

# Goitre, lymphoma and the doughnut sign

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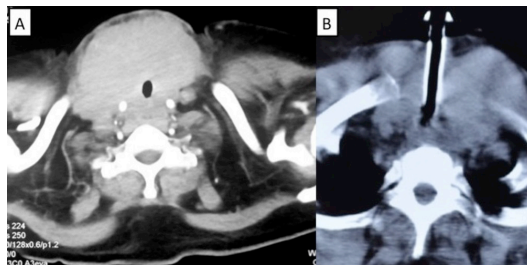
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## DESCRIPTION

A 65-year-old woman, with a known case of Hashimoto's thyroiditis on eltroxin for 15 years, presented with progressive diffuse swelling neck for 2 months. She also gave a history of difficulty in swallowing and breathing for 1 week. On examination, she had respiratory distress, low oxygen saturation (85% on pulse oximeter) and cyanosed tongue. Systemic examination was unremarkable except for goitre (grade 2) and stridor. As the saturation was not improving with supplemental oxygen, she underwent an emergency tracheostomy. Subsequently,

a contrast-enhanced CT scan of the neck showed large lobulated heterogeneously enhancing lesion in the region of thyroid gland encasing all major structure of neck including trachea (figure 1). Core biopsy and immunohistochemistry (CD45, CD20, CD10 and BCL6 positive) confirmed the diagnosis as diffuse large B cell lymphoma (DLBCL). The patient received R-CHOP chemotherapy (rituximab, cyclophosphamide, doxorubicin, vincristine and prednisolone). After 1 month, she was asymptomatic with >50% decreased swelling, and the tracheostomy tube was removed.

Hashimoto's (autoimmune) thyroiditis is a known risk factor for thyroid lymphoma, making patients 60 times more prone to lymphoma than the general population.<sup>1</sup> Primary thyroid lymphoma constitutes 1%–5% of thyroid malignancies. The majority (60%–80%) of thyroid lymphomas are DLBCL.<sup>2</sup> On CT images, lymphoma can present with solid nodules, multiple nodules and diffuse swelling. In rare cases, it can present with the classical finding of 'doughnut sign' in which lymphoma completely encircle the trachea as in the index case.<sup>3</sup>



**Figure 1** (A) CT neck image showing a homogenous mass encasing the trachea (doughnut sign) and invading the common carotid artery and the tracheo-oesophageal groove. (B) CT neck image showing tracheostomy tube.

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**Patient consent** Obtained.

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## Learning points

- ▶ Any follow-up case of Hashimoto's thyroiditis presenting with a rapidly enlarging neck mass, hoarseness of voice or difficulty in breathing or eating should be suspected of lymphoma transformation.
- ▶ The patient who develops doughnut sign is more symptomatic due to compressive symptoms.
- ▶ Prompt supportive care (tracheostomy in the index case) and definitive therapy (R-CHOP) is rewarding with a successful outcome.



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