

# Prostatic adenocarcinoma brain metastases

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Prostatic adenocarcinoma (PCa) is the second most common malignancy in men which metastasizes mostly to pelvic lymph nodes, lungs and skeletal system.

**Prostate cancer**, rarely metastasizes to the brain.

Early autopsy study by Saitoh et al reported a 1.1% rate of cerebral metastasis amongst 1,885 patients with prostate cancer <sup>1)</sup>. Such rate of cerebral metastasis is noted to be even lower in clinical studies, with only 4 out of 3,732 patients with prostate cancer were found to have intracranial involvement <sup>2)</sup>. Despite the rarity of this condition, cerebral metastases from prostatic carcinoma are relatively well described in the literature <sup>3) 4) 5) 6) 7) 8)</sup>.

Intracranial metastasis are exceedingly rare and usually involves leptomeninges, cerebrum and cerebellum, but brain metastases without other sites of metastatic disease are exceedingly rare and may be more common with ductal adenocarcinoma variant <sup>9)</sup>.

However, dural metastasis of PCa is exceedingly rare and only a few reports have been published in the literature <sup>10)</sup>.

Single metastasis from a prostate adenocarcinoma in the brainstem without systemic disease is exceptional. Due to the different diagnostic possibilities, biopsy should be performed in order to obtain a diagnosis, especially in the context of Muir-Torre syndrome <sup>11)</sup>.

Three cases reports about pituitary gland metastasis from carcinoma of the prostate and one with diabetes insipidus <sup>12) 13)</sup>.

Dorsi et al., lentiform dural metastasis and subdural collection simulated an epidural collection on noncontrast CT. When CNS involvement is observed in a PCa patient, it might be a result of vertebral metastases <sup>14)</sup>.

A common route of seeding to the spinal dura mater is via the valveless vertebral venous system (Batson's plexus) or by a direct extension of calvarial lesions into the underlying dura <sup>15)</sup>.

Nevertheless, some authors believe that all metastases occur by way of the arterial system, with prior lung implantation being another causative factor <sup>16)</sup>.

## Case series

### 1976

Between 1959 and 1971 there were 91 patients with clinically diagnosed prostatic carcinoma who were autopsied at Roswell Park Memorial Institute. In four of these 91 (4.4%) intracerebral metastasis were found at autopsy, but only in one of these four was the diagnosis arrived at pre-mortem. This

report describes the diagnosis and management of intracerebral metastasis from prostate carcinoma. It appears, on the basis of our initial experience, that the clinical diagnosis of this entity deserves more frequent consideration <sup>17)</sup>.

## Case reports

Two patients with parenchymal brain metastases from adenocarcinoma of the prostate (CaP) are presented. Both patients had the diagnosis made antemortem by biopsy, and tumor immunoreactivity for prostatic phosphatase and prostate specific antigen confirmed prostatic origin. Brain metastases from prostatic adenocarcinoma are unusual, occurring in only 0.2 per cent of all patients with CaP. Patients present with symptoms of motor dysfunction, headache, and seizures. The mean age at presentation of brain metastases from CaP is fifty-nine years old, which is younger than most patients with CaP. The majority of patients die within weeks after diagnosis. Craniotomy with tumor debulking, radiation therapy, and androgen deprivation may be useful in prolonging survival. All reported cases of CaP metastatic to brain have been histologically moderately differentiated or poorly differentiated. The periprostatic venous plexus is considered the most likely route of tumor spread to the brain <sup>18)</sup>.

<sup>1)</sup>

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Catane R, Kaufman J, West C, Merrin C, Tsukada Y, Murphy G P. Brain metastasis from prostatic carcinoma. *Cancer*. 1976;38(06):2583-2587.

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<sup>7)</sup>

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Maiuri F, Corriero G, D'Amico L, Iaconetta G. Cerebellar metastasis from prostatic carcinoma simulating, on CT-scan, a cerebellopontine angle tumor. Case report. *Acta Neurol (Napoli)* 1989;11(01):21-24.

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Yilmaz H, Kaya M, Can M, Ozbek M, Keyik B. Metastatic prostate adenocarcinoma presenting central diabetes insipidus. *Case Rep Med*. 2012;2012:452149. doi: 10.1155/2012/452149. Epub 2012 Mar 18. PubMed PMID: 22474455; PubMed Central PMCID: PMC3312572.

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Kleinschmidt-DeMasters BK. Dural metastases. A retrospective surgical and autopsy series. *Arch Pathol Lab Med*. 2001;125:880-87.

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