Internal jugular vein thrombosis and intensely hypermetabolic thyroid on 18F-FDG PET/CT

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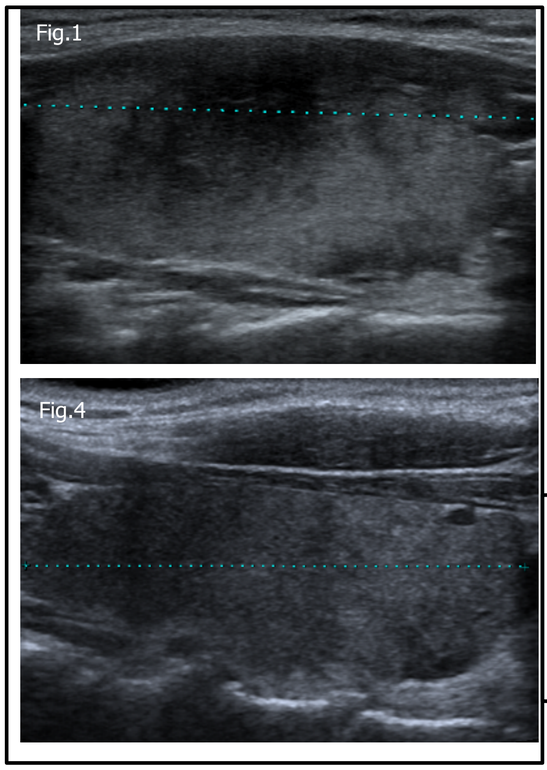
INTRODUCTION

Internal jugular vein thrombosis is generally related to central venous access devices because of endothelial trauma or inflammation. Other reported causes include neck surgery complications, malignancies, deep neck infections, intravenous drug abuse, ovarian hyperstimulation syndrome and hypercoagulable states, generally malignancy-related.

CASE REPORT

A 47-year-old woman presented at the emergency department with acute neck pain, local swelling and fever. Neck ultrasound with Doppler studies showed a goiter of 48 ml with an hypoechoic parenchyma and a left internal jugular vein thrombosis of recent appearance on the site of pain (Fig.1). Blood tests revealed elevated inflammatory markers, overt hyperthyroidism (TSH < 0.04 µUI/ml, FT4 3 ng/dl, FT3 7.9 pg/ml) and high serum thyroglobulin (183 ng/ml; N <40). Antibodies anti-thyroperoxidase, anti-thyroglobulin and anti-TSH receptor were absent. Technetium-99m pertechnetate scintigraphy showed a very low uptake, suggestive of thyroiditis (Fig.2).
Nonsteroidal anti-inflammatory treatment was administered, in addition to low-molecular weight heparin.

The most common causes of internal jugular vein thrombosis were investigated. A complete screening of inherited and acquired pro-thrombotic factors was negative. IgG antiphospholipid antibodies were present (58 UI/L; N <12) during the acute phase of the disease but they were subsequently negative on further controls.
18F-FDG PET/CT showed an unusually intense and diffuse uptake in thyroid gland, with extension to surrounding tissues and multiple bilateral adenopathies, strongly evocative of a thyroid lymphoma (Fig.3A).



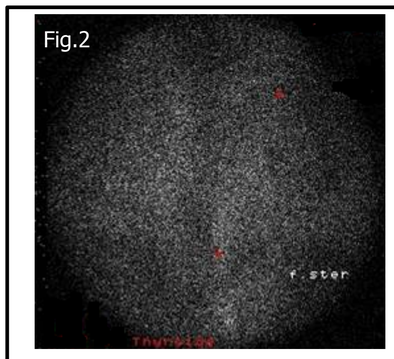


Fig. 2 . Technetium-99m pertechnetate scintigraphy showed a very low uptake

Fig.1 Ultrasound imaging showing en enlarged and hypoechoic thyroid.

Fig.4 Normalized thyroid ultrasound.

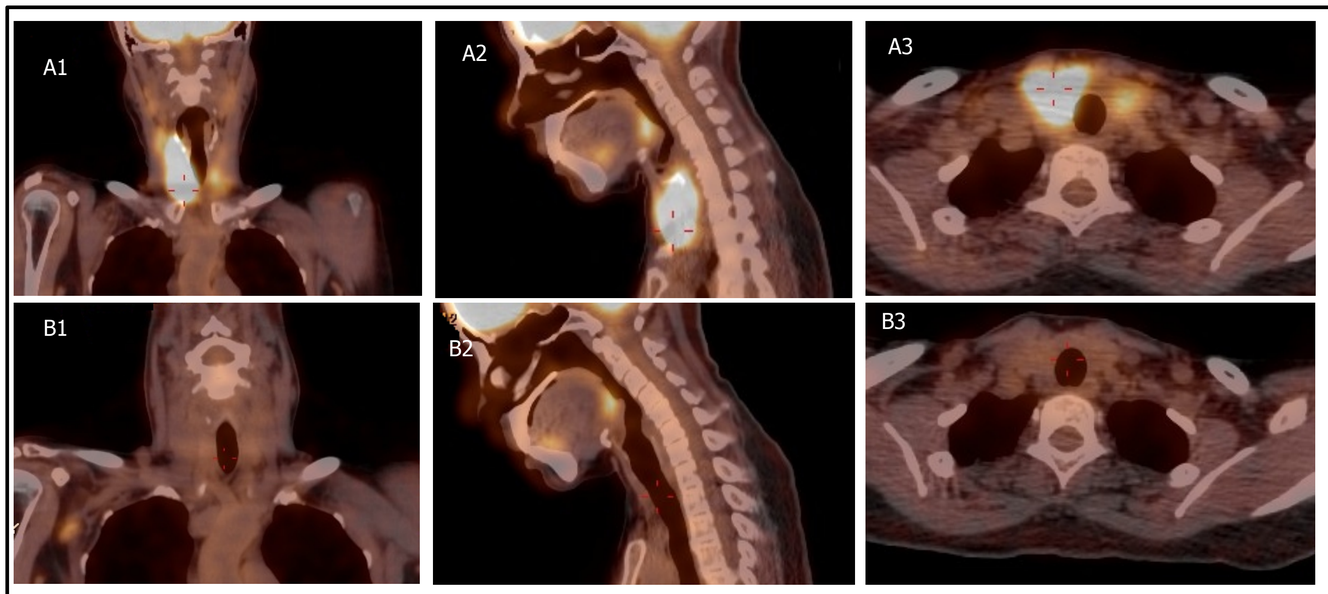


Fig. 3A 18F-FDG PET/CT intense and diffuse uptake in thyroid gland (a1, coronal view; a2, sagittal view; a3, axial view).
Fig. 3B 18F-FDG PET/CT normal thyroid uptake after six months (b1, coronal view; b2, sagittal view; b3, axial view).

A progressive decrease of neck pain and swelling was observed, together with the complete regression of fever and inflammatory state, and a wait and see attitude was decided. After six-months delay, the complete normalisation of 18F-FDG PET/CT and neck ultrasound was observed, confirming the diagnosis of subacute thyroiditis (Fig.3B; Fig.4).

DISCUSSION

Very limited data are reported in literature on the correlation between deep venous thrombosis and subacute thyroiditis. A higher prevalence of antiphospholipid antibodies in autoimmune thyroid disease has been observed. Their clinical significance still remains unclear, but they seem to represent an non-specific marker of immune dysregulation.
Some reports on sinus or cerebral thrombosis after thyrotoxicosis suggest that hyperthyroidism could be associated with a hypercoagulable state. The exact mechanism is still unknown, but some authors suggest that awareness should be raised on the increased risk of thromboembolic events in these patients.
Thyroid 18F-FDG PET/CT incidentalomas are relatively frequent, with reported incidence ranging up to 9%. The clinical relevance of diffusely increased 18F-FDG uptake in the thyroid gland as an incidental finding on PET/CT remains controversial. Most studies indicate that a diffuse uptake is suggestive of benign diseases, but they clearly point out that also benign incidental uptakes (both focal and diffuse) is a clinically significant finding, requiring further management.

CONCLUSIONS

This case shows that in a patient with subacute thyroiditis presenting with persistent neck pain and swelling, internal jugular vein thrombosis must be ruled out.
Ultrasound and Technetium-99m pertechnetate scintigraphy, together with biological and clinical markers, may be of help in the differential diagnosis of an intensly hypermetabolic thyroid lesion on 18F-FDG-PET/CT.

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