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Source / Izvornik: **Collegium Antropologicum, 2009, 33, 1421 - 1422**

**Journal article, Published version**

**Rad u časopisu, Objavljena verzija rada (izdavačev PDF)**

Permanent link / Trajna poveznica: <https://um.nsk.hr/um:nbn:hr:105:942631>

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Download date / Datum preuzimanja: **2024-12-27**



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# Prostatic Carcinoma Metastatic to the Optic Nerve

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## ABSTRACT

*Optic nerve can be infiltrated with various tumors and inflammatory processes, with a considerable prevalence of primary over secondary tumors. Metastases of gastric carcinoma to the optic nerve are less frequently, and those of prostatic carcinoma very infrequently observed. A 66 year-old man presented with metastasis to the optic nerve with consequential vision loss to the level of light perception developed two years after prostatic surgery. Systemic therapy with methylprednisolone resulted in a satisfactory vision function recovery. According to literature data, prostatic carcinoma metastases to the optic nerve occur very rarely. In our patient with the optic nerve infiltration found on the first clinical examination, papillary edema was associated with the signs of optic nerve functional impairment (visual acuity, visual field, unilateral RAPD). An infiltrative process involving a distal portion of the optic nerve usually does not cause papillary alterations, and produces a clinical picture of retrobulbar optic neuropathy, such as that observed in our patient on the second clinical examination, showing the signs of optic nerve damage.*

**Key words:** metastases, optic nerve, prostatic carcinoma

## Introduction

Ocular metastasis always involves the uveal tract, especially the choroid. Papillary metastases have been exceptionally described, and represent only 5% of the ocular metastatic locations. Optic nerve can be infiltrated with various tumors and inflammatory processes, with a considerable prevalence of primary over secondary tumors. Secondary tumors usually infiltrate optic nerve metastatically or locally from invasive carcinomas and various lymphoreticular malignomas. Metastatic involvement is rarely seen and can be associated with metastases to the central nervous system, or with invasion from the orbit or choroid. Primary carcinomas that most commonly metastasize to the optic nerve by vascular dissemination are breast carcinoma in women and lung carcinoma in men. Metastases of gastric carcinoma to the optic nerve are less frequently, and those of prostatic carcinoma very infrequently observed<sup>1-6</sup>.

## Case Report

A 66 years old man was operated on for prostatic carcinoma. Two years after, his left eye vision gradually decreased to light perception in several days. A mild edema

of the optic nerve papilla was found by ophthalmoscopy. Computed tomography (CT) of the orbit was unremarkable. L4-L5 x-ray indicated secondary osteoplastic changes to the vertebral trunks as well as changes in the sacrum and pelvis. Electroencephalography revealed dysrhythmic changes, whereas brain CT showed no meta localizations. Systemic therapy with methylprednisolone resulted in a fast vision recovery to 1.0. Remission of the initially pronounced relative afferent pupillary defect (RAPD) was recorded.

The patient presented again 5 months later for relapsing left eye vision loss to uncertain light perception. X-ray of the optic canals showed marked contour demineralization on the left, while CT of the orbits pointed to thickening of the left optic nerve. VEP flash lamp showed a left P-100 wave of prolonged latencies and low amplitudes. Cervical spine x-ray now indicated osteoplastic changes in the trunk region of almost all cervical vertebrae. Systemic therapy with methylprednisolone led to the left eye vision recovery to uncertain 1.0, while Goldmann perimetry also showed good recovery with the absence of II isopter. The pronounced RAPD observed at the onset of the new visual impairment attack was found to subside.

## Discussion

According to literature data, prostatic carcinoma metastases to the optic nerve occur very rarely<sup>7–9</sup>. Several cases of prostatic carcinoma metastatic to the choroid, orbit and ocular adnexa have been described<sup>10–15</sup>. Kattah et al. presented four cases of optic neuropathy due to prostatic carcinoma metastasizing to the optic canal, whereas metastases directly affecting the optic nerve are by far less common<sup>16</sup>. Zappia et al. found only two reports in English describing isolated optic nerve involvement by prostatic metastases<sup>2</sup>. Vogelzang et al. reported a case of blindness, secondary to hormone-refractory prostate cancer, occurring 7 years after the diagnosis of metastatic prostate cancer and 3.5 years after the clinical onset of the hormone-refractory state<sup>17</sup>. The optic nerve infiltration before or immediately after the lamina cribrosa leads to the formation of papillary edema. In case

of prelaminar infiltration, papillary edema is caused by the infiltrative process and is not a true papillary edema. When the portion behind the lamina cribrosa is involved by infiltration, disk elevation is caused by true papillary edema, and cannot be differentiated from a papillary edema caused by, e.g., intracranial pressure increase, ischemia or inflammation.

In our patient with the optic nerve infiltration found on the first clinical examination, papillary edema was associated with the signs of optic nerve functional impairment (visual acuity, visual field, unilateral RAPD).

An infiltrative process involving a distal portion of the optic nerve usually does not cause papillary alterations, and produces a clinical picture of retrobulbar optic neuropathy, such as that observed in our patient on the second clinical examination, showing the signs of optic nerve damage<sup>18</sup>.

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## METASTAZA KARCINOMA PROSTATE U VIDNOM ŽIVCU

### SAŽETAK

Optički živac može biti infiltriran različitim tumorima i upalnim procesima, s većom učestalošću primarnih tumora. Metastaze karcinoma želuca, a poglavito prostate vrlo su rijetke. Cilj ovoga rada je prikazati 66 godišnjeg muškarca u kojeg se metastaza vidnog živca manifestirala 2 godine nakon operacije prostate s edemom glave vidnog živca i posljednim oštećenjem vida. Sustavna steroidna terapija dovela je do oporavka vidne funkcije. Treba istaknuti da je prikazan bolesnik s rijetkim oblikom sekundarne tumorske infiltracije vidnog živca, u kojeg je nađen edem glave vidnog živca praćen znacima oštećenja vidne funkcije (vidna oštrina, vidno polje, RAPD). Kada infiltrativni proces zahvati distalni dio vidnog živca ne nastaje edem papile, ali su prisutni znaci retrobulbarne optičke neuropatije.