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Visual loss as the initial manifestation of an ignored disseminated prostate cancer: A case report

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ABSTRACT

Purpose: To present a rare case of advanced disseminated prostate cancer with bilateral visual loss as the initial manifestation of the disease.

Observations: A 55-year-old man referring progressive visual blurring for the last 6 months and painless severe bilateral visual loss in the last 7 days prior to our consultation, associated with a bilateral optic disc swelling and leptomeningeal metastases from a previously ignored prostate carcinoma is presented. Rapid improvement of visual acuity and involution of leptomeningeal metastasis was observed after initiation of the specific oncologic treatment.

Conclusions and importance: Bilateral visual loss may be the initial manifestation of leptomeningeal carcinomatosis from an ignored prostate cancer. Prompt diagnosis is crucial in order to improve the quality of life of a critically ill patient with a disseminated prostate cancer.

1. Introduction

Systemic malignancies can produce various ocular manifestations, either by metastatic infiltration of the tumor into the ocular or orbital tissue, or by the paraneoplastic syndromes they produce, such as cancer or melanoma-associated retinopathies, paraneoplastic optic neuropathy or bilateral diffuse uveal melanocytic proliferation.[1,2] Visual symptoms can also manifest due to brain or meningeal metastatic disease that may cause compression of oculomotor nerves or of the optic chiasm, infiltration of the occipital cortex or intracranial hypertension and papilledema, among others.[3]

Leptomeningeal carcinomatosis (LC) is usually a late manifestation of a malignant disease and most often occurs in patients that have received many prior treatments.

In a review by Lanfranconi et al. visual loss was the initial symptom in 50% of patients with LC from many different types of primary cancers, principally gastric followed by lymphoma, breast, and lung.[4]

Prostate cancer is the most commonly diagnosed malignancy in men, and the second most frequent cause of death for cancer. However, LC occurs only in 0.03% of all types of genito-urinary (GU) cancers and in 0.016% of prostate cancer.[5]

Visual symptoms as the initial presentation is an extremely rare event in prostate cancer. Only a few cases have been reported where visual disturbances led to the diagnosis of a prostatic malignancy, and in none of them the presence of optic disc swelling associated to meningeal involvement was described as the leading cause of the visual acuity deficit[6–8] and none of the reviewed cases of LC and visual loss in Lanfranconi series were from prostate cancer.[4]

We present herein a rare case of an advanced disseminated prostate cancer with bilateral visual loss as the initial manifestation of the disease.

2. Case report

A 55-year-old man, with a history of gastritis, sinusitis, mild smoking, a weight loss of about 20 kg in the last year and low back pain since the last month, and a family history of prostate cancer, presented to our department referring progressive visual blurring for the last 6 months, and painless severe bilateral decrease of the visual acuity in the last 7 days prior to our consultation.

Best corrected visual acuity (BCVA) was 20/125 in the right eye (RE) and 20/200 in the left eye (LE), while near vision was less than J14 in both eyes; ocular extrinsic motility and intraocular pressure were normal; pupils were isochoric and pupillary reflexes were sluggish. Anterior segment biomicroscopy was irrelevant and the fully dilated fundus examination by means of biomicroscopy and binocular indirect

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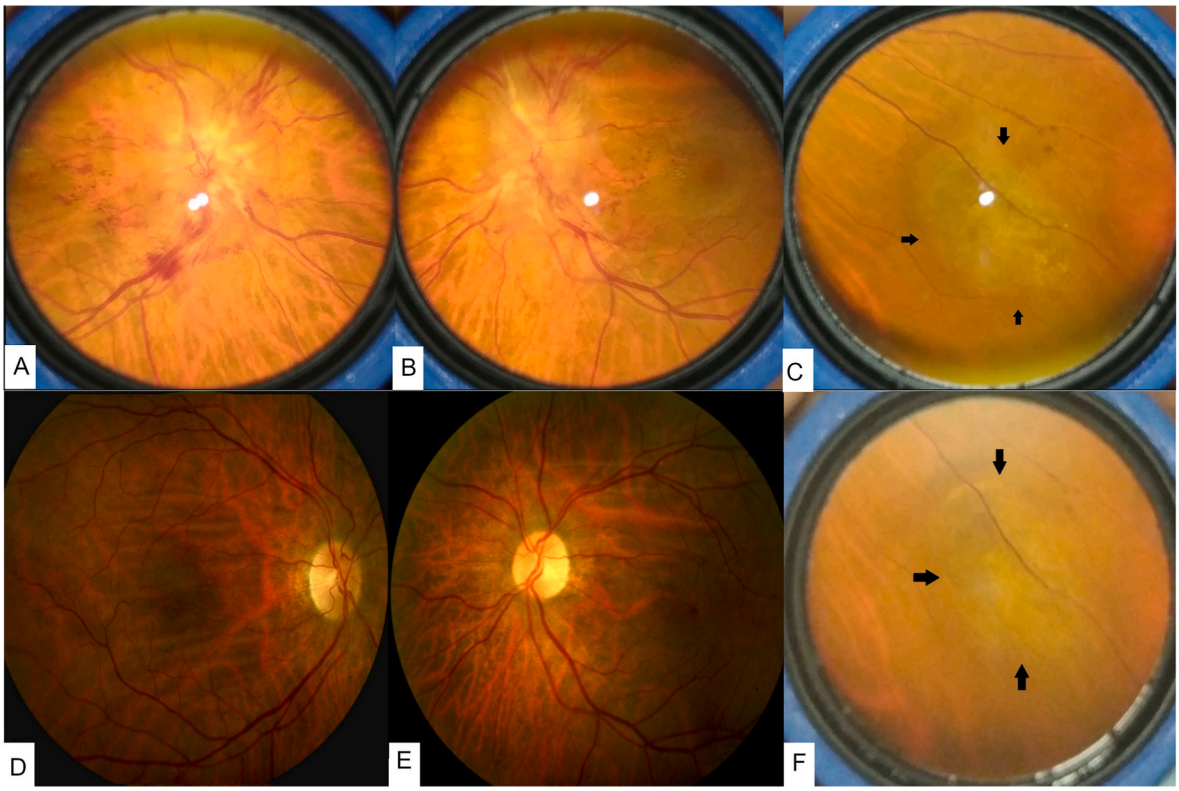

Fig. 1. Color fundus images of the right eye (A) and left eye (B), showing a marked bilateral papilledema, with optic disc's margins completely faded, obscuration of all vessels of the disc, slight venous dilatation, epi and juxta-papillary exudates and peripapillary superficial retinal hemorrhages. C: color fundus image of the temporal mid periphery of the right eye, showing a slightly prominent, gray-yellowish ovoid lesion with ill-defined edges (black arrows). D, E, and F: post systemic chemotherapy treatment; color fundus images of right (D) and left eye (E), showing bilateral complete resolution of optic disc swelling and retinal hemorrhages 18 months after initial visit; note the bilateral residual choroidal folds. F: color fundus image of the temporal mid-periphery of the right eye showing flattening and attenuation of the lesion described in Fig. 1C (black arrows) 18 months after initial visit. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

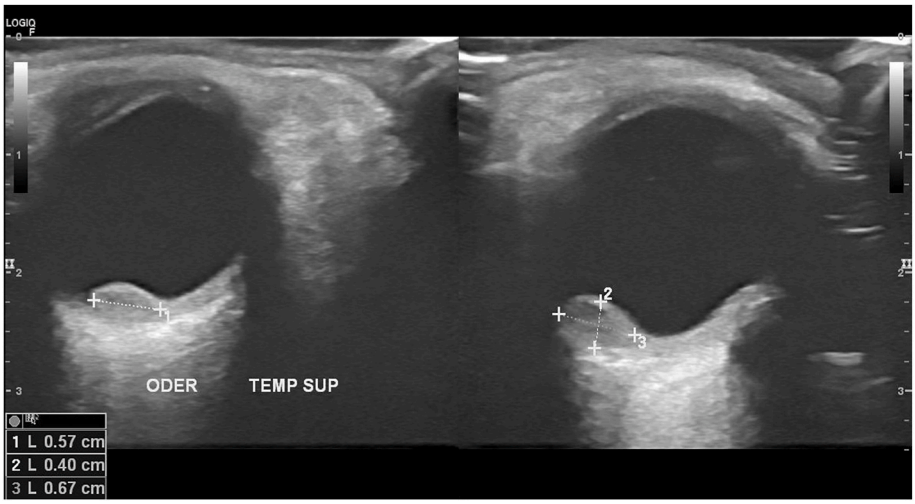

Fig. 2. B-ultrasound scan of the right eye at initial examination showing a choroidal dome-shaped protruding lesion with heterogeneous internal reflectivity.

ophthalmoscopy showed a bilateral marked optic disc swelling with slight disc elevation, epi and juxtapapillary superficial amorphous white infiltrates, discrete quantity of peripapillary and macular superficial hemorrhages and mild retinal vein dilatation (Fig. 1A and B). Besides, a gray-yellowish and slightly to moderately prominent, dome-shaped ovoid choroidal tumor with ill-defined borders and of about 4-disc diameters in its largest diameter was observed in the midperiphery of the supero-temporal quadrant in the RE (Fig. 1C) mostly isoechogenic but with some focal hypoechogenic areas in the mode B ultrasound, measuring 4mm thick and 6.7mm in its largest diameter (Fig. 2).

Neurological exam was normal. Blood tests showed normal values of protein C and erythrocyte sedimentation rate, but evidenced thrombocytopenia and anemia, and a prostate serum antigen (PSA) of 101 ng/ml.

A gadolinium-enhanced magnetic resonance imaging (MRI) of the

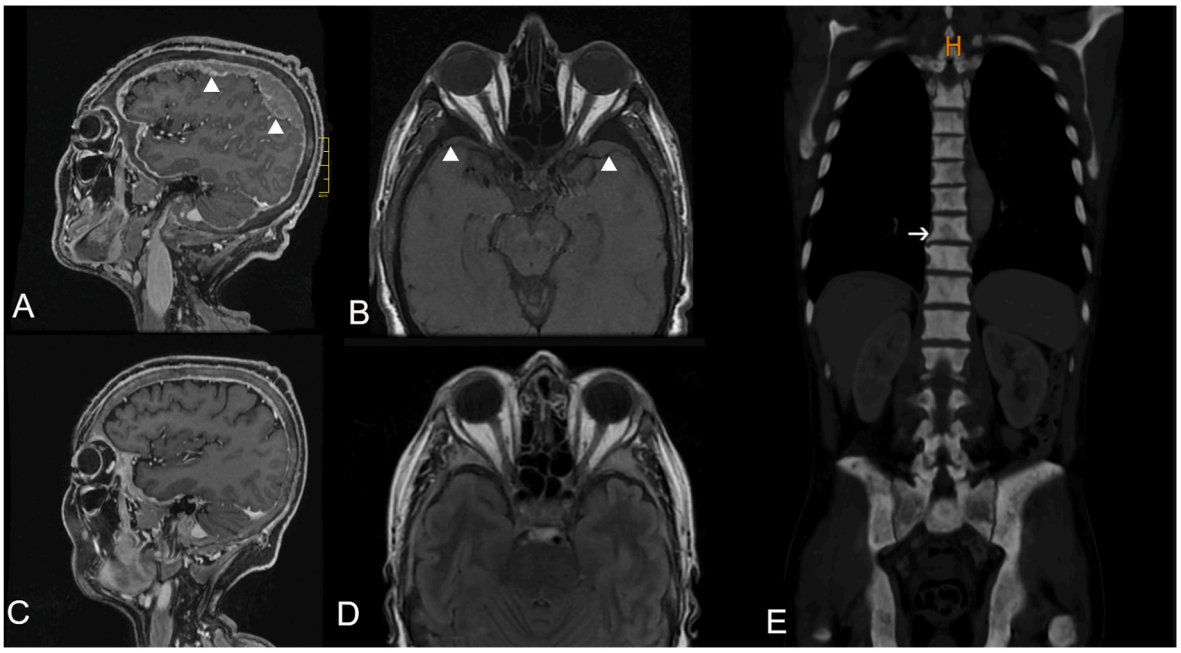

Fig. 3. A: sagittal T1-weighted gadolinium-enhanced brain magnetic resonance imaging (MRI) showing diffuse and nodular pachymeningeal metastatic thickening with peripheral gadolinium enhancement (arrowheads). B: horizontal T1-weighted brain MRI showing close relationship of both optic nerves with pachymeningeal metastatic involvement (arrowheads). C: sagittal T1-weighted gadolinium-enhanced brain MRI showing resolution of the diffuse and nodular pachymeningeal thickening described in Fig. 3A after initiation of specific oncologic treatment. D: horizontal T2-flair brain MRI showing good definition of both optic nerves after treatment. E: initial computed tomography scan of the thorax, abdomen and pelvis showing axial skeleton involvement; arrow pointing at one osteolytic lesion.

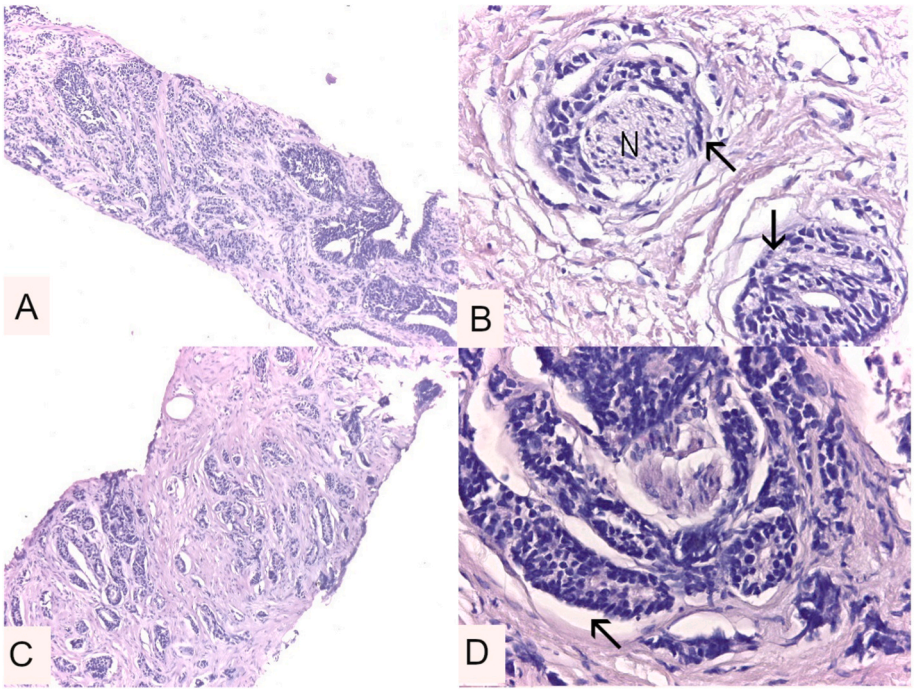

Fig. 4. Needle biopsy of the prostate gland (hematoxylin-eosin stain). A (low magnification) and B (high magnification) right lobe biopsy: moderate to poorly differentiated infiltrating adenocarcinoma (arrows); Gleason classification: 8 (5 + 3); International Society of Urological Pathology (ISUP) group classification: 4. C (low magnification) and D (high magnification): left lobe biopsy: well to moderately differentiated adenocarcinoma (arrow); Gleason classification: 6 (3 + 3). ISUP group classification: 1; also, it can be observed perineural infiltration in the right lobe (N:nerve).

brain showed midline shift and diffuse nodular pachymeningeal thickening on the left fronto-parieto-temporal region and on the right fronto-temporal region (Fig. 3A), and sheath enhancement of both intraorbital optic nerves.

Thoracic, abdominal and pelvic CT scan revealed diffuse bone rarefaction with mixed sclerotic and lytic lesions on the axial skeleton, pelvic and shoulder girdles. A lumbar puncture was performed with an elevated opening pressure of 44cmH2O. Laboratory examination of the cerebrospinal fluid (CSF) revealed turbidity, normal glucose (73mg/dL), and elevated proteins (67mg/dL), but cytological and microbiological tests were negative. Digital rectal examination showed induration of both prostate lobes. Prostate MRI evidenced a tumoral lesion in the peripheral area. Bone marrow aspiration revealed non-hematopoietic neoplastic cells, and open prostate biopsy confirmed the presence of an extensive low to moderately differentiated adenocarcinoma (Gleason 8) in the right lobe (Fig. 4A and B) and a well to moderately

differentiated adenocarcinoma (Gleason 6) in the left one (Fig. 4C and D). The patient underwent surgical castration followed by chemo/hormonal therapy (enzalutamide 160mg daily and 6 cycles of chemotherapy with docetaxel 120mg each 21 days, combined with zoledronic acid 4mg each 2 cycles) that produced a rapid improvement of visual acuity and of the ocular fundus abnormalities in both eyes. On the last follow-up control, 18 months after the initial visit, BCVA was 10/10 in both eyes, a complete resolution of the optic disc swelling, hemorrhages and deposits (Fig. 1D and E), and attenuation of the choroidal mass in the RE (Fig. 1F) were seen, as well as a complete resolution of the pachymeningeal thickening (Fig. 3C) with a normalization of PSA value up to 0.46ng/ml.

3. Discussion

Prostate cancer is asymptomatic in most cases, and neurological signs and symptoms, including visual symptoms, are very rare as the initial presentation of the disease.[9] Some reported cases mentioned the presence of diplopia or visual acuity decrease due to oculomotor palsy, choroidal metastasis or optic nerve infiltration as the initial feature of prostatic malignancy; however, in none of them an associated bilateral optic disc swelling with meningeal involvement causing dramatic visual loss has been described as was the case in our patient.[6–8]

Papilledema is typically associated with symptoms of elevated intracranial pressure, such as headaches, pulsatile tinnitus, transient visual obscurations and enlarged blind spots, but visual acuity is relatively spared.[10] Besides, patients with LC accompanied by ocular manifestations, such as vision loss, diplopia, ptosis, anisocoria, papilledema, and visual field defects, frequently have other neurologic symptoms.[11] that are either due to intracranial hypertension or involvement of certain neuroanatomic structures.[12]

Our patient, that presented with a rapid and painless severe bilateral visual loss, and despite an elevated lumbar puncture opening pressure, did not refer any other clinical or neurologic manifestation of intracranial hypertension and his disseminated malignant disease such as headache, seizures, gait difficulties, memory problems, nausea and vomiting, incontinence, fatigue, pain, cranial nerve palsies and confusion.

The diagnosis of leptomeningeal metastatic disease is made either by identifying malignant cells in CSF or by gadolinium-enhanced MRI, although there are high rates of false negative results with both methods.[13] Cytology of a single CSF analysis for neoplastic cells is positive only in 50% of cases but increases to more than 80% when two analyses are performed and to 90% with three.[14,15] Increased CSF pressure over 15 cmH_2O, elevated white blood cells (more than 5 cells/μL), elevated protein levels (50 mg/dL or more) and decreased glucose levels (under 40 mg/dL) may help make the diagnosis when malignant cells are not detected. When there is strong evidence of leptomeningeal carcinomatosis on MRI, cytological confirmation may not be necessary.[16] In our patient, despite a negative cytology result in CSF, lumbar puncture elevated opening pressure, proteinorachia, and Gadolinium-enhanced MRI images showing an extensive diffuse and nodular thickening of meningeal coats, were consistent with leptomeningeal carcinomatosis. Also, it may be speculated that the bilateral optic disc swelling and optic nerve enlargement could be attributed both to optic nerve carcinomatous infiltration and elevated intracranial pressure.

4. Conclusion

Bilateral visual loss may be the initial manifestation of leptomeningeal carcinomatosis from an ignored prostate cancer, and prompt diagnosis is crucial in order to improve the quality of life of a critically ill patient with an otherwise silent disseminated prostate cancer associated with intracranial metastatic disease. Middle age asymptomatic men consulting for visual loss and presenting with optic disc swelling should thoroughly be evaluated to rule out leptomeningeal carcinomatosis complicating a prostate cancer.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Patient consent

Consent to publish the case report was not obtained. This report does not contain any personal information that could lead to the identification of the patient.

Declaration of competing interest

All the authors have no financial disclosures.

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