteristics of patients with hypothyroidism

Reason to visit

According to our research, the reason patients come to the clinic is that they have a tumor in front of their neck at 56.4%; Reasons for fatigue accounted for 20.5%; 15.4% of patients come for re-examination after treatment for hyperthyroidism and 7.7% was the percentage of patients coming for re-examination after thyroidectomy. This result is also consistent with the results of the authors Nguyen Khoa Dieu Van and Hoang Tien Hung [3]. This suggests that the reason why the patient visits was not because of the symptoms leading to the diagnosis of hypothyroidism. This may be explained by the fact that asymptomatic hypothyroidism suggests, patients often visited many different specialties before detecting hypothyroidism [2].

Common clinical symptoms

Fatigue was the most common symptom but not a specific symptom. Also, because it was not a specific symptom of the disease, patients often did not go to the doctor or sometimes see the doctor, they were often examined in many different specialties, so the disease was often detected late. Other symptoms were also only seen at a lower rate. There were no symptoms specific to the disease [6].

4.3. Concentrations of FT3, FT4, TSH in patients with hypothyroidism

In our study, the average FT3 concentration of 4.22 ± 1.43 nmol/L was within the normal range (3.1-6.8nmol/L). The average FT4 concentration was 8.88 ± 4.59 pmol/L, down from normal values (12-22pmol/L). FT4 was lowest in patients after Basedow treatment with synthetic anti-thyroid drugs. The median TSH concentration was

6.15 μ U/mL, up from the normal value (0.5-5 μ UI/L). TSH was highest in patients after Basedow treatment with synthetic anti-thyroid drugs, TSH concentrations >10 μ U/mL were the most common in the age group <60 years old, high TSH concentration was concentrated in patients with resistant treatment.

Synthetic thyroid and patients with goiter. There was a correlation between the concentration of FT4 and the concentration of TSH, TSH increases, the higher FT4 decreases and vice versa, when TSH was very low, FT4 was also very low [3].

V. CONCLUSIONS

A common reason for a patient to see a doctor is a cervical tumor. The common clinical symptom of hypothyroidism is fatigue accounting for 84,6%. The majority of patients have low FT3, FT4 and elevated TSH.

REFERENCES

1. Dao Thi Dua and Hoang Thi Huong Lan (2012), "Research on some causes of hypothyroidism at Hue Central Hospital", *Proceedings of the full text of scientific topics*, pp. 304-309.
 2. Jeffrey R. Garber et al (2014), "Clinical Practice Guidelines for Hypothyroidism in Adults", *Medscape*, 18, pp. 988-1028.
 3. Hoang Tien Hung (2009), "Commenting on clinical, subclinical characteristics and some common causes of patients with hypothyroidism at the gland", *Master's thesis in medicine*, Hanoi Medical University.
 4. Nguyen Thi Thanh Mai and Tran Duc Tho (2002), "Initially commenting on clinical and subclinical characteristics of hypothyroidism in the endocrinology-hospital department of Bach Mai from 1991-2001", *The thesis graduated from doctor*, Hanoi Medical University.
 5. Abhishek Singhai et al (2016), "A Study of Systemic Hypertension with Subclinical Hypothyroidism", *International Journal of Medical Science and Public Health*, 6(2), pp. 307-309.
 6. Raghda A. A. Radi (2010), "Assessment of Thyroid Function in Pregnant Women from Rimal Health Center Gaza City", *Thesis submitted in Partial Fulfillment of the requirements for the degree of Master of Science in Biological Sciences-Medical Technology*, The Islamic University-Gaza.
 7. Nguyen Thanh Thao (2013), "Study on clinical, subclinical and etiological characteristics of primary hypothyroidism", *Level II Specialized Thesis*, Hue College of Medicine and Pharmacy.
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