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Dates: Received: 15 February, 2017; Accepted: 24 February, 2017; Published: 25 February, 2017

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Keywords: Hypothyroidism; Levothyroxine sodium; Euthyroidism; Endocrinology and metabolism; Internal medicine

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Research Article

The Comparison with the Rates of Control of Hypothyroidism in the Between Outpatient Clinics of Internal Medicine and Endocrinology

Abstract

Background and aims: Hypothyroid patients are usually follow-up in internal diseases with endocrinology and metabolism clinics in Turkey. The aim in this study is to determine the differences between these two clinics in terms of reaching the target.

Methods: 310 patients with hypothyroid that are under levothyroxine sodium treatment are involved this study. These 268 women and 42 men are applied to Atatürk University Medical School in 2015. Their TSH level are recorded during the application and used a sensitive immunometric assay for TSH measurement. TSH<4 mIU/L is considered as achievement of treatment goals and TSH≥4 is not. Data analysis are made by SPSS-20 and they evaluated regarding "man whitney u" and "chi-square" test.

Results: The evidences show that there is a significant difference between endocrinology and internal diseases clinics regarding their TSH averages. TSH averages are 4,48 mIU/L and 7,93 mIU/L p<0,001 respectively (man whitney u test). In addition, there is a significant difference statistically with regard to achievement of treatment goals, 77,6 %, 58% p<0,001 respectively (chi-square test).

Conclusions: Hypothyroid patients are more successfully treated in endocrinology and metabolism outpatient clinics than internal diseases clinics, however, there should be more comparative analyses in order to get certain results.

Introduction

Hypothyroidism, is known as an underactive thyroid condition of clinical findings and symptoms due to lack of sufficient production of thyroid gland or hormone-resistant of end organs [1]. Hypothyroidism occurs more common in female than male with a ratio 5:1 [2]. Iodine deficiency is the most common cause of hypothyroidism worldwide, however, autoimmune thyroiditis is the most common cause in regions with enough iodine in the diet [3]. Radioactive iodine treatment, total or subtotal thyroidectomy are other causes in hypothyroidism etiology [4]. Levothyroxine sodium (LT₄) alone or combined with liothyronine protocols are given to maintain euthyroid state [5]. Thyroid-stimulating hormone (TSH) levels are monitored to help determine whether the dose is adequate within 4-6 weeks period, follow-up must continue until to maintain euthyroid hormone levels [4]. Treatment goals in healthy young population are to achieve optimal TSH levels under 4 mIU/L [6].

Achievement of treatment goals is significantly important in establishment of clinical findings and symptoms. Follow-up in patients treated with LT₄ is done in Endocrinology and Metabolism outpatient clinics (EMOC) and Internal Medicine outpatient clinics (IMOC) in Turkey. Comparison the achievement of treatment goals for euthyroidism in both EMOC and IMOC were evaluated in this study.

Materials and Methods

Total 310 patients treated with LT₄ due to previous hypothyroidism diagnosis, presented to EMOC and IMOC of Ataturk University Medical School in 2015 were enrolled to the study. Patients were divided into two groups regarding to numbers of presentation either EMOC or IMOC respectively 134 and 176. TSH levels at admissions, etiologic causes, age and sex were recorded to the prepared forms, a sensitive immunometric assay used for TSH measurement.

Statistical analysis

Numeric, percentile, arithmetic mean and standard deviation values were used for descriptive statistics. Data-analysis were done with SPSS-20. P values < 0,05 were accepted statistically significant.

Results

Of the patients presented to EMOC, 14.9% (n=20) were men and 85.1% (n=114) were women with a mean age of 45.45 ± 14.3 years. Of the patients presented to IMOC, 12.5% (n=22) were men and 87.5% (n=154) were women with a mean age of 47.09 ± 13.18 years. No significant difference was detected between groups regarding gender and age ($p=0.536$ and $p=0.326$). Based on etiology, there was Hashimoto thyroiditis in 47.8% (n=64), papillary thyroid carcinoma in 28.4% (n=38), history of surgery for benign goiter in 14.9% (n=20), post-radioactive iodine therapy in 3% (n=4), atrophic thyroiditis in 3% (n=4), both history of surgery and Hashimoto thyroiditis in 0.7% (n=1), undifferentiated thyroid carcinoma in 0.7% (n=1) and Hurtle cell thyroid carcinoma in 0.7% (n=1) of the patients presented to EMOC whereas Hashimoto thyroiditis in 58% (n=102) and history of thyroidectomy in 42% (n=74) of the patients presented to IMOC. Since patients presented to IMOC were stratified into 2 groups, no comparison with those presented to EMOC was made. The lowest, highest and mean serum TSH values were 0.02 mIU/L, 100 mIU/L and 4.48 mIU/L in the patients presented to EMOC, whereas 0.01 mIU/L, 100 mIU/L and 7.93 mIU/L in the patients presented to IMOC, respectively. Significant difference was detected in mean TSH value between groups ($p<0.001$). When compared regarding achieving TSH target (TSH<4 mIU/L), it was found that 77.6% (n=104) of the patients presented to EMOC and 58.0% (n=102) of the patients presented to IMOC were within target range, indicating significant difference ($p<0.001$).

Discussion and Conclusion

Hypothyroidism symptoms impair quality of life in patients and one should aim to achieve euthyroid state in all patients. In the present study, it was found that success rate in achieving euthyroid state was higher among patients presented to EMOC when compared to those presented to IMOC. It was thought that this could be due underestimation of the issue by clinicians working in IMOC, lack of knowledge, failure regarding close monitoring until achieving euthyroid state in patients and employment of different clinicians in IMOC resulting from rotation in our university. Another reason for this difference might be the fact that patients are usually diagnosed in internal diseases clinics and then follow-up in endocrinology clinics. One of the under specification in our study is not recorded how long have the patients suffer from hypothyroid and how

many times have they come to visit after their first diagnosis. In endocrinology clinics patients possibly followed-up longer and more intensely. There should be sequential polyclinic visits for patients in order to reach euthyroid state. This might take a couple of months. Patients that are diagnosed and followed up for a few times in internal diseases clinics are followed up further in endocrinology clinics. This might be the reason for the patients' probability to reach euthyroid state is higher in endocrinology clinics. If patients that were diagnosed and followed up in the same clinics from beginning to the end was compared, the results would be more realistic. This might be another under specification in our study.

In conclusion; based on our results, it was thought that it is more appropriate to follow patients in EMOC in order to achieve this goal. The second conclusion that can be drawn is that it is needed to improve awareness of internal medicine specialists regarding management of patients with hypothyroidism. However, because of the fact that there is no other study to compare with ours, and our study has under specification that are mentioned, we believe that there should be more comparative analyses to get certain results.

Acknowledgment

The authors acknowledge the study participants for compliance to protocols.

References

1. Muller AF, Berghout A, Wiersinga WM, Kooy A, Smits JW, et al. (2008) Thyroid function disorders-Guidelines of the Netherlands Association of Internal Medicine. *Neth J Med* 66: 134-142. [Link: https://goo.gl/PDIsB3](https://goo.gl/PDIsB3)
2. Aoki Y, Belin RM, Clickner R, Jeffries R, Phillips L, et al. (2007) Serum TSH and total T4 in the United States population and their association with participant characteristics: National Health and Nutrition Examination Survey (NHANES 1999-2002). *Thyroid* 17: 1211-1223. [Link: https://goo.gl/WudKyQ](https://goo.gl/WudKyQ)
3. Rapoport B (1991) Pathophysiology of Hashimoto's thyroiditis and hypothyroidism. *Annu Rev Med* 42: 91-96. [Link: https://goo.gl/FMLmcY](https://goo.gl/FMLmcY)
4. Juby AG, Hanly MG, Lukaczer D (2016) Clinical challenges in thyroid disease: Time for a new approach? *Maturitas* 87: 72-78. [Link: https://goo.gl/2eFDEu](https://goo.gl/2eFDEu)
5. Santini F, Pinchera A, Marsili A, Ceccarini G, Castagna MG, et al. (2005) Lean body mass is a major determinant of levothyroxine dosage in the treatment of thyroid diseases. *J Clin Endocrinol Metab* 90: 124-127. [Link: https://goo.gl/qkftsl](https://goo.gl/qkftsl)
6. Baskin HJ, Cobin RH, Duick DS, Gharib H, Guttler RB, et al. (2002) American Association of Clinical Endocrinologists medical guidelines for clinical practice for the evaluation and treatment of hyperthyroidism and hypothyroidism. *Endocr Pract* 8: 457-469. [Link: https://goo.gl/EJ7G9Z](https://goo.gl/EJ7G9Z)