



## Progressive vision loss as the initial symptom of Prostate Cancer

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### ABSTRACT

Although it may vary between countries, since the prostate specific antigen screening era, metastatic prostate cancer at diagnosis accounts for approximately 10% of cases. Intracranial dural metastases are uncommon, but when present they may lead to an increase in intracranial pressure that can subsequently damage intracranial structures, such as the cranial nerves. Prolonged intracranial hypertension can cause optic nerve ischemia, leading to progressive and irreversible vision loss if untreated, hence the importance of anamnesis, complete physical examination, and clinical suspicion.

### 1. Introduction

Prostate cancer (PCa) is the most frequent urogenital neoplasm; actually, it represents the second leading cause of death by cancer in men in the United States<sup>1</sup> and Europe.<sup>2</sup> Pelvic lymph nodes and axial skeleton are the most common metastatic sites.<sup>3</sup> Central nervous system (CNS) metastases are unusual, however specifically in the dura, are extremely rare.<sup>4</sup> Neurological symptoms usually develop due to high intracranial pressure (ICP), however, loss of visual acuity occurs rarely. There are a few cases reported in literature of progressive loss of visual acuity in patients with prostate cancer metastases in the dura.

### 2. Clinical case

58 years-old man, with history of left pelvic limb deep vein thrombosis and pulmonary embolism who underwent thrombectomy and vena cava filter (VCF) placement in 2013 and further anticoagulation therapy with rivaroxaban. The patient seeks medical attention in 2018 at the emergency department due to 8 months of bilateral progressive loss of visual acuity that ended in blindness, and holocranial headache, nausea and vomiting increased by Valsalva maneuver.

On physical examination 15 points on Glasgow Coma Scale, normal sized pupils, preserved pupillary light and consensual reflexes. Bilateral papilledema was observed at funduscopy. Digital rectal examination

(DRE): normotonic anal sphincter and both prostatic lobes indurated (T2c). Limbs with preserved mobility, strength and sensibility. Prostate specific antigen (PSA) 1500 ng/mL, coagulation tests were within normal ranges. Disseminated proliferative bone disease and leptomeningeal enhancement was found on MRI (*Image 1*). PET/CT showed abnormal uptake in intercavo-aortic, iliac and pelvic lymph nodes, cervical and lumbar spine, bilateral humeral head and the prostate (*Image 2*).

For high ICP, decompressive craniectomy and dura mater biopsies were taken. Results showed moderately differentiated metastatic adenocarcinoma, positive PSA immunohistochemical stain supported diagnosis of metastatic PCa (*Image 3*).

After craniectomy, androgen deprivation therapy (ADT), Degarelix, was started with headache remission at 3 months, but no vision recovery. After 6 months on ADT, PSA value decreased to 0.38 ng/mL, with no vision recovery. Patient died 12 months after diagnosis.

### 3. Discussion

CNS metastases in PCa are uncommon, and usually present in patients with known PCa diagnosis, unlike this case, in which PCa was later diagnosed. Intracranial metastases in PCa patients are between 1 and 6%: the dura mater is the most common site, with spread to leptomeninges in 67%, cerebral cortex 25%, and cerebellum 8%.<sup>5</sup> Dural

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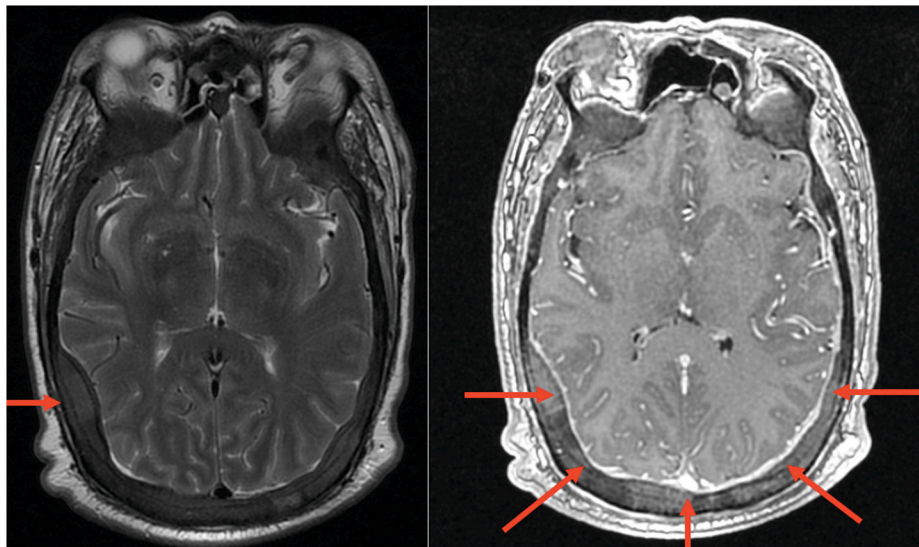
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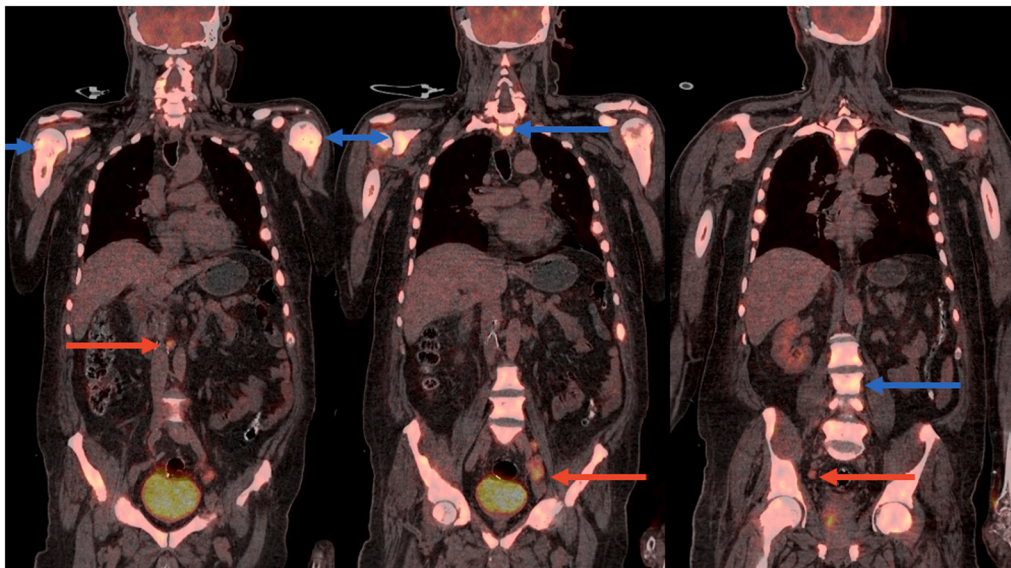
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**Image 1.** Leptomeningeal enhancement was found on MRI. (Red arrows point out the Leptomeningeal enhancement). (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)



**Image 2.** PET/CT with abnormal uptake in intercostal-aortic iliac and pelvic lymph nodes (Red arrows), cervical and lumbar spine and bilateral humeral head (Blue arrows) and the prostate. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

metastases, can develop a subdural hematoma and lead to impaired neurological function, or they may increase ICP causing injuries to adjacent structures, such as the cranial nerves,<sup>4</sup> including the optic nerve, leading to visual loss, as in our patient. A review from 16,280 PCa patients from the MD Anderson Cancer Center identified that 103 (0.63%) had cerebral parenchyma metastases and only 7% of these had visual field defects,<sup>5</sup> therefore we can assume that loss of visual acuity is an extremely rare symptom in PCa patients, and even more as the initial manifestation of the disease. Furthermore, CNS metastases are considered a rare terminal event with death likely to happen within a year of metastases diagnosis regardless of treatment.<sup>5</sup>

#### 4. Conclusion

Clinical manifestation of loss of visual acuity in PCa, secondary to CNS metastases, is an extremely rare symptom and confers a worse prognosis. The screening of PCa is important to reduce the risk of

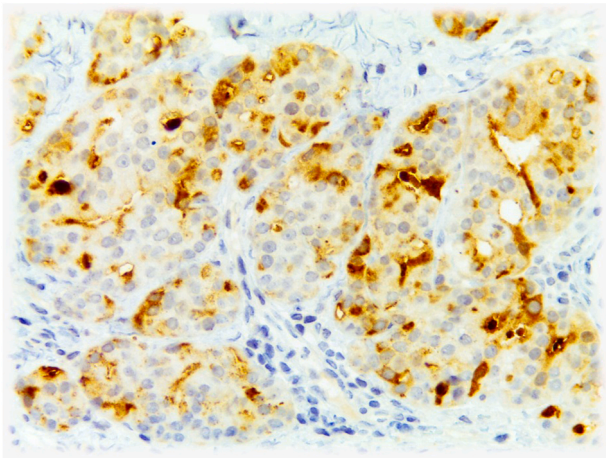
advanced disease. AUA guidelines recommend that with suspicion of advanced PCa with no prior histological confirmation, clinicians should obtain tissue for diagnosis from the primary tumor site or metastases when clinically feasible, and in patients with high tumoral volume it recommends ADT + Cht or ARAT.

#### CRediT

**Davila Legorreta:** Conceptualization, Methodology. **Rodenas Gil:** Data curation, Writing- Original draft preparation. **Navarro Ruesga:** Writing- Original draft preparation, Visualization, Investigation. **Can-tellano-Orozco, Pacheco-Gahbler:** Supervision. **Santa Maria Orozco:** Writing - Reviewing and Editing.

#### Declaration of competing interest

None.



**Image 3.** Positive PSA immunohistochemical stain supported diagnosis of metastatic PCa.

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