Meningioma with metastasis from follicular carcinoma thyroid

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Abstract

A 45-year-old female presented with loss of vision in the left eye, numbness on left half of face and left-sided hemicrania for two months. On the basis of radiological investigations, provisional diagnosis of basal meningioma was made. Tissue sent for histopathological evaluation revealed a dual tumor-meningioma with metastasis from follicular carcinoma, thyroid. Consent could be obtained for an ultrasound examination only. To the best of authors’ knowledge, this is the first report of a tumor metastasizing to another tumor, where a follicular carcinoma thyroid metastasized to meningioma.

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Tumors metastasizing to another tumor is uncommon. Literature search showed no case where metastasis from follicular carcinoma thyroid was seen in a meningioma. We report here a case of a 45-year-old female with a provisional diagnosis of meningioma. It was only during histopathologic evaluation that it was revealed that there were foci of metastasis from follicular carcinoma thyroid within the meningioma. Such cases will always be a diagnostic challenge and underscore the importance of careful processing and examination.

Case Report

A 45-year-old female, hailing from the Terai (sub-Himalayan) region of India, presented with loss of vision in the left eye, numbness on left half of face and left-sided hemicrania for two months. There was no history of bladder/bowel involvement, seizure or vomiting. On examination, the general condition of the patient was good. The left pupil was semi-dilated showing no eye movement or response to light. There was no facial weakness discerned. Imaging investigations were performed.

Computerized Tomography (CT) scan of the cranium showed a hyperdense, homogenously enhancing lobulated solid mass in sphenoid sinus with left parasellar extension, causing bony destruction and extra-axial indentation of left temporal lobe.

Subsequently, the patient underwent a Magnetic Resonance Imaging (MRI) examination with contrast [Figure 1a] and b, which demonstrated the extent of the mass with an enhancing dural tail. Caudally, the mass was seen to cause osseous destruction of the base of the skull/floor of left middle cranial fossa with effacement of foraamina and a lobulated component reaching till the pterygopalatine fossa. In addition, a small homogenously enhancing extra-axial lesion with enhancing 'dural tail' was also seen in the left high frontal region.

The differential diagnostic possibilities of an aggressive meningioma versus neoplastic mass from the sphenoid sinus were kept and clinicopathological correlation was suggested.

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Pathological findings

Small bit of tissue was sent for intra-operative histopathology reporting. Tissue was easy to crush and easy to spread. Smears showed a monomorphic population of small round cells along with some acinar structures [Figure 2]. There were no meningothelial cells identified. Intraoperative diagnosis of a round cell tumor was offered.

Remaining tumor tissue was sent for routine histopathology processing. Whole tissue received was processed and multiple sections examined. In majority of sections, sheets and whorls of meningothelial cells with round to oval vesicular nuclei and eosinophilic cytoplasm were seen.

In one of the sections, however, two different types of tumor tissues were seen. One of the tumor population comprised of meningothelial cells earlier described. This tumor showed no atypia, mitosis, necrosis or endothelial proliferation. EMA (epithelial membrane antigen) and vimentin immunopositivity was seen in this tumor. The other cell population comprised of fairly uniform, cuboidal to columnar cells forming moderate to large sized follicles. Nuclei were round with stippled chromatin. Cytoplasm was moderate to large in amount with a granular basophilic appearance. Mitotic activity (4-5/10 HPF) was seen in this part of the tumor. At places follicles were seen filled with pink colloid. This tumor part was EMA- and Vimentin-negative and CK and TTF-1 (thyroid transcription factor-1) positive [Figure 3] and [Figure 4]. Diagnosis of transitional meningioma (WHO grade I) with metastasis from follicular carcinoma thyroid was made and further work-up advised for confirmation. Retrospectively, the acinar structures seen on crush smears correlated with the histological findings.

The patient refused for a thyroid scan. Consent could be obtained for an ultrasound examination only.
Ultrasound scan done with high frequency probe revealed a small-rounded hypoechoic lesion with eccentric punctuate calcification in the inferior pole of left thyroid lobe. In addition, a bulky well-defined lobulated lymph nodal mass was seen in the left supraclavicular region just inferior to and abutting the inferior pole of left lobe with a discrete lymph node seen superior to the main nodal mass. Pathological correlation was suggested but the patient and her family denied undergoing any invasive procedure.

Patient came for a check-up one month later and her general condition was satisfactory. Then she was lost to follow-up.

Discussion

Histology of the thyroid adenocarcinoma includes papillary, follicular and anaplastic types. Papillary carcinoma is the commonest accounting for 75-85% of thyroid carcinoma cases, followed by follicular carcinoma (10-20%), medullary carcinoma (5%) and anaplastic carcinoma (1%). As a general rule, follicular carcinoma tends to present in women at an older age than do papillary carcinoma, with a peak incidence in the forties and fifties. The incidence of follicular carcinoma is increased in areas of dietary iodine deficiency. Terai region of India is a belt in the foothills of Himalayas with a high incidence of iodine deficiency. Patient reported here belonged to this region. Metastasis through vascular invasion is seen in follicular carcinoma in contrast to lymphatic invasion in papillary carcinomas. This accounts to the spread of follicular carcinoma thyroid to distant locations also. However, to the best of the authors' knowledge, metastasis of follicular carcinoma thyroid to another tumor has not been reported so far.

Tumors metastasizing to another tumor are uncommon. Literature search revealed only two cases of tumor-to-tumor metastasis. In the first case, a uterine cervix tumor was seen metastasizing to renal cell carcinoma and in the second, urothelial carcinoma metastasized to solitary fibrous tumor of the pleura. No case, however, has been reported of a carcinoma thyroid metastasizing to meningioma. There is, though, a single case report of pituitary metastasis of thyroid follicular adenocarcinoma with an incidental meningioma in the posterior fossa. Literature survey shows that there are occasional reports indicating an association of thyroid carcinoma and meningioma with cases where intracranial metastasis of follicular carcinoma has clinically mimicked a meningioma or meningioma has metastasized to the thyroid gland. The case reported here was also clinically diagnosed as meningioma but is unusual in having shown foci of metastasis from follicular carcinoma thyroid within the meningioma tissue. Examination of the thyroid confirmed the presence of a nodule. A careful scrutiny and reporting of all dual tumors is needed and it needs to be analyzed which tumors are more associated in some way or the other. Data thus generated will surely unravel some common pathways of tumorigenesis in dissimilar tumors. However, no matter how much is known about the pathogenesis of such cases, diagnosing them would always be a challenge and require careful handling and interpretation. Intrasoperatively, the authors feel, the diagnosis of tumor-to-tumor metastasis would be fraught with pitfalls and is to be avoided.

References