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Case Report

Simultaneous Thyroid Autoimmunity: A Coexistence of Grave's Disease and Hashimoto's Thyroiditis

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Abstract

Introduction: Grave's Disease (GD) and Hashimoto's Thyroiditis (HT) are two autoimmune diseases whose coexistence is rare. We report a case of a patient in whom both diseases manifested simultaneously. ***Case report***: A 36- year-old woman presented with thyrotoxicosis. She had tachycardia with WHO grade 2 homogeneously non-pulsatile goiter, without exophthalmos. The evaluation revealed peripheral hyperthyroidism with positive anti-thyroid peroxidase (anti-TPO) antibodies and anti-thyroid-stimulating hormone receptor (anti-TSHR) antibodies. Cervical ultrasound revealed a goiter affecting the right lobe in the context of thyroiditis. Thyroid scintigraphy indicated a picture suggestive of Graves' disease in the left lobe and hypocaptating thyroiditis in the right lobe. The patient was treated with propranolol and Carbimazole, with alternating phases of hyperthyroidism and hypothyroidism. ***Discussion and Conclusion***: Autoimmune thyroid diseases, GD and HT, are specific to the thyroid gland and are common in women. They share pathogenic features that could explain their association, including genetic and environmental factors leading to thyroid cell damage, T-cell-mediated autoimmunity, human leukocyte antigen binding, and the presence of autoantibodies such as anti-thyroid peroxidase antibodies in GD. Rare cases have demonstrated that HT can manifest after GD, and vice versa, leading to an alternation of hyperthyroidism and hypothyroidism in certain patients due to changes in the balance between various categories of antibodies. In the present case, the patient simultaneously presented both diseases.

Keywords: grave's disease, Hashimoto's thyroiditis, antibodies, goiter, hypothyroidism, hyperthyroidism, thyroid scintigraphy.

INTRODUCTION

Grave's disease and Hashimoto's thyroiditis are primary autoimmune thyroid disorders, each exhibiting distinct clinical manifestations and opposing thyroid hormone dynamics. Grave's disease involves autoantibodies (TRAb) stimulating thyroid-stimulating hormone receptors, leading to hyperthyroidism and goiter. In contrast, Hashimoto's thyroiditis signifies chronic inflammation with lymphocytic infiltration, potentially damaging thyrocytes. Specific autoantibodies, notably anti-thyroperoxidase (TPO) antibodies, serve as markers of autoimmunity and can result in hypothyroidism [1- 7].

Though their concurrent occurrence is uncommon, a subset of patients may manifest both Hashimoto's and Graves' disease, causing alternating hypothyroidism and thyrotoxicosis, posing diagnostic complexities. This report presents a particular case in which Graves' disease and Hashimoto's thyroiditis coexist, highlighting the complex nature of these autoimmune thyroid disorders, the associated diagnostic challenge, and the necessity of adapted therapeutic approaches.

CASE REPORT

A 36-year-old woman was referred to our department because she presented with symptoms of thyrotoxicosis. On physical examination, the patient had a heart rate of 112 beats per minute, a homogeneous non-pulsatile goiter (Figure 1), and bilateral hand tremors. There was no exophthalmos.

Full laboratory investigations revealed peripheral hyperthyroidism, with a suppressed thyroid-stimulating hormone (TSH) level of 0.007uui/ml, a

serum-free thyroxine (T4L) level of 43pmol/L, and a free triiodothyronine (T3) level of 17pmol/L. In addition, the patient had elevated levels of anti-thyroid-stimulating hormone receptor antibodies (TRAb) at 4.8 IU/L and anti-thyroid peroxidase antibodies (anti-TPO) at 257.7 IU/mL.

Cervical ultrasonography revealed a goiter primarily affecting the right lobe of the thyroid, characterized by multiple hypoechoic and hypervascularized areas with a "candle drop" appearance, indicative of thyroiditis. Thyroid scintigraphy showed findings consistent with Graves' disease in the left lobe and reduced iodine uptake indicative of hypoceptive thyroiditis in the right lobe (Figure 2).

The patient's management consisted of hygienic-dietetic measures, propranolol, and carbimazole. Our patient's evolution was characterized by alternating phases of hyperthyroidism and hypothyroidism.

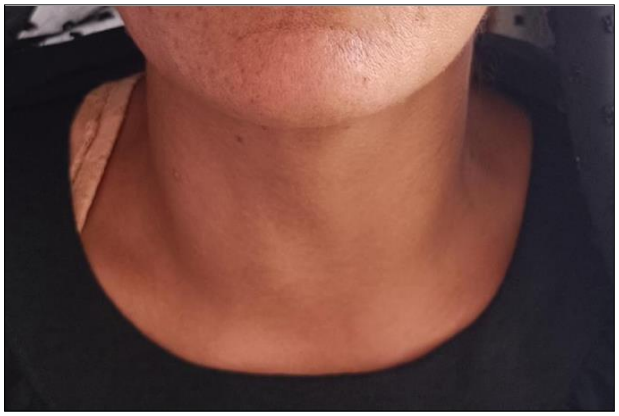

Figure 1: image of our patient with a goiter

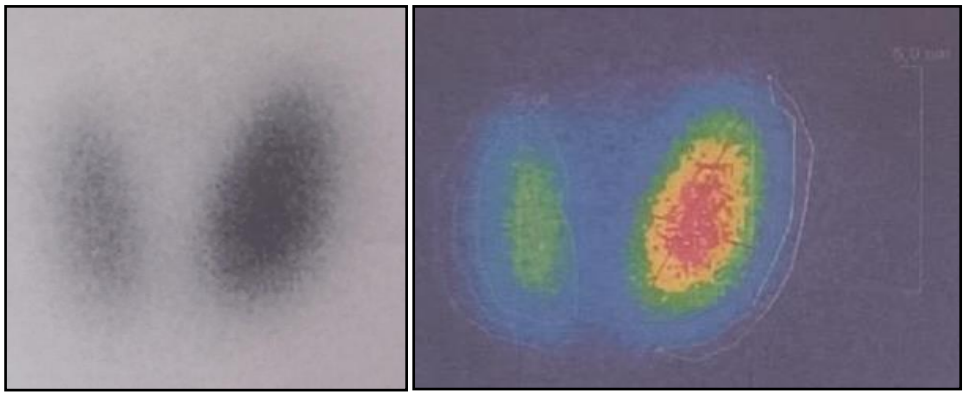

Figure 2: thyroid scintigraphy image of our patient

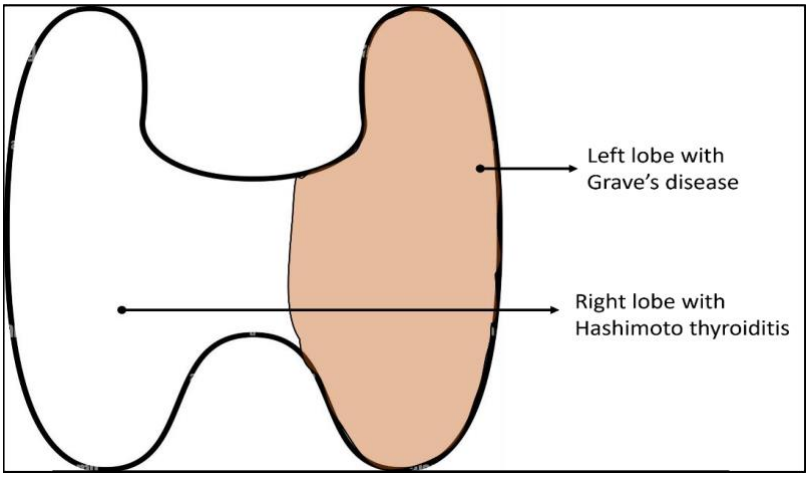

Figure 3: illustrative scheme for our case

DISCUSSION

Graves' disease and Hashimoto's thyroiditis are two organ-specific autoimmune diseases Graves' disease stands as the predominant cause of hyperthyroidism, characterized by a variable combination of thyrotoxicosis, homogeneous vascular goitreous, exophthalmia and pretibial myxoedema. Hashimoto's thyroiditis, on the other hand, exhibits a variable clinical presentation. It can initiate with a phase of hyperthyroidism termed Hashitoxicosis, followed by a phase of euthyroidism prior to the emergence of permanent hypothyroidism. These two diseases are more frequent in women than in men, with a sex ratio varying from 1/5 to 1/10 [1- 9].

However, the association between autoimmune thyroid diseases is rarely described. Both diseases arise from a combination of genetic and environmental factors that lead to damage to thyroid cells and the production of autoantigens, triggering an immune response. Hashimoto's thyroiditis is initiated by an imbalance in the TH1/TH2 ratio, favoring TH1 activation and cellular immunity, which culminates in the destruction of thyroid cells. Conversely, aTH2 predominance triggers humoral immunity, marked by the production of antibodies targeting the TSH receptor, the root cause of Grave's disease. The immune response in Graves' disease, leading to the production of anti-TSH receptor antibodies, may also result in the production of anti-TPO and anti-thyroglobulin antibodies, elucidating their possible presence in this condition [5- 13].

Rare cases have demonstrated that HT can manifest after GD, and vice versa, leading to an alternation of hyperthyroidism and hypothyroidism in certain patients due to changes in the balance between various categories of antibodies [1- 12].

Practicing medical professionals should remain vigilant about the potential coexistence of Hashimoto's thyroiditis in patients diagnosed with Grave's disease. As additional cases of this mosaic disease pattern are identified, ongoing research can provide valuable insights into tailored treatment approaches. Comparing the effectiveness and long-term outcomes of treatment strategies, including antithyroid drug therapy and radio-iodine ablation, in patients with concurrent Graves' disease and Hashimoto's thyroiditis can guide clinical decisions and ultimately improve patient care [2- 8].

CONCLUSION

The presence of both Grave's disease and Hashimoto's thyroiditis illustrates the complex and multifaceted nature of autoimmune thyroid disorders. These conditions provide important information about how the immune system works, the influence of hormones, the accuracy of diagnosis, the effectiveness of treatment, and how patients are cared for. As research continues to reveal more about these diseases, healthcare providers will become better prepared to diagnose, treat, and offer personalized care to individuals dealing with the complex interactions of autoimmune thyroid disorder.

BIBLIOGRAPHY

1. Daramjav, N., Takagi, J., Iwayama, H., Uchino, K., Inukai, D., Otake, K., ... & Takami, A. (2023). Autoimmune thyroiditis shifting from Hashimoto's thyroiditis to graves' disease. *Medicina*, *59*(4), 757. https://doi.org/10.3390/medicina59040757
2. Diagne, N., Sow, M., Faye, A., Ndao, A. C., Dieng, M., Djiba, B., ... & Pouye, A. (2021). Association of Hashimoto's Thyroiditis and Graves' Disease: A Case Report and Review of the Literature. *Case Reports in Clinical Medicine*, *10*(10), 303-307. DOI: 10.4236/crcm.2021.1010038
3. Oueslati, I., Salhi, S., Yazidi, M., Chaker, F., & Chihaoui, M. (2022). A case of Hashimoto's thyroiditis following Graves' disease. *Clinical Case Reports*, *10*(10), e6466. https://doi.org/10.1002/ccr3.6466
4. Horiya, M., Anno, T., Kawasaki, F., Iwamoto, Y., Irie, S., Monobe, Y., ... & Kaneto, H. (2020). Basedow's disease with associated features of Hashimoto's thyroiditis based on histopathological findings. *BMC Endocrine Disorders*, *20*(1), 1-7. https://doi.org/10.1186/s12902-020-00602-8
5. Majumder, A., & Sanyal, D. (2012). A case of simultaneous occurrence of Graves' disease and Hashimoto's thyroiditis. *Indian journal of endocrinology and metabolism*, *16*(Suppl 2), S338.
6. Shira, G. (2021). MD and Vanessa Schmidt, MD. Coexisting Hashimoto's Hypothyroidism and Graves' Hyperthyroidism. *Proceedings of UCLA Health*, 25.
7. Dasari, S., Naha, K., Hande, M., & Vivek, G. (2014). Hot and cold: coexistent Graves' disease and Hashimoto's thyroiditis in a patient with Schmidt's syndrome. *Case Reports*, *2014*, bcr2013010432. doi:10.1136/bcr-2013-010432
8. Imam, S., Dar, P., Paparodis, R., Almotah, K., Al-Khudhair, A., Hasan, S. A. M., ... & Jaume, J. C. (2019). Nature of coexisting thyroid autoimmune disease determines success or failure of tumor immunity in thyroid cancer. *Journal for ImmunoTherapy of Cancer*, *7*, 1-13. https://doi.org/10.1186/s40425-018-0483-y
9. Gonzalez-Aguilera, B., Betea, D., Lutteri, L., Cavalier, E., Geenen, V., Beckers, A., & Valdes-Socin, H. (2018). Conversion to Graves disease from Hashimoto thyroiditis: a study of 24 patients. *Archives of Endocrinology and Metabolism*, *62*, 609-614.
10. Abdellaoui, Y., Magkou, D., Bakopoulou, S., Zaharia, R., Raffin-Sanson, M. L., & Cazabat, L. (2020). Coexistence of autoimmune hyper-and hypothyroidism in a kindred with reduced

sensitivity to thyroid hormone. *European Thyroid Journal*, *9*(5), 263-268. DOI: 10.1159/000506424

11. Melki, A. (2014). Maladie de Basedow suivie d'une thyroïdite de Hashimoto chez une même patiente. SFE Lyon 2014 / *Annales d'Endocrinologie, 75*, 486–516 http://dx.doi.org/10.1016/j.ando.2014.07.744
12. Umar, H., Muallima, N., Adam, J. M., & Sanusi, H. (2010). Hashimoto's thyroiditis following Graves' disease. *Acta Med Indones*, *42*(1), 31-5.
13. Takasu, N., Yamada, T., Sato, A., Nakagawa, M., Komiya, I., Nagasawa, Y., & Asawa, T. (1990). Graves' disease following hypothyroidism due to Hashimoto's disease: studies of eight cases. *Clinical endocrinology*, *33*(6), 687-698.
14. Ahmad, E., Hafeez, K., Arshad, M. F., Isuga, J., & Vrettos, A. (2018). Hypothyroidism conversion to hyperthyroidism: it's never too late. *Endocrinology, Diabetes & Metabolism Case Reports*, *2018*(1).
15. Bishay, R. H., & Chen, R. C. Y. (2016). Hashimoto's thyroiditis and graves' disease in one patient: the extremes of thyroid dysfunction associated with interferon treatment. *Case Reports in Endocrinology*, *2016*.