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Ocular Manifestations of Prostatic Adenocarcinoma: A Case Study of Orbital Metastasis in A 64-Year-Old Male

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Abstract **Case Report**

This case study presents a rare instance of prostatic adenocarcinoma metastasizing to the choroid and orbit in a 64-year-old patient. Despite the commonality of prostatic adenocarcinoma, ocular metastasis presents a unique challenge. The paper delves into the histological and immunohistochemical aspects, as well as therapeutic interventions.

Keywords: prostatic adenocarcinoma, ocular metastasis, tumor.

INTRODUCTION

Orbital metastases represent 2 to 10% of malignant orbital lesions [1].

The mechanisms of orbital spread are twofold. In the case of lung metastasis, tumor emboli pass into the pulmonary circulation and then, via the carotid artery, into the ophthalmic artery. In the absence of lung metastases, tumor cells invade Batson's plexus, then the cranial venous sinuses, and finally the ophthalmic veins [2, 3].

We report a case of orbital metastasis from a prostatic adenocarcinoma and review the diagnostic, therapeutic, and prognostic features of this condition.

CASE REPORT

Mr. L, a 64-year-old male, has been followed for 5 years for an initially localized prostatic adenocarcinoma. He presented with a progressive decrease in visual acuity in his left eye. No other notable systemic symptoms were observed. An ophthalmological examination revealed a choroidal lesion and left exophthalmos.

MRI (Magnetic Resonance Imaging) showed a homogeneous intraorbital mass compressing the eyeball. Biopsy of this mass confirmed the presence of malignant cells.

Histopathological analysis of the surgical specimen revealed the presence of a carcinomatous tumor proliferation with a solid architecture (Fig. 1). It was composed of cuboidal to cylindrical cells with eosinophilic or clear cytoplasm, enlarged hyperchromatic nuclei, and a small nucleolus. Immunohistochemical study with anti-PSA antibodies indicating a prostatic origin of the tumor cells. (Fig. 2).

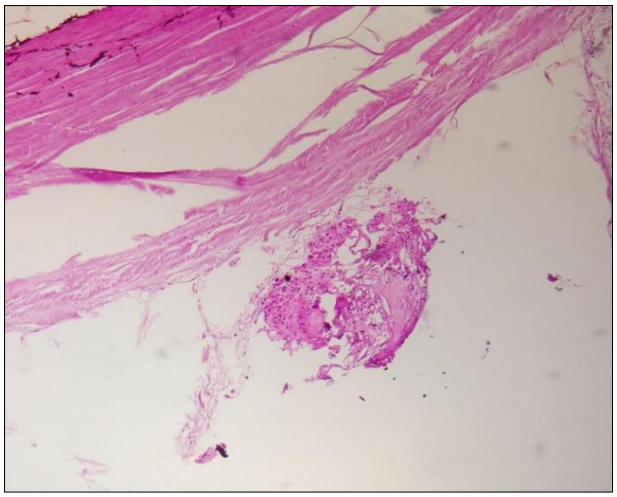

Figure 1: Microscopic examination shows a poorly differentiated carcinomatous process made up of cuboidal cells with pale nuclei

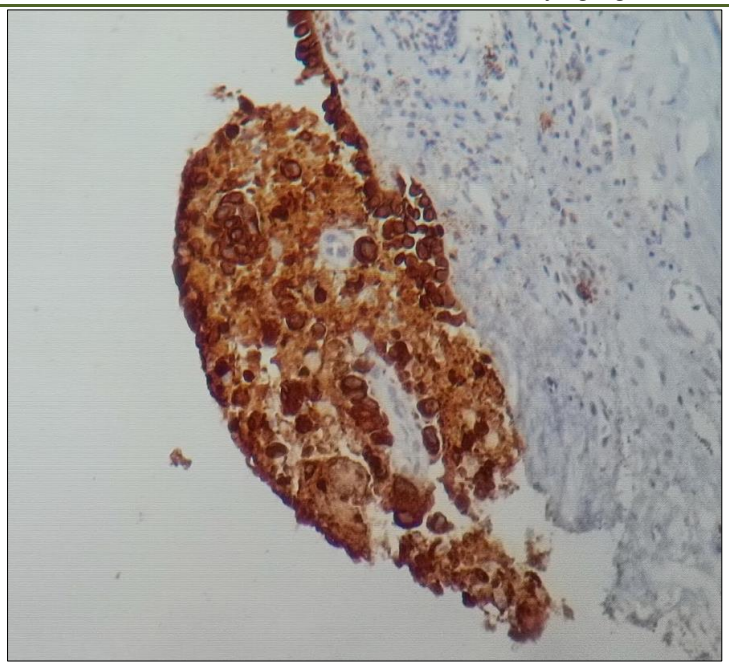

Figure 2: Immunohistochemical study shows positive immunostaining with anti-PSA antibodies

The primary diagnosis was established based on magnetic resonance imaging (MRI) revealing the orbital mass and the positivity of PSA markers on immunohistochemistry. Bone scintigraphy was also performed, confirming the presence of multiple skeletal metastases. Other potential diagnoses could have included primary orbital tumors or metastases from other cancers, but immunohistochemical results confirmed the prostatic origin.

Given the advanced nature of the disease and the presence of bone metastases, systemic chemotherapy with docetaxel at a dose of 75 mg/m^2 administered every three weeks was initiated. In parallel, palliative radiotherapy targeting the orbital lesion was administered at a total dose of 30 Gy in 10 fractions.

DISCUSSION

Metastases are malignant tumors that originate from a distant organ site and deposit at any intra-ocular structure. Intraocular metastases involve the choroid (90%), ciliary body (2%), iris (8%), and retina, optic disc, vitreous, and/or lens capsule (<1-4%)

Studies showed that the most reported symptoms associated with orbital metastases are the diplopia, pain and decreased vision; whereas proptosis, motility disturbances and disk oedema are the most presenting signs [4].

In the choroid metastasis occur as yellow coloured tumour(s) with subretinal fluid and surface retinal pigment epithelial changes (“leopard spotting”). Ultrasound B scan shows a high echogenicity mass (80%) and optical coherence tomography shows an irregular ("lumpy bumpy") choroidal surface (64%) [5].

The diagnosis of orbital metastases is easily done when there is a history of a primary tumor. In our case, the patient has already had a radical prostatectomy for a prostate adenocarcinoma and presented no other signs of another tumor.

Metastatic prostate cancer most commonly involves bone marrow. [14] Although primary prostate tumors are frequently well-differentiated adenocarcinomas with small acinar formation, it is the less well-differentiated forms that tend to metastasize, particularly moderately differentiated forms with fused glands, cribriform or papillary formations, or with absence of apparent gland formation.

The use of immunohistochemical examinations is of primary interest in this case.

Tumor cells usually usually express (PSA), prostatic acid phosphatase (PAP), and pan-keratins. Poorly differentiated tumors negative for PSA and PAP may label for prostate-specific membrane antigen (PSMA), prostein (P501S) and novel Human Prostate-Specific (NKX 3.1)

Therapeutic modalities for orbital metastases of prostate cancer include chemotherapy, hormonal therapy and radiotherapy. This treatment is palliative and does not modify the course of the disease in any way. The emergency treatment of choice is external radiotherapy focused on the orbit, combined with anti-androgens and corticosteroid therapy. Subsequently, conventional hormonal treatment for metastatic prostate cancer will be started if it is not already started [6, 7].

Local tumour control can be achieved by external beam radiotherapy, brachytherapy, chemotherapy, immunotherapy, or photodynamic therapy. Survival is dependent on the site of the primary and available treatments; in a series of 1111 patients with uveal metastasis, there was 32% survival at 3 years and 24% at 5 years. Favourable prognosis was found in carcinoid (NET) tumour cases, and worst prognosis in pancreatic and kidney carcinoma [8].

IN CONCLUSION

Orbital metastases of prostatic adenocarcinoma are rare and mark an unfavorable course of the disease. Urgent treatment is needed to preserve the function of the affected eye, although the overall prognosis of the disease remains unchanged or even unfavorable.

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