CASE REPORT

Isolated Oculomotor Nerve Palsy Due to Metastasis of Prostatic Cancer to the Cavernous Sinus

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ABSTRACT

A 69-year-old man with prostatic cancer under palliative care developed isolated right-sided oculomotor nerve palsy with pupillary impairment and persistent ocular pain. Cranial magnetic resonance imaging demonstrated metastasis of prostatic cancer to the right-sided cavernous sinus and orbital apex. In the English language literature, there are only six reported cases of isolated oculomotor nerve palsy secondary to prostatic cancer. In all cases, although there was metastatic lesion in the vicinity of the cavernous sinus, ocular pain did not develop. In the current patient, because metastatic tumour might involve the right-sided oculomotor nerve as well as lacrimal nerve, ocular pain developed.

ARTICLE HISTORY

Received 1 December 2015
Revised 2 January 2016
Accepted 9 January 2016

KEYWORDS

Lacrimal nerve; ocular pain; orbital apex; painful ophthalmoplegia; superior orbital fissure

A 69-year-old Japanese man having prostatic cancer with multiple bone metastases, multiple lymph node metastases, and bone marrow infiltration was admitted to our palliative care unit. Oral administration of betamethazone at 3 mg/day underwent for general malaise and anorexia. There was no other contributory medical history. Two weeks later, the patient complained of right-sided persistent and mild ocular pain, and binocular diplopia. Palpebral aperture measured 8.5 mm in the right eye and 9.0 mm in the left eye. The diameter of the pupil measured 2.5 mm in the right eye and 2.0 mm in the left eye in an illuminated room (Figure 1). Responses to light and near were sluggish in the right eye. Restriction of elevation, depression, and adduction were observed in the right eye (Figure 1). Because intorsion of the right eye was observed at the leftward and downward gazes, there was no right-sided trochlear nerve palsy. Corneal sensation was normal, and corneal reflex was brisk in both eyes. There were no other neurological abnormalities. Consequently, the patient was diagnosed as having isolated oculomotor nerve palsy on the right side. Cranial gadolinium-enhanced T1-weighted magnetic resonance

imaging (MRI) demonstrated a massive lesion in the cavernous sinus and orbital apex on the right side (Figure 2). Using 5 days of intravenous methylprednisolone at 125 mg/day, although right-sided ocular pain disappeared, right-sided oculomotor nerve palsy did not improve. Therefore, Tolosa-Hunt syndrome was excluded. The patient was diagnosed as having metastasis of prostatic cancer to the right-sided cavernous sinus and orbital apex. Based on the patient's consent, oral administration of betamethazone at 3 mg/day continued as palliative care. Six weeks later, the patient died of cancerous cachexia. Autopsy was not permitted.

In the English language literature, there are only six reported cases of isolated oculomotor nerve palsy secondary to prostatic cancer.^{1–6} In 1988, Svare et al.¹ noted a first reported case of isolated unilateral oculomotor nerve palsy secondary to prostatic cancer. Detailed finding of oculomotor nerve palsy and accompanied symptoms were not described. Skull roentgenogram demonstrated metastatic lesion near the cavernous sinus. Cranial computed tomography and MRI were not performed. Ransom et al.² noted a case of isolated right-sided oculomotor nerve palsy

Figure 1. Restriction of elevation, depression, and adduction were observed in the right eye (upper panels). Palpebral aperture measured 8.5 mm in the right eye and 9.0 mm in the left eye. The diameter of the pupil measured 2.5 mm in the right eye and 2.0 mm in the left eye in an illuminated room (lower panel).

Figure 2. Cranial gadolinium-enhanced T1-weighted magnetic resonance imaging (A: axial image, B: coronal image) demonstrated a massive lesion in the right-sided cavernous sinus (short arrows) and orbital apex (long arrows).

secondary to prostatic cancer. Two months before oculomotor nerve palsy, right-sided cervical radiculopathy developed. Finding of the pupil was not described. Cranial computed tomography

demonstrated lytic area in the clivus. Cullom and Savino³ reported a case of isolated left-side oculomotor nerve palsy with pupillary involvement and frontal headache presenting as an initial manifestation of

prostatic cancer. Cranial MRI demonstrated a massive lesion arising from the left-sided aspect of the pituitary gland extending laterally into the left-sided cavernous sinus. Navarro et al.⁴ described a case of isolated right-sided oculomotor nerve palsy without pupillary involvement as an initial manifestation of prostatic cancer. Whether there was headache or not was not noted. Cranial MRI demonstrated a massive lesion in the right-sided cavernous sinus. Izumi et al.⁵ noted a case of isolated oculomotor nerve palsy on the right side secondary to prostatic cancer. Whether there was headache or not and finding of the pupil were not mentioned. Cranial computed tomography demonstrated multiple brain metastases and osteoblastic metastasis in the right-sided processus clinoideus posterior. Petersson et al.⁶ described a case of isolated left-sided oculomotor nerve palsy due to metastasis of prostatic cancer to the sphenoid sinus extending to the cavernous sinus on the left side. Finding of the pupil was not reported. Headache proceeded to oculomotor nerve palsy a few months. As a result, among these six reported cases,^{1–6} pupillary impairment was detected in one case,³ and pupil was spared in one case.⁴ However, in four cases,^{1,2,5,6} pupillary finding was not noted. Although headache developed in two cases,^{3,6} there were no reported cases of ocular pain. Metastatic tumour of prostatic cancer was detected in the vicinity of the cavernous sinus in all six reported cases.^{1–6}

In our patient, based on cranial MRI finding, metastatic tumour in the cavernous sinus might invade through the superior orbital fissure to the orbital apex and along to the orbital lateral wall. Therefore, because metastatic tumour might stimulate the lacrimal nerve on the right side, and right-sided persistent ocular pain developed. Right-sided persistent ocular pain was not severe, probably because betamethasone

at 3 mg/day had been already performed for palliative care. In conclusion, this is a first reported case of isolated oculomotor nerve palsy with ocular pain secondary to prostatic cancer. We emphasize that in cases of isolated oculomotor nerve palsy in prostatic cancer, metastatic lesion in the vicinity of the cavernous sinus should be suspected. Furthermore, persistent ocular pain may be an indicating sign that metastatic tumour in the cavernous sinus invade through the superior orbital fissure to the orbital apex.

Declaration of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing the paper

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