Prostate cancer is the most common type of cancer and the second leading cause of death due to malignancy among men in Western populations after skin cancer [1]. About 30% of patients with prostate cancer have regional or distant metastasis at the time of diagnosis [2]. Bone metastases of prostatic cancer are the most common form of distant spreading [1,2]. The most frequent sites of bone metastases are the pelvis and vertebrae [1]. Despite the frequency of bone metastasis in prostatic carcinoma, oculo-orbital metastases are considered extremely rare [3]. In this report, we present a case of prostatic cancer metastasizing to the left orbital cavity.

**CASE PRESENTATION**

A 73-year-old man was referred to our clinic with a 4-month history of left periorbital swelling and pain. During the last 2 weeks, the symptoms had been worsening. A moderate degree of left-sided proptosis and ipsilateral visual loss were detected in ophthalmologic examination. The patient had a history of recurrent urinary tract infection and lower urinary tract symptoms such as dysuria, frequency and pollakuria. Urinalysis revealed microscopic hematuria and 2–3 white blood cells per high power field. Increased serum alkaline phosphatase (ALP) level and anemia were also found in laboratory examination. Complete physical examination was unremarkable except for the digital rectal examination. Firm and nodular prostatic tissue was palpated on rectal examination. Serum prostate specific antigen (PSA) level was 873 ng/mL. Magnetic resonance imaging (MRI) of the cranium showed retro-orbital mass measuring 4 × 3 cm (Figure 1). Computed tomography (CT) confirmed these findings. There were no other visceral metastases at presentation. Bone scanning showed multiple osseous metastases in pelvic bones, vertebrae and humerus. Histopathologic examination of the fine needle aspiration biopsy (FNAB) from the orbital mass revealed cellular smears, in which there were atypical epithelial cells with large regular nuclei and prominent nucleoli. These cells formed large clusters and acinar structures (Figure 2). In addition, granular material due to fragmentation of cell cytoplasm was present in the background. These findings indicated a malignant epithelial tumor metastasis that may have arose...
secondary to prostate carcinoma. After this histopathologic diagnosis, tru-cut biopsy of the prostate gland was performed. Biopsy result was reported as prostatic adenocarcinoma with Gleason grade 4+4 (Figure 3). With a diagnosis of advanced disease, the patient received total androgen blockade with luteinizing hormone releasing hormone analog and flutamide. After 2 months of hormonotherapy, the left-sided proptosis subsided and a significant improvement in vision was observed as well. The PSA values were 434 ng/mL and 293 ng/mL in the 3rd and 7th months, respectively. Although radiotherapy was recommended, the patient refused this treatment modality. The patient died due to brain metastasis 12 months after diagnosis.

**DISCUSSION**

Orbital metastasis of a neoplasm is an uncommon entity in adults and it represents only 2–9% of orbital tumors [1,3]. Epithelial and non-epithelial metastatic tumors can be seen in orbital localization. Non-epithelial metastatic tumors that occur in the orbital cavity are neuroblastomas, melanomas and sarcomas [4]. The most common epithelial tumors are adenocarcinomas originating from the breast, lung, prostate, stomach, thyroid, and kidney [1,4]. Prostate cancer is an important health problem in the aging male population. The most common sites of metastasis beyond the periprostatic region are the pelvic nodes and the pelvic, lumbosacral spine, and long bones [4]. Soft-tissue metastases of prostate cancer are very rare. The first case of metastatic prostatic carcinoma to the eye was reported in 1872 [5], and in 1903 Greenwood and Southard reported a case of prostate carcinoma metastasis to the choroid [6]. Since then, only a few cases of orbital metastasis from prostate cancer have been reported in the literature. Recent studies have indicated prostate cancer as the 3rd most commonly identified source of orbital metastasis [4,7]. In 1986, Perez Moreiras found a case secondary to prostate cancer out of 23 cases with metastasis to the orbit [8]. In a series of 227 cases with carcinomatous metastasis to the eye and orbit, only three patients (1.3%) had an associating primary lesion in the prostate gland [9]. The largest series of oculo-orbital metastasis from prostate cancer including seven patients was published by De Potter et al [10].

![Figure 1](image1.png)

**Figure 1.** Metastatic tumoral mass (arrow) in the left retro-orbital region is seen on magnetic resonance imaging.

![Figure 2](image2.png)

**Figure 2.** (A) Aspiration smear shows atypical epithelial cells with large nuclei and prominent nucleoli (arrowheads) (May-Grünwald-Giemsa [MGG], 10×). (B) An acinar structure (arrows) formed by atypical epithelial cells was noted in the smear (MGG, 40×).
There are two routes of metastasis to the orbital region. The first one is through lung metastases, where tumor emboli pass via pulmonary circulation into the choroid arteries and subsequently into the ophthalmic artery. Secondly, prostatic or vertebral lesions may seed into Batson’s plexus and reach the cranial venous sinuses traveling up to the ophthalmic and vertex veins [4]. The usual presenting symptoms are visual loss, ptosis, ocular pain, osteoblastic lesions of the orbital wall and diplopia due to the orbital involvement. Physical examination showed ptosis and a palpable mass [3,4,7]. Review of the literature indicates that about two-thirds of the cases with prostate cancer metastasis were diagnosed after the development of ocular symptoms and those metastases could mimic a variety of other conditions such as primary orbital tumor, secondary extension from adjacent primary neoplasms, lymphomas, meningiomas, and arteriovenous malformations [3,7]. Radiologic studies can also help in the diagnosis of metastatic tumors. The most common finding on CT is a well-defined, contrast enhancing, intraconal mass and osteoblastic lesions. The diagnosis of orbital metastasis of prostate cancer is achieved by cytologic examination of fine needle aspiration material as in this case, but ocular enucleation or evisceration of the orbit [3,11]. Nuclear crowding, microglandular groups, nuclear and nucleolar enlargement, variable pleomorphism are frequently seen cytologic findings [3,10,11,14]. In this case, FNAB showed cellular smears, nuclear crowding, nuclear–nucleolar enlargement, acinar structures, fragile vacuolated cytoplasm and mild–moderate pleomorphism. These cytologic findings support the diagnosis of a malignant epithelial tumor. Upon these histologic findings, examination of the prostate gland should be done as the first step for male patients. As long as the FNAB indicates the lesion to be malignant epithelial tumor, especially of prostatic origin, the prostate gland of the patient should be evaluated subsequently. The performed tru-cut biopsy revealed prostatic carcinoma, Gleason score 4 + 4.

Treatment modalities for metastatic orbital tumors include chemotherapy, hormonal therapy, radiation therapy and combined therapy [1,3,11–14]. Dieckert and Berger reported a patient with choroidal metastasis who responded to hormonal therapy alone [15]. De Potter et al reported complete ocular response after hormonal therapy combined with radiotherapy to uvea as seen in their patients [10]. Enucleation of the mass is a rarely used option for cases of complete blindness or intractable pain. Following anti-androgenic hormonal therapy, ptosis and pain disappeared in this case. After radiation therapy, marked relief of symptoms may be seen in more than 80% of patients [1,3]. We offered radiotherapy to the orbital region, but the patient refused this treatment modality. The prognosis for patients with metastatic disease to the orbital region is poor. Various studies reported an overall median survival rate of 7.4–24.5 months [1,3,7–13]. It was 12 months in this case.

In conclusion, metastatic orbital tumor secondary to prostate cancer should be considered in patients...
who have elevated serum PSA level and abnormal
digital rectal examination findings in addition to ptosis
and loss of vision complaints. The prognosis of orbital
metastasis due to prostate cancer seems to be better
than the other oculo-orbital metastatic cancers. In
addition, it should be appreciated that a finding of
very high serum PSA levels is an indicator of a poorer
outcome.

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