

A Hostile Takeover: Progressive Replacement of the Thyroid Gland and Local Tissues with a Fibrosclerotic Mass

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Section: Head & neck imaging

Area of Interest: Ear / Nose / Throat

Procedure: Surgery

Technique: MR-Diffusion/Perfusion

Special Focus: Endocrine disorders Case Type: Clinical Cases

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Patient: 36 years, female

Clinical History:

A 36 year old lady presented to our ENT clinic with a history of progressive anterior neck swelling, hoarseness and dyspnoea. On examination, she had palpable, firm right thyroid gland enlargement and mobile vocal folds. She denied other symptoms typical of thyroid disease.

Systemic examination was normal.

Imaging Findings:

Figure 1: Pre-treatment axial T1 post gadolinium fat-saturated MRI of the neck showing tracheal compression by large heterogeneous thyroid mass bigger on the left side compared to the right

Figure 2: Post steroid treatment axial T1 post gadolinium-fat saturated MRI of the neck showing relief of tracheal compression and reduction in the size of the thyroid mass.

Figure 3: Post-operative axial T1 post gadolinium-fat saturated MRI of the neck showing complete resolution of tracheal compression and significant reduction in the bulk of the thyroid mass 3 months post-surgery

Ultrasound imaging of the thyroid gland showed an enlarged right hemithyroid with retroclavicular extension and a left U3 1.3 centimetre nodule. It also suggested an abnormal echotexture suggestive of thyroiditis or lymphoproliferative infiltration. Isotope scanning showed intense activity in the right side of the thyroid gland.

Discussion:

Introduction

Riedel's thyroiditis (RT) is a rare form of chronic thyroiditis that is characterized by extensive fibrosis involving the thyroid gland and surrounding tissues. It is thought to be associated with multifocal fibrosclerosis.[1]Immunoglobulin G4-related disease (IgG4-RD) is a new disease category characterised by plasma cell infiltration and fibrosis

throughout many organs, particularly the thyroid.[2]RT has been compared to other fibrosclerotic diseases and is hypothesized to be part of the IgG4-related systemic disease spectrum due to the extensive thyroidal fibrosis and the discovery of associated organ involvement, including retroperitoneal fibrosis, pancreatic fibrosis, mediastinal fibrosis, orbital pseudotumour and sclerosing cholangitis.[3]There has also been a report of an association between subglottic/tracheal stenosis and multifocal fibrosclerosis.[4]

Delay in the diagnosis of RT may occur because it is a rare condition and requires histopathological confirmation. This report serves to provide further evidence for the successful management of this rare condition.

Investigations

Ultrasound imaging of the thyroid gland showed an enlarged right hemithyroid with retroclavicular extension and a left U3 1.3 centimetre nodule. It also suggested an abnormal echotexture suggestive of thyroiditis or lymphoproliferative infiltration. Isotope scanning showed intense activity in the right thyroid gland. However she remained euthyroid. Magnetic resonance imaging (MRI) scan additionally showed a mild degree of tracheal compression. There was evidence of left sided subglottic stenosis raising the possibility of multifocal fibrosclerosis in this case. Results from the above imaging made the team suspect RT.

Core biopsy of the right thyroid lobe showed evidence of Riedel's thyroiditis and a chronic inflammatory process.

Treatment

Having confirmed Riedel's thyroiditis, an MDT discussion involving ENT, radiology and Endocrinology clinicians recommended that she be treated with high dose intravenous steroids followed by surgical decompression. Following a course of methylprednisolone, there was a remarkable improvement in her breathing and compressive symptoms. MRI scan of the neck showed the goitre had reduced in size considerably compared to her initial scan prior to admission. She underwent a successful subtotal thyroidectomy. Histology of both thyroid lobes was consistent with RT.

Learning points

- Despite being a rare condition, clinical awareness of the presentations of Riedel's thyroiditis should enhance our acumen to make the diagnosis in time.
- Timely use of glucocorticoids early in the disease has good outcomes.
- Liaison between different medical specialists is crucial in determining optimum treatment modalities.
- Surgery has an optimum outcome after glucocorticoid therapy.

Written informed patient consent for publication has been obtained.

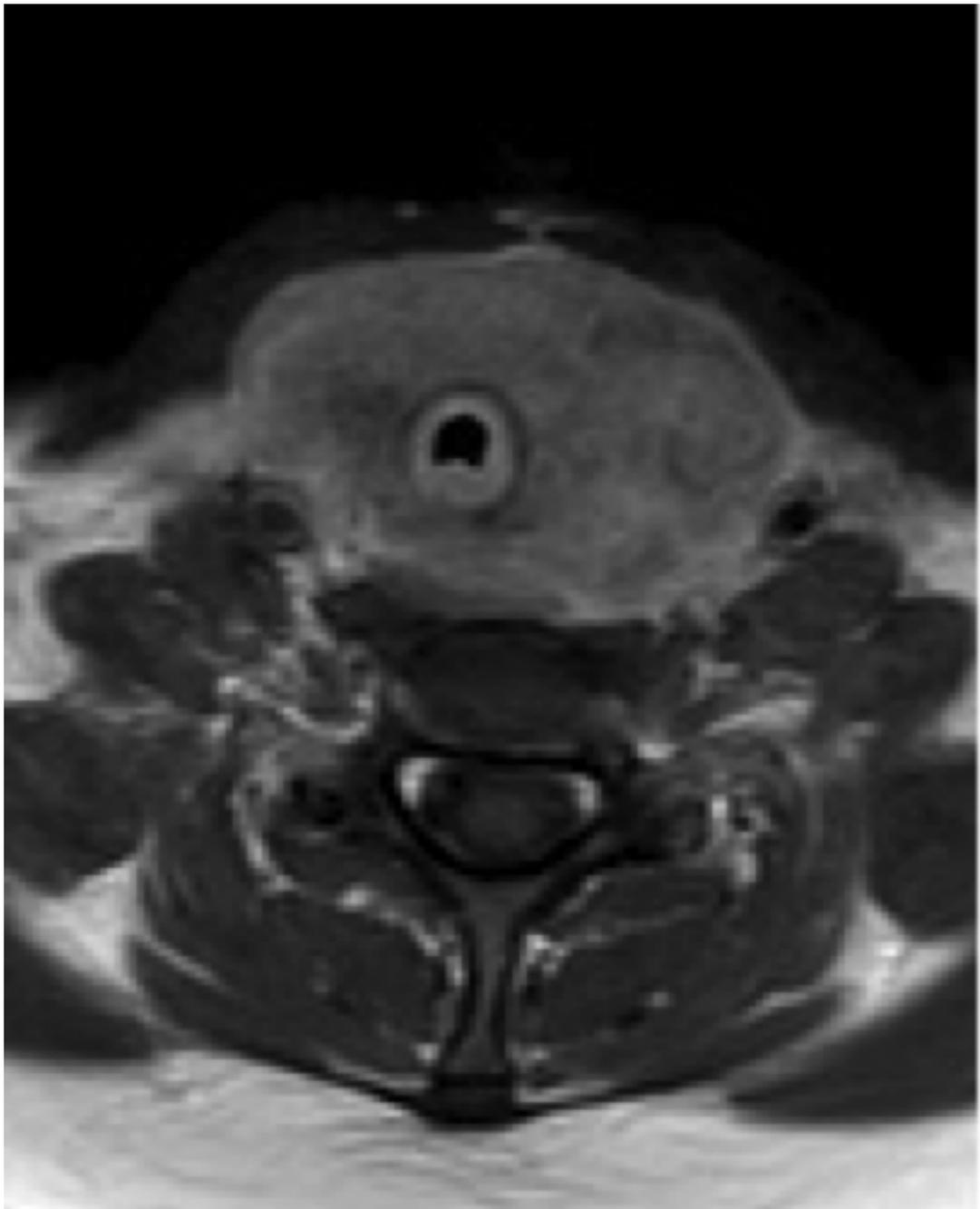
Differential Diagnosis List: Riedel's thyroiditis, Paucicellular variant of undifferentiated carcinoma, Fibrosing Hashimoto's thyroiditis

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Figure 1

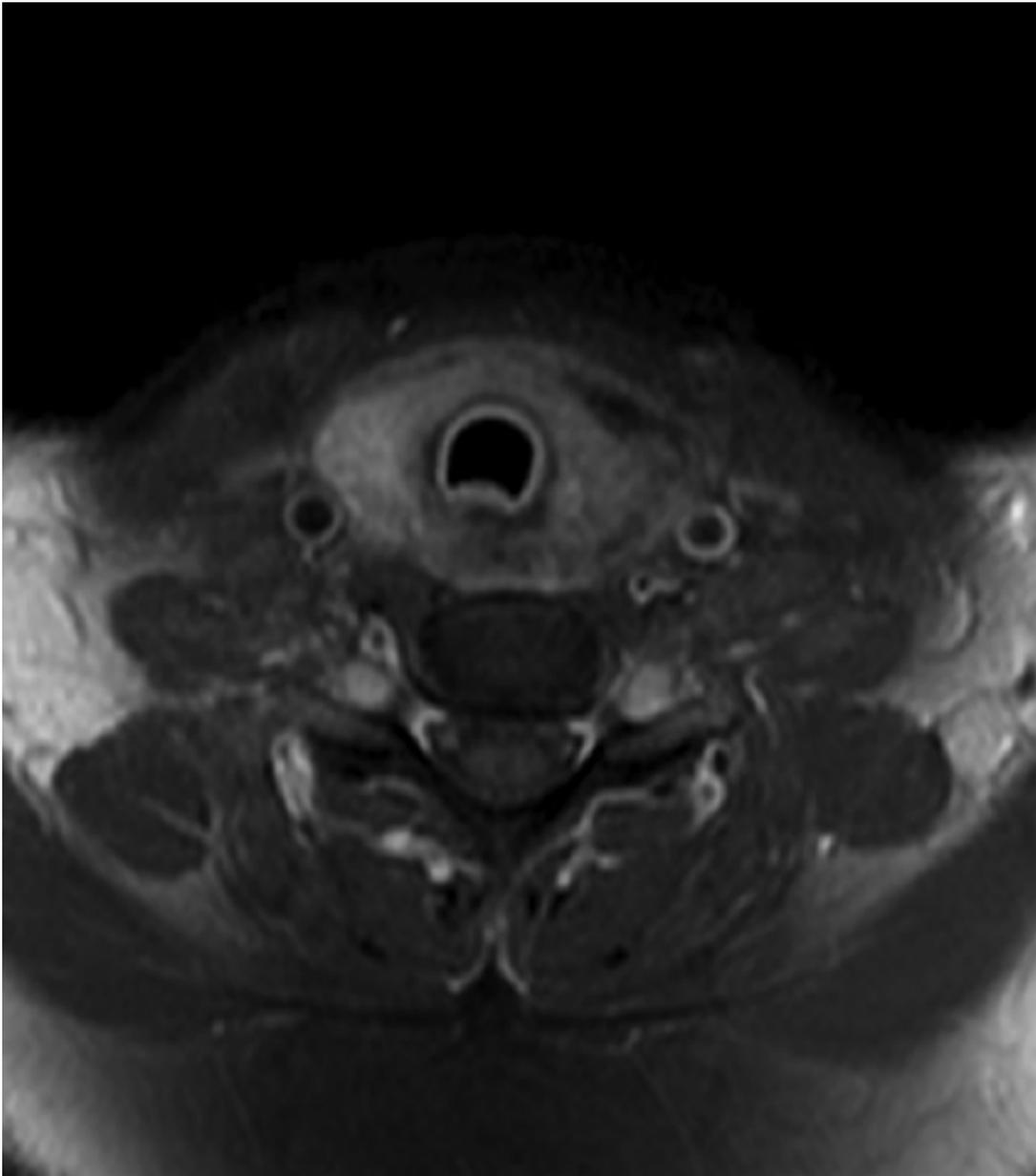
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Description: Pre-treatment axial T1 post gadolinium fat-saturated MRI of the neck showing tracheal compression by large heterogeneous thyroid mass bigger on the left side compared to the right **Origin:** Panditaratne N, Department of Radiology, Calderdale Royal Hospital, Halifax, United Kingdom.

Figure 2

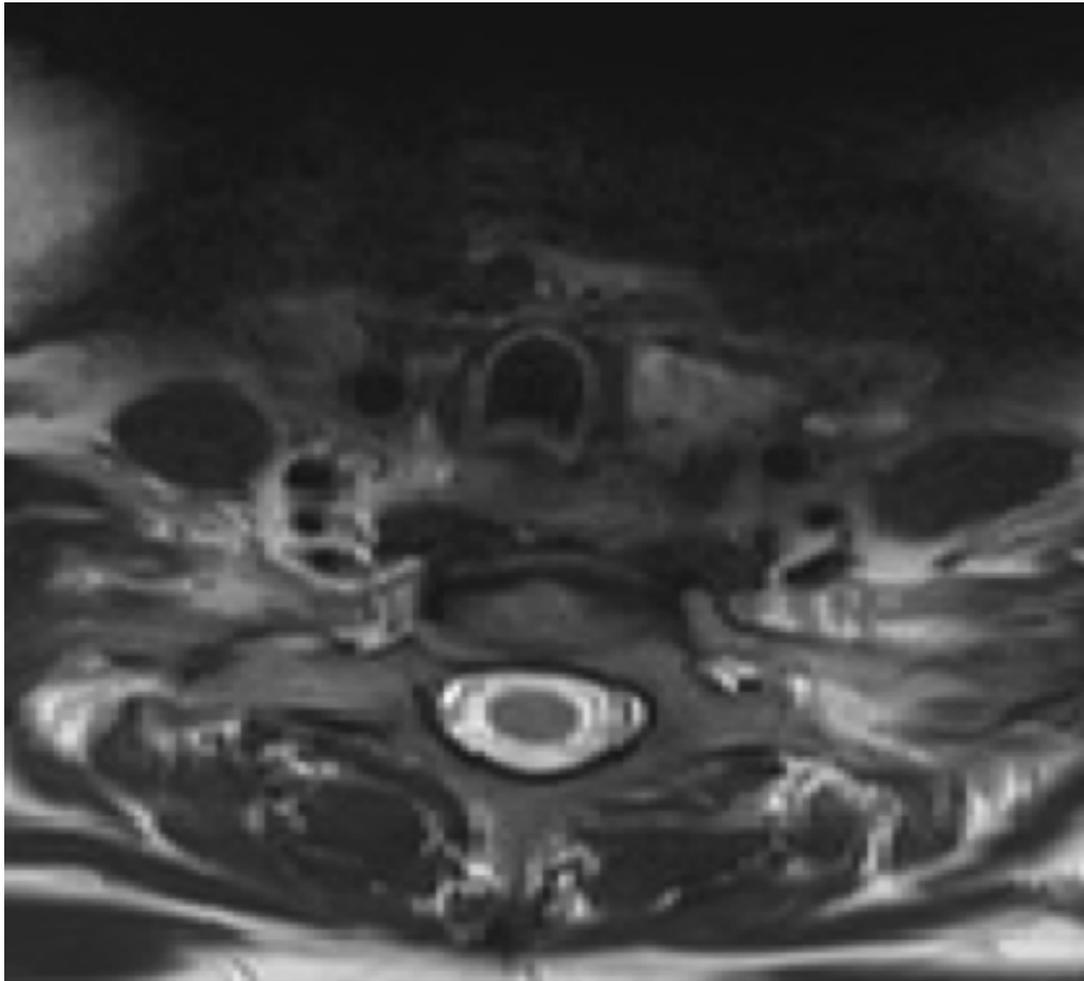
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Description: Post steroid treatment axial T1 post gadolinium-fat saturated MRI of the neck showing relief of tracheal compression and reduction in the size of the thyroid mass. **Origin:** Panditaratne N, Department of Radiology, Calderdale Royal Hospital, Halifax, United Kingdom

Figure 3

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Description: Post-operative axial T1 post gadolinium-fat saturated MRI of the neck showing complete resolution of tracheal compression and significant reduction in the bulk of the thyroid mass 3 months post-surgery **Origin:** Panditaratne N, Department of Radiology, Calderdale Royal Hospital, Halifax, United Kingdom.