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Follicular thyroid carcinoma mimicking meningioma: A case report

Krishnalatha Buandasan*, Adil Hussein

Department of Ophthalmology, School of Medical Sciences, Universiti Sains Malaysia, Health Campus, Kubang Kerian, Kelantan, Malaysia

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ABSTRACT

Follicular thyroid carcinoma (FTC) is a well-differentiated tumor which resembles the normal microscopic pattern of the thyroid. Although intracranial metastasis to the brain is frequent in adults, metastasis from FTC is very rare. Dural metastases mimicking meningioma have been documented in the literature now and then. However, cases arising from a FTC are again very rare. We report the case of a middle-aged lady who presented with progressive, painless left eye proptosis. She was noted to have a non-axial proptosis with dystopia, compressive optic neuropathy and exposure keratitis. She also had a painless swelling over the occipital region. She was initially misdiagnosed to have multiple foci of meningioma based on magnetic resonance imaging findings. Subsequent histopathological examination revealed presence of FTC. She was euthyroid but was found to have multiple small thyroid nodules by ultrasonography. Hence, the definite diagnosis of all dural masses must be histological wherever possible and thyroid carcinoma should be considered as a potential primary tumour in such presentations.

1. Introduction

Intracranial metastases are the most frequent brain tumours in adults, growing in the cerebrum, cerebellum or the meninges. Anecdotal reports of these lesions suggest that isolated forms may have radiological features which are strongly suggestive of a primary tumour. Moreover, their macroscopic appearance may be mistaken for a meningioma. Review of the literature shows that although meningiomas have well known clinical and radiological features, various pathologies could simulate them. About 60% of meningiomas manifest a "dural tail" sign; and a broad dural attachment of a tumour with an adjacent dural tail is highly suggestive of a meningioma. However, it has been noted that the "dural tail" has also been described in a variety of lesions such as dural metastases, glioma, acoustic neuroma, sarcoidosis, lymphoma and even giant aneurysm. Therefore it is not specific to meningiomas[1].

Tagle P and co-workers[2] reviewed the literature concerning 29 reported cases of dural metastases mimicking meningioma. The most frequently reported primary neoplasms were prostate, kidney and breast. Only one out of the 29 cases was reported to be arising from a follicular thyroid carcinoma (FTC). Dural metastases may arise either from direct extension of skull metastases or from hematogeneous metastases, or rarely from outward progression of a cortical brain metastasis. Florence Laigle-Donadey *et al*[3] identified 198 cases of dural metastases. Only one was noted to be arising from a FTC. This indicates that dural metastasis from FTC is very rare.

FTC is a well-differentiated tumour which resembles normal thyroid microscopy. FTC is the second most common cancer of the thyroid after papillary carcinoma, accounting for approximately 10-15% of clinically evident thyroid malignancies. FTC may be overtly or minimally invasive, despite its well-differentiated characteristics. FTC has a long natural history with a typical slow progressive course. However, when distant metastases occurs, it is associated with significant morbidity and mortality. Only 1% of these cases develop intracranial metastases. An important point to note here is that initial presentation with distant metastases is uncommon.

2. Case report

A 50 year old Malay lady with no known medical illness initially presented to an ophthalmologist at a nearby hospital in May 2009 with two months' history of painless left eye protrusion. Magnetic resonance imaging (MRI) had shown an extraconal mass with multiple foci at the brain. She was referred to the neurosurgical team and was offered surgical intervention but unfortunately she defaulted follow-up. She presented to us a year later with progressive worsening of the left eye protrusion with reduced vision and tearing. She also noticed a painless lump over the back of her head which was increasing in size. There was no

*Corresponding author: Dr. Krishnalatha Buandasan, Department of Ophthalmology, School of Medical Sciences, Health Campus, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia.
Tel: +60137422202
Fax: +6097653370
E-mail: drlatha9@gmail.com

headache, recurrent vomiting or any neurological symptoms nor any constitutional symptoms.

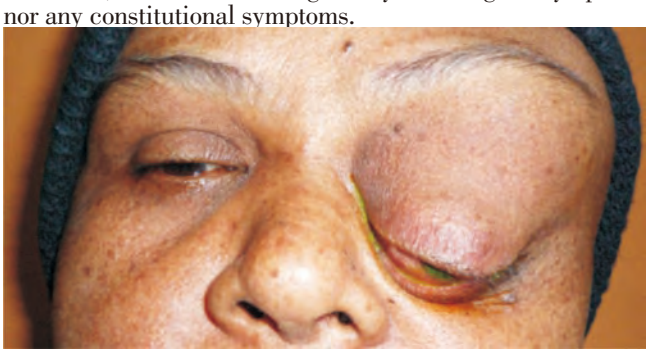

Figure 1. A severely proptosed left eye which has been pushed downward.

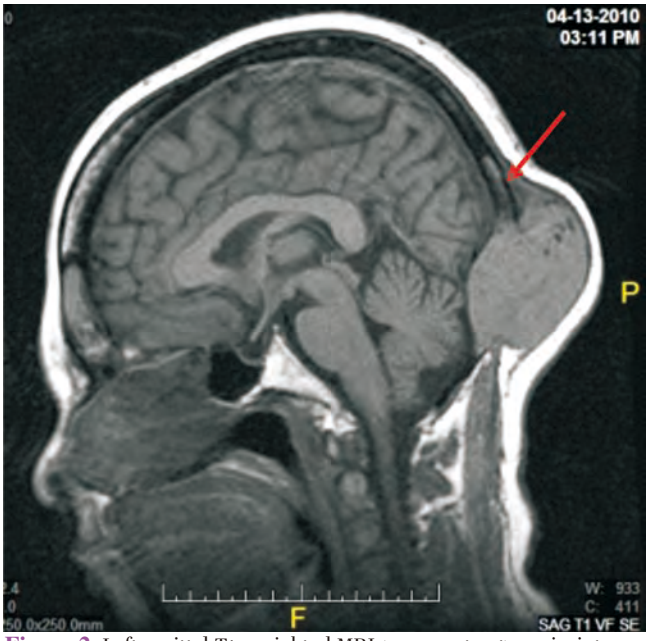

Figure 2. Left sagittal T1-weighted MRI (non-contrast)-an isointense extra-axial mass lesion in the occipital region with a dural-tail.

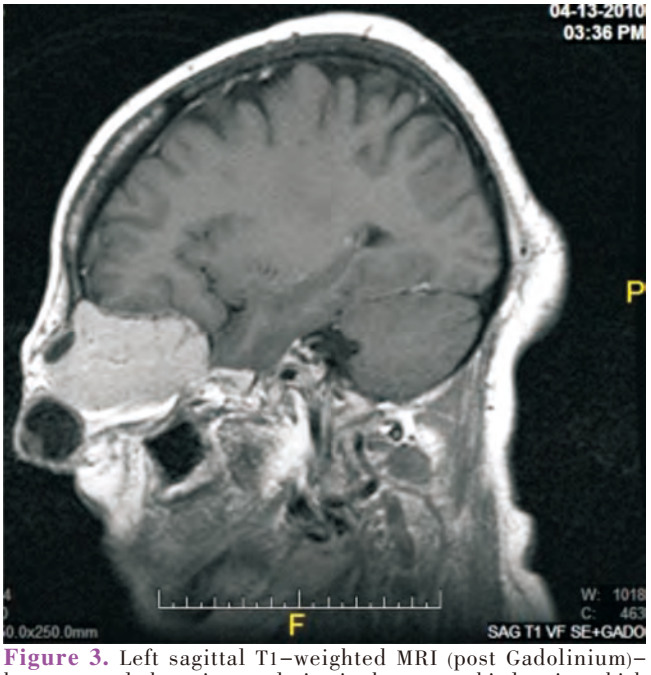

Figure 3. Left sagittal T1-weighted MRI (post Gadolinium)-heterogenously hyperintense lesion in the retro-orbital region which is pushing the globe downward.

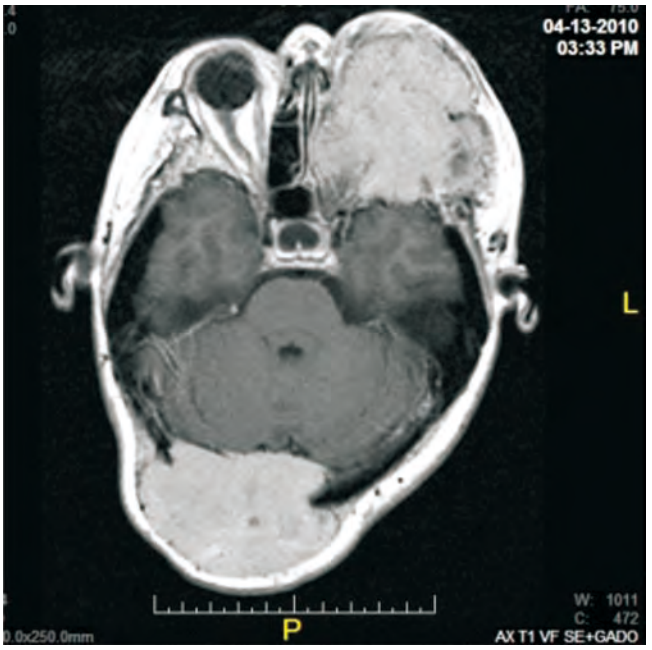

Figure 4. Axial T1-weighted MRI (post Gadolinium)- showing mass in the orbit as well as occipital region.

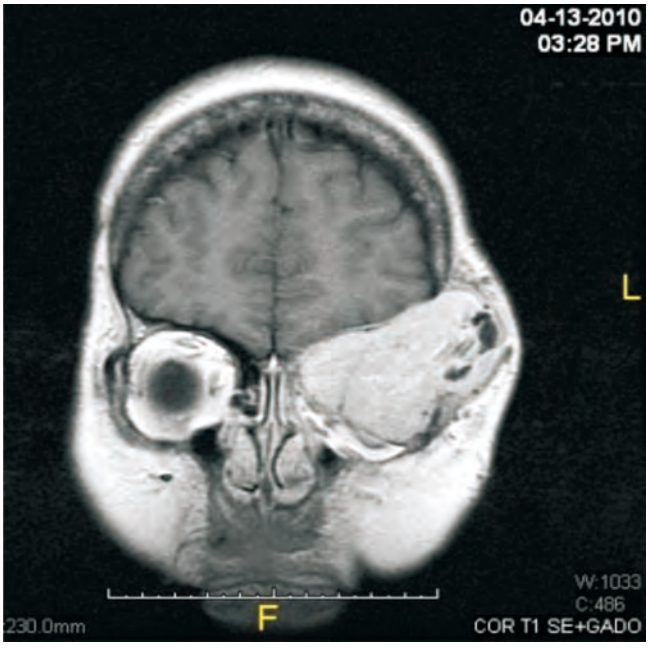

Figure 5. Coronal T1-weighted MRI (post Gadolinium).

She was noted to have a vision of 6/45 pinhole 6/30 in her left eye and non-axial proptosis with dystopia (the globe was markedly displaced downward (Figure 1). There was evidence of compressive optic neuropathy with positive relative afferent pupillary defect, red desaturation, reduced light sensitivity, dyschromatopsia and optic disc swelling, as well as exposure keratopathy. Her right eye was normal with a 6/6 visual acuity. The intraocular pressure was normal bilaterally. There was a firm mass measuring 8×6 cm over the occipital region.

A repeat MRI demonstrated well-defined, lobulated, broad-based, extra axial mass lesions in the left frontal and occipital regions (Figures 2-5). The mass in the left frontal region was seen mainly in the extraconal compartment and retro-orbital region. The lesion was isointense to gray matter on T1 weighted images, heterogenously hyperintense on T2 weighted images, not suppressed on fluid attenuated inversion recovery (FLAIR) and heterogenously enhanced

post IV Gadolinium. A similar mass lesion was seen at the occipital region, with presence of a dural tail. The mass was causing stretching of the overlying skin and subcutaneous tissues, with destruction of the right occipital bone. Multiple small round osseous lesions which were hyperdense in all sequences were noted in the right parietal region. No intracranial extension was noted. The right orbit was normal. A radiological diagnosis of multiple intracranial meningioma was made.

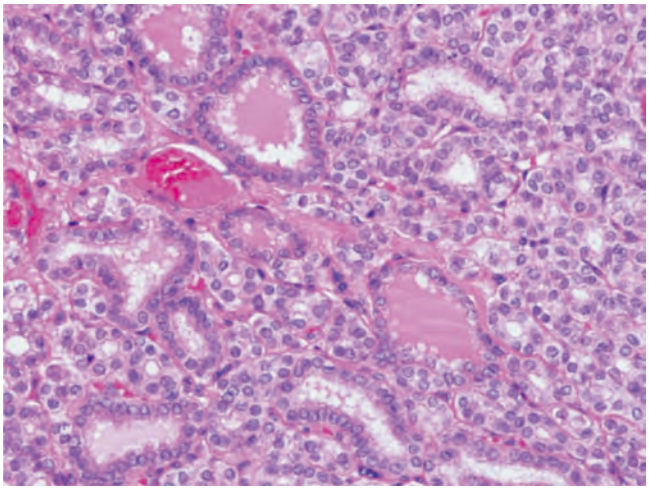

Figure 6. Tissue removed from the tumour zone showing follicular pattern of cells resembling thyroid follicular cells (H&E stain, original magnification×1 000).

Subsequently she underwent subtotal excision of the occipital tumour. The tumour was noted to be a well-demarcated extradural tumour measuring 8×10 cm which was confined to the dura (dura was not breached). The tumour beneath the bone margin was not excised. The histopathology and immuno-histochemistry of the tumour revealed a metastatic FTC. Fibrocollagenous tissue with areas of infiltrating malignant cells in follicles which tested positive for the Thyroglobulin stain was noted. This was unexpected as she was euthyroid at that time and there was no clinically evident thyroid nodule or lymphadenopathy. Ultrasonography of the thyroid gland showed multiple small, well-defined nodules from which fine needle aspiration cytology was obtained. It was compatible with FTC (Figure 6).

Radiological examination of the neck, chest and abdomen revealed no other metastatic foci. She was referred to the surgical team and subsequently planned for total thyroidectomy with adjuvant radiotherapy for the brain.

3. Discussion

About 20% of dural metastases are clinically silent and incidentally diagnosed during radiological work up or at autopsy. If symptomaticly they are most often due to simulated parenchymal metastases through tumour compression or a true invasion of the underlying brain parenchyma producing a syndrome of increased intracranial pressure, progressive deficit or, less frequently, seizures and cranial nerve palsies. Localized headache with skull tenderness and occasionally contralateral weakness are suggestive of subdural hematomas.

This case is important due to its unusual clinical presentation that was also the primary manifestation. Unilateral proptosis as an initial manifestation of FTC is unusual, and only a few cases have been reported in the literature[4-6].

Over the past few decades, the improving resolution of CT and MRI scans has increased confidence in the pre-operative diagnoses of intracranial tumours. This is particularly the case with meningiomas, whose dural base (and associated "dural tail") and extra-axial situation gives a classical CT and MRI appearance. Being non-invasive, CT and MRI has promoted a more conservative management strategy for presumed benign tumours such as meningiomas, with regular follow-up imaging and opting for surgery in cases where tumour enlargement or symptoms occur. However, the case we present supports previous reports that these strategies must be followed with the knowledge that even a classical CT and MRI appearance, can give a wrong diagnosis, with the potential for serious management errors and medicolegal consequences[7]. This is further reiterated by a recent article that also highlighted a similar case of a dural metastasis secondary to FTC mimicking a meningioma[8].

This case is also unique, as to the best of our knowledge, no case has so far been reported in the literature whereby a FTC has presented as a proptosis and being misdiagnosed as a meningioma. As a conclusion, we opine that the dural metastasis can be often mistaken for meningiomas. Extra-axial dural base metastasis cannot be reliably differentiated from meningiomas on CT or MRI. Dural metastasis from FTC is indeed rare but our experience in this case has made us realize that metastasis must be considered as a differential diagnosis even when a meningioma is suspected.

In conclusion, the definite diagnosis of all dural masses must be histological wherever possible and thyroid carcinoma should be considered as a potential primary tumour in such presentations.

Conflict of interest statement

We declare that we have no conflict of interest.

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