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Unilateral Proptosis as the Presenting Feature of Papillary Thyroid Carcinoma

CASE REPORT

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ABSTRACT

A 69-year-old female with unilateral proptosis for 1 year presented at our ophthalmology clinic. She had degenerative myopia and a history of low vision for several years. A radiographic imaging revealed a right orbital mass causing bone lysis and invading the intracranial space. Total resection of the mass was performed, and the findings of a histopathological examination were consistent with those for follicular or papillary thyroid carcinoma. Total thyroidectomy with modified radical lymph node dissection revealed a follicular variant of papillary carcinoma. The patient was referred to the nuclear medicine department for further radioiodine therapy. Although extremely rare, thyroid should be carefully examined as a part of the systemic workup when assessing the primary diagnosis of orbital metastasis. Further, patients with pathologic myopia should be carefully examined for signs of orbital mass when suspected because of overlapping symptoms, such as pseudoproptosis and low vision.

Keywords: Orbital metastasis; papillary thyroid carcinoma; proptosis; thyroid gland

INTRODUCTION

The most common malignancy involving the thyroid gland is papillary thyroid carcinoma (PTC; 75%), with a rare distant metastasis (1%-2%) (1). Orbital metastasis from thyroid malignancy is observed in 3%–6% cases, mostly from follicular or medullary carcinoma (1). A recent review has documented four cases of orbital metastasis from PTC (2). Thus far, only one case of PTC involving muscles in the orbit has been published (3). Here, we describe a patient with orbital metastasis involving muscles as the primary clinical manifestation of PTC.

CASE REPORT

A 69-year-old-female with unilateral proptosis in her right eye for 1 year presented at the ophthalmology clinic (Figure 1). She had a history of degenerative myopia and low vision for several years. Upon examination, her best-corrected visual acuity was light perception in the right eye and 20/200 in the left eye; a fixed dilated pupil was noted in the right eye. Measurements with the Hertel exophthalmometer showed values of 30 mm for the right eye and 27 mm for the left eye (base 10^2 mm). A dilated fundus examination revealed posterior staphylomas and other degenerative myopic changes in both eyes and optic disc pallor in the right eye. Orbital computed tomography and magnetic resonance imaging scans showed an extra-axial, well-defined, 30×30×45-mm mass located in the middle cranial fossa, next to the temporal pole, with its borders indistinguishable from the leptomeningeal and osseous tissues, associated with sphenoidal bone lysis and invading the retrobulbar fat tissue (Figure 2). She was submitted to surgery by the neurosurgery department with pterional craniotomy. Gross anatomic finding was noted in the surgery as an elastic, purple-colored, hemorrhagic mass originating from the muscle cone. At this stage, the presumptive diagnosis was rhabdomyosarcoma. The mass was completely resected.

A histopathological examination revealed an infiltrative neoplastic epithelial lesion, neoplastic cells having a medium-sized eosinophilic cytoplasm, and mildly pleomorphic round vesicular nuclei. Some nuclei had a ground glass appearance and nuclear overlapping. Neoplastic cells mostly had a follicular appearance, with some papillary projections. There were few colloid-like materials in certain follicular neoplastic areas. The neoplastic cells infiltrated muscular fibers and bone trabeculae. An immunohistochemical analysis showed pancytokeratin, TTF-1, thyroglobulin, cytokeratin 19, galectin, and epithelial membrane antigen positivity and the absence of staining against estrogen and progesterone receptors, mesothelin, and S-100. These findings were consistent with the follicular variant of PTC (Figure 3).

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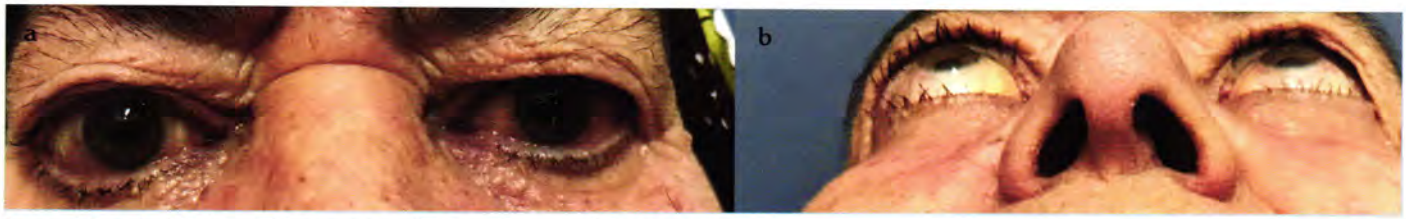

Figure 1. a, b. **Unilateral proptosis of the right eye of the patient**

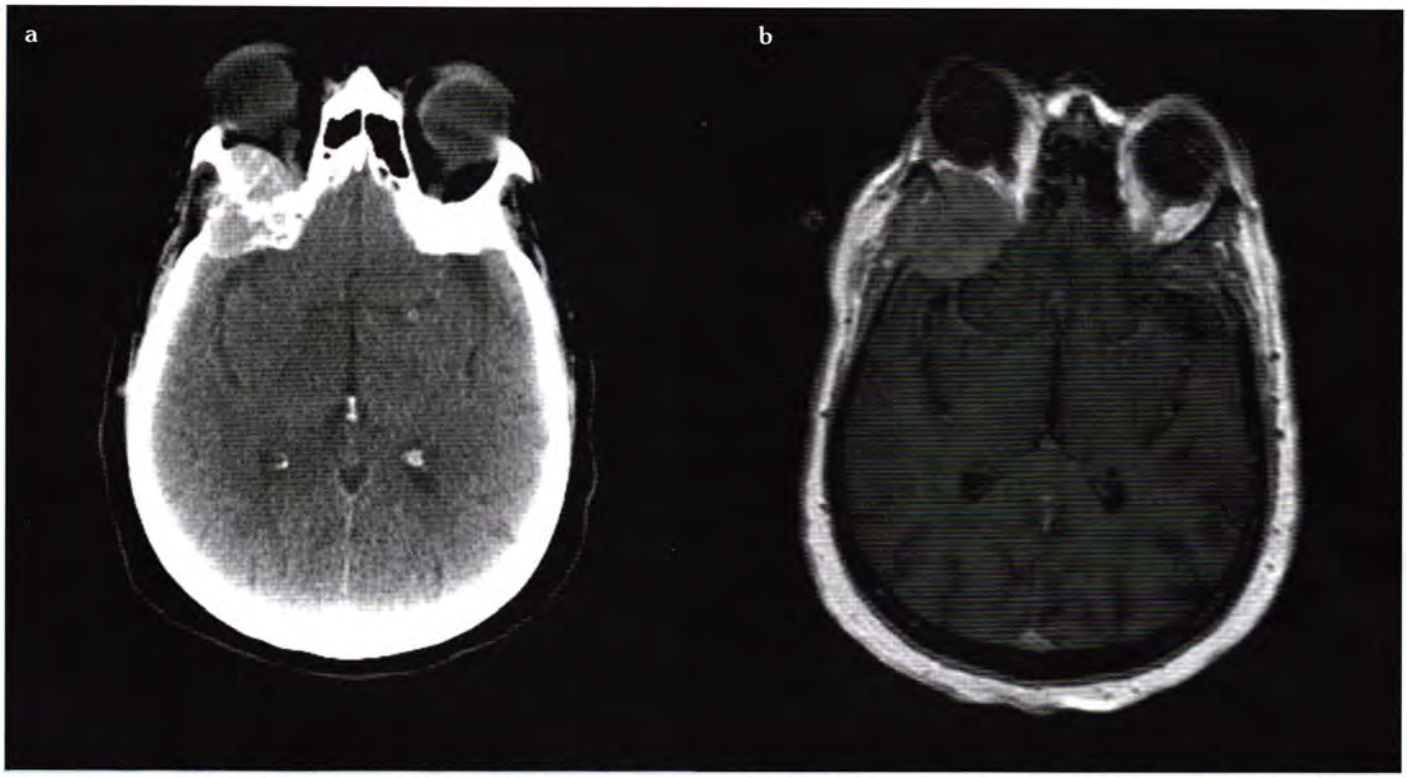

Figure 2. a, b. **Axial computed tomography (a) and T1-weighted postcontrast magnetic resonance imaging (b) scans showing a well-defined lesion with intralesional calcifications associated with bone lysis and protruding into the right orbit with the displacement of the lateral rectus muscle (30×30×45 mm).**

The patient was referred to the surgical department of our hospital. She was clinically and biochemically euthyroid. The thyroid-stimulating hormone level was 2.13 πUI/mL, free T3 level was 2.55 pg/mL, and free T4 level was 1.28 ng/dL. At this time, the serum thyroglobulin level was 290 ng/mL (immunometric assay) and antithyroglobulin antibody level was 8.07 U/mL (quimioluminescence assay). A thyroid ultrasonography revealed an increased left lobe with multiple nodules, with the largest nodule sized 2.5×3 cm in diameter having peripheral calcifications and internal microcalcifications. She also had presumed images of metastatic lymph nodes in the paravascular region in zones 3-4 beside the internal jugular vein, with the biggest node sized 15×11 mm in diameter. The fine-needle aspiration biopsy of nodules revealed benign lesions. The patient was submitted for bilateral total thyroidectomy with left modified radical neck dissection. The histopathological examination confirmed the diagnosis of PTC without any invasion to the extrathyroidal soft tissue. She was transferred to the nuclear medicine department for further radioiodine therapy.

DISCUSSION

Orbital metastasis from all types of cancer is rare. The presenting signs of patients treated for orbital metastasis of any origin by frequency are diplopia, proptosis, pain, decreased vision, and ptosis.(4) The most common symptom of orbital metastasis from various thyroid cancers is proptosis.(2) Our patient had a history of low vision and pseudoproptosis due to high myopia and axial length, which might have led to her delay in the recognition of symptoms.

There are four cases in literature documenting the orbital metastasis of PTC.(1, 3, 5, 6) Three of these cases had distant organ metastasis other than orbit at the time of diagnosis, and only one case similar to the present case showed no other site of distant metastasis other than orbit. In their case presented by Boughattas et al. (6), the patient had a history of the diagnosis of PTC and sites of metastasis in the lung and on the supraorbital ridge were detected on postablative imaging and was confirmed via radiological imaging. Rocha Filho et al. (5) have also documented a case with orbital metastasis of PTC on the frontal bone as the initial clinical

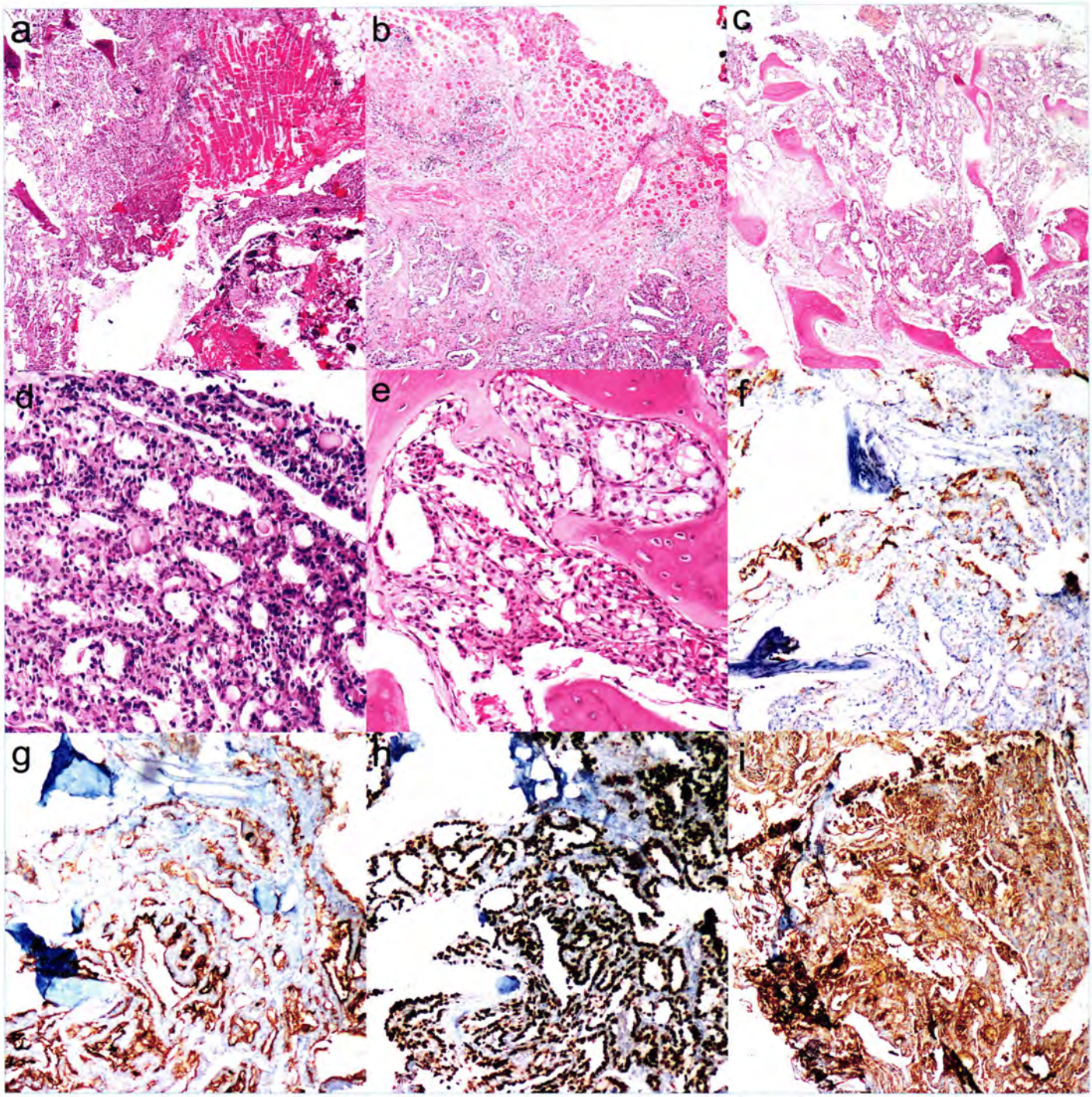

Figure 3. a-i. (a) Neoplastic cell infiltration of the muscle and bone tissue (H-E, 40×). (b) Muscle infiltration with neoplastic cells (H-E, 100×). (c) Follicular and some papillary appearances of tumor cells between the orbital bone lamellas (H-E, 100×). (d) Ground glass appearance of neoplastic cells, follicular and papillary structures, and a few colloid materials in the follicular areas (H-E, 200×). (e) Close-up view of neoplastic cells in the bone tissue (H-E, 200×). (f) Positive immunohistochemical staining with cytokeratin 19. (g) Epithelial membrane antigen. (h) Thyroid transcription factor. (i) Thyroglobulin (avidin biotin peroxidase immunohistochemistry, 200×)

manifestation of the tumor and treated with radiotherapy and chemotherapy. The case also had diffuse bone metastasis. Repanos et al. (3) have demonstrated a case of orbital metastasis of PTC to the medial rectus muscle, similar to our case, in which muscles were involved. Surgical exenteration was the treatment option for the case because of debilitating diplopia and visual acuity showing an unlikely improvement with any other treatment option. Shyla et al. (1) have reported a case of a well-encapsulated mass involving the orbit and extending to ethmoids, sphenoid sinus, and nasal cavity. Both histopathological examination of the incisional biopsy and total surgical of the mass revealed acinic cell carcinoma of the minor salivary gland; however, they associated the lesion with orbital

metastasis of PTC after the histopathological analysis showed the diagnosis of PTC from thyroidectomy specimen.

CONCLUSION

This case demonstrates a very rare presentation of PTC with distant orbital metastasis. Our case shows that special care should be taken while examining patients with a long history of low vision because the most common symptoms of orbital tumors, such as diplopia, loss of vision, and proptosis, may remain unnoticed by these patients in the absence of a specific evaluation. Moreover, although very rare for orbital masses, thyroid should also be considered while assessing the primary cause for the most common suspected sites.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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