Transient Burning Pain in the Ipsilateral Orbit as an Initial Manifestation of Dorsal Pontine Hemorrhage
—Case Report—

Hikaru DOI, Shuji HASHIMOTO*, and Jun-ichi KIRA

Department of Neurology, Neurological Institute, Graduate School of Medical Sciences, Kyushu University, Fukuoka; *Shirakawa Branch, Tenri Hospital, Tenri, Nara

Abstract

A 45-year-old man with a past history of hypertension and hyperlipidemia presented with right dorsal pontine hemorrhage manifesting as transient burning pain in the right orbital region, followed by numbness and mild weakness of the left side of the body. Magnetic resonance imaging showed a hyperintense lesion in the right dorsalpons on T₁-weighted and T₂-weighted images, but no other abnormalities suggesting vascular lesions in the midbrain, medulla, cerebellum, or cerebrum. These findings were consistent with the subacute stage of small pontine hemorrhage. He was treated to decrease his blood pressure. The symptoms gradually improved and he has suffered neither recurrence of the orbital pain nor migraine for several months after the first episode of headache. The trigeminal nociceptive system in the dorsal lateral pons may be linked to this characteristic pain, as suggested by reports of secondary migraine caused by cavernous hemangioma and arteriovenous malformation, and activation of the dorsal lateral pons during migraine attacks on positron emission tomography.

Key words: pontine hemorrhage, trigeminal nerve, facial pain

Introduction

Pontine hemorrhage usually manifests as headache centered in a central or occipital region, probably caused by the stretching or distortion of pain-sensitive structures such as blood vessels, especially the proximal cerebral and dural arteries. We report a case of right dorsal pontine hemorrhage first manifesting as transient pain in the ipsilateral orbital region, followed by the main symptoms, which included ataxic hemiparesis and sensory impairment on the contralateral side.

Case Report

A 45-year-old man with a past history of hypertension and hyperlipidemia suffered sudden onset of burning pain in the right orbital region while driving. He suffered lacrimation but no nasal discharges. He was unable to do anything except remain still and quiet during the orbital pain. Thirty minutes later, he developed numbness and mild weakness on the left side of his body, including his face. He also noticed mild nausea and light headedness. The orbital pain lasted for about 1 hour and then almost completely subsided. His past and family histories were non-contributory regarding migraine or other primary headaches. He was admitted to a hospital and a diagnosis of pontine hemorrhage was made based on the finding of computed tomography.

Fifteen days after the episode of pain, he attended our clinic for further evaluations. Physical examination found his blood pressure was 160/98 mmHg. Neurological examination revealed mild weakness and ataxia of the left upper and lower extremities, and moderately decreased touch sensation on the left side of the face, and the left upper and lower extremities. No abnormalities were noted on the right. Magnetic resonance imaging showed a hyperintense lesion in the right dorsal pons on T₁-weighted and T₂-weighted images (Fig. 1), but no other abnormalities suggesting vascular lesions in the midbrain, medulla, cerebellum, or cerebrum. These findings were consistent with the subacute stage of small
Transient Orbital Pain and Pontine Hemorrhage

The present case of transient burning pain in the right orbital region was an initial manifestation of pontine hemorrhage. He was treated to decrease his blood pressure. The symptoms gradually improved and he has suffered neither recurrence of the orbital pain nor migraine for several months after the first episode of headache.

**Discussion**

Transient facial pain has been reported as an initial symptom in a case of the temporal lobe hemorrhage, whereas cases of acute brainstem insult have all involved ischemia: transient salt and pepper pain on the face in acute brainstem ischemia, burning oral and mid-facial pain in ventral pontine infarction, and transient eye and nose pain in 3 cases of pontine infarction. The present case has similar characteristics: Transient pain was the initial manifestation preceding other neurological symptoms, the lesion was located in the dorsal pons, and the transient pain was located in the ipsilateral trigeminal nerve territory.

One possible mechanism involves transient stimulation of the main sensory nucleus or the descending tract of the trigeminal nerve on the right by the hemorrhage, resulting in the ipsilateral facial pain (Fig. 2A). Another possible mechanism has the lesion affecting the nucleus reticularis parvocellularis (Rpc) area, resulting in the transient orbital pain, as reported previously. Briefly, the neurons located in the Rpc ventromedially adjacent to the trigeminal subnuclei oralis and interpolaris project to the subnucleus reticularis ventralis (SRV) neurons in the medulla oblongata mainly on the ipsilateral side (Fig. 2B). The SRV includes trigeminal nociceptive neurons that are activated by painful stimulation on the cornea, pinna, nose, face, and tongue mainly on the ipsilateral side.

Migraine or migraine-like headache may develop following brainstem hemorrhage caused by cavernous hemangioma and arteriovenous malformation (AVM). Positron emission tomography studies have revealed that significant activation is seen in the brainstem, especially in the dorsal lateral pons, in patients with migraine without aura and migraine triggered by 1,2-glyceryl trinitrate. Therefore, involvement of the dorsal lateral pons is thought to initiate migraine or migraine-like headache. Interestingly, one case involved a lesion located in almost the same region as in the present case. Although our case could not be distinguished from cavernous hemangioma or AVM and only showed one episode of headache, the present case together with these other migraine cases indicate that dorsal pontine lesion can produce painful sensations restricted to the trigeminal nerve territory.

The present case of transient burning pain in the right orbital region was an initial manifestation of...
right dorsal pontine hemorrhage. This case suggests that transient unilateral orbital pain can be the initial sign of pontine hemorrhage.

References


Address reprint requests to: Jun-ichi Kira, M.D., Department of Neurology, Neurological Institute, Graduate School of Medical Sciences, Kyushu University, 3–1–1 Maidashi, Higashi-ku, Fukuoka 812–8582, Japan.
E-mail: kira@neuro.med.kyushu-u.ac.jp