

# Severe Hashimoto Hypothyroidism with Pseudo Graves Appearance: Case Report

## Hashimoto Tiroiditi Olgusunda Tiroid Sintigrafisinde Yalancı Graves Hastalığı Görünümü

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**ABSTRACT** Hashimoto thyroiditis (HT) is an autoimmune disorder of the thyroid gland. Scintigraphically, HT can mimic any thyroid disease. In this case report, we present a patient with severe hypothyroidism identified to have pseudo Grave's disease (GD) in Tc-99m pertechnetate scintigraphy of thyroid gland, while being in the late clinical stage of the disease. Scintigraphy showed a high symmetric diffuse uptake compatible with the diagnosis of GD. Based on clinical evaluation and laboratory findings, patient was diagnosed with HT accompanied with scintigraphically identified pseudo Grave's findings. In conclusion, taken in isolation, scan findings can be misleading; hence, it should be evaluated in conjunction with clinical examination and scintigraphy, US, thyroid function tests, fine needle aspiration biopsy when needed and thyroid antibodies seem crucial. Moreover, the likelihood of Grave's appearance not only in the early stages but also in later stages of the disease must be considered in patients with HT.

**Key Words:** Hashimoto disease; Graves disease; radionuclide imaging

**ÖZET** Hashimoto tiroiditi (HT) tiroid bezinin otoimmün bir hastalığı olup, hipotiroidizmin en sık sebepleri arasında görülmektedir. HT'de sintigrafik bulgular herhangi bir tiroid hastalığını taklit edebilmektedir. Bu olgu sunumunda ağır hipotiroidi ile izlenen, tiroid sintigrafisinde yalancı Grave's hastalığı (GH) görünümü bulunan, ancak klinik olarak hastalığın geç döneminde olan bir HT olgusunu sunmaktayız. Sintigrafide difüz toksik guatr bulgularına benzer olarak hiperplazik tiroid bezinde difüz artmış radyoaktivite tutulumu izlendi. Klinik değerlendirme ve laboratuvar sonuçları sonrasında hastaya sintigrafik olarak yalancı GH imajı izlenen HT tanısı kondu. Olguları sadece sintigrafik olarak değerlendirmenin hatalı sonuçlara sebep olabileceği, doğru tanı için sintigrafi, US, tiroid hormonları ve gereğinde ince iğne aspirasyon biyopsileri dâhil olmak üzere klinik muayene ve tiroid antikorlarının mutlaka birlikte değerlendirilmesi gerekmektedir. Ayrıca HT olgularında yalancı GH görünümünün hastalığın sadece erken dönemlerinde değil geç dönemlerinde de izlenebileceği akıld tutulmalıdır.

**Anahtar Kelimeler:** Hashimoto hastalığı; Graves hastalığı; radyonüklit görüntüleme

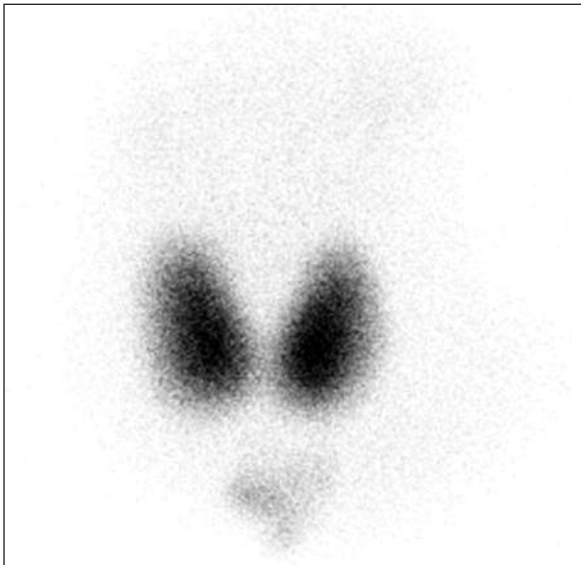
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Being one of the most common causes of hypothyroidism, Hashimoto thyroiditis (HT) is an autoimmune disorder of the thyroid gland. Scintigraphic findings show considerable variation in HT that mimic any thyroid disease such as Grave's disease (GD), multinodular goiter, hyperactive or hypoactive nodule. While homogenous appearance predominates in the early stages of the disease, diffuse heterogeneous appearance with hot or cold nodules emerges in the later stages. Ultrasonography (US) findings include diffuse hypoechogenicity. In this paper, we present a pa-

tient with severe hypothyroidism identified to have pseudo GD in Tc-99m pertechnetate scintigraphy of thyroid gland, while being in the late clinical stage of the disease.

## CASE REPORT

A 46-year-old patient with breast carcinoma presented with the complaints of fatigue, shortness of breath, constipation and dry skin. Thyroid gland was large and hard on palpation while thyroid function tests revealed a free-T4 level of 0.37 ng/dL (0.8-1.7), TSH of >150.000 mIU/mL (0.55-4.78), anti-thyroglobulin antibody of 97.1 IU/mL (0-60) and anti-thyroid peroxidase antibody (Anti-TPO) of 135.8 IU/mL (0-60). Anterior scintigraphic imaging revealed diffuse increased radioactivity uptake in the hyperplastic thyroid gland similar to diffuse toxic goiter findings. Background activity was very low and salivary glands appeared to be suppressed (Figure 1). Both lobes and isthmus were larger than normal in US with a significant reduction in thyroid echogenicity and irregularities in the shape and boundaries of the lobes. Large echopenic areas with irregular margins and band type hyperechoic areas were observed in the lobes while no nodular lesion mass with a discrete border



**FIGURE 1:** Scintigraphic observation of very low background activity, diffuse increased radioactivity uptake in the hyperplastic thyroid gland similar to diffuse toxic goiter findings and suppressed appearance of salivary glands.

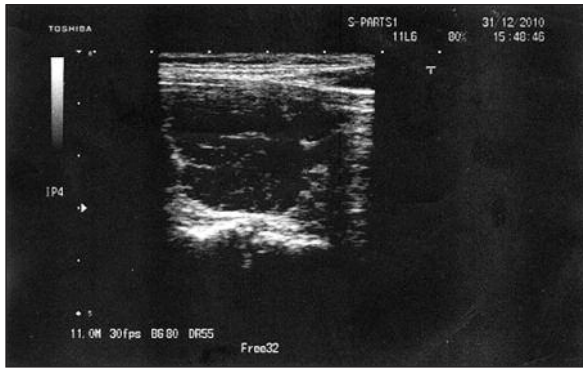
was identified (Figure 2). Based on clinical evaluation and laboratory findings, patient was diagnosed with HT accompanied with scintigraphically identified pseudo Grave's findings. Levothyroxine replacement therapy was initiated.

## DISCUSSION

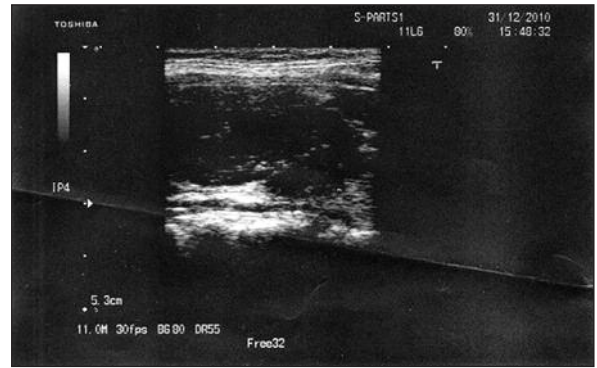
Considered as a chronic autoimmune thyroiditis, HT is autoimmune destruction of the thyroid gland secondary to autoimmunity developed against thyroid antigens and characterized by lymphocyte infiltration and goiter. Whilst Anti-tyroglobulin antibodies are evident in 55-90% of patients, Anti-TPO antibodies are identified in 90-95%.<sup>1</sup> Lymphoid follicle formation resulting from lymphocytic and plasma cell infiltration leads to follicular damage. Eventually, fibrosis develops which causes thyroid gland enlargement. Therefore, goiter and hypothyroidism constitute the principal clinical features of the disease.<sup>2</sup>

While thyroid scintigraphy has no value in the diagnosis of HT, HT can mimic several thyroid disorders based on scintigraphic findings. Thyroid functions are normal in the early stage of the disease in HT. Slight reduction in thyroid functions stimulate hypophysis initially leading compensatory increase in TSH levels to normalize thyroid gland function. This type of thyroid stimulation may lead to an increase in the radioiodine uptake and diffuse radioactivity. In some cases, the response of thyroid follicles to TSH stimulation appears in a different way which may lead to patchy proliferation of these follicles. Scintigraphical consideration of this phenomenon is characterized by increased uptake (TSH responsive follicles) or decreased uptake (TSH irresponsive follicles). As a result, multinodular goiter develops and thyroid gland fails to respond increased levels of TSH due to progressed replacement of thyroid parenchyma with fibrous tissue leading overt hypothyroidism.<sup>3</sup> In this stage, scintigraphy reveals varying degrees of nonuniform decreased uptake along the thyroid gland.

While pseudo Grave's appearance is evident in the early stages of the disease, in our case pseudo Grave's findings are associated with the later stage of HT. Erdoğan et al. studied the role of coloured



Left lobe



Right lobe

**FIGURE 2:** Diffuse hyperplastic thyroid gland in heterogenous echogenicity. Sonographic findings are compatible with thyroiditis.

doppler US in the etiology of hyperthyroidism and reported perinodular or intranodular signal increase in toxic adenomas.<sup>4</sup> Although vascular pattern is more discrete in Grave's disease when compared to HT, increase in thyroid vascularization was also documented in HT.<sup>5,6</sup> This increase in vascularization has been explained by the TSH receptor antibody or TSH mediated stimulation of the thyroid gland. In these patients, a significant correlation between serum vascular endothelial growth factor (VEGF) and TSH levels was reported.

In clinical studies, thyroid scintigraphy is applied to detect any diffuse abnormality or focal lesions affecting the uptake pattern of thyroid parenchyma. Rare cases of Hashimoto's encephalopathy associated with Grave's disease presented in a few case reports. In these reports, diagnosis was often difficult due to its heteroge-

neous clinical presentation, especially since the thyroid status, anti-thyroid antibody titres and scintigraphy may not be related to the disease state.<sup>7,8</sup> Also, the findings obtained from a thyroid scan may mimic a nodular lesion in some clinical situations such as vascular malformations, parathyroid adenomas or cervical lymph nodes.<sup>9</sup> A vascular anomaly can mimic a hypoactive nodule in pertechnetat scintigraphy reported by Urhan et al.<sup>10</sup>

In conclusion, since evaluation of the cases by scintigraphy per se may lead to false results, along with consideration of clinical examination and scintigraphy, ultrasonography, thyroid function tests, fine needle aspiration biopsy when needed and thyroid antibodies seem crucial. Moreover, the likelihood of Grave's appearance not only in the early stages but also in later stages of the disease must be considered in patients with HT.

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