

A case of Tolosa-Hunt syndrome

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Tolosa-Hunt syndrome is a rare disease in children characterized by dull, persistent pain around the affected eye and ophthalmoplegia caused by granulomatous inflammation in the cavernous sinus, superior orbital fissure, or orbit. Although spontaneous remission can occur, corticosteroids frequently have a dramatic response; however, recurrence can transpire after complete remission. We report an 11-year-old girl with Tolosa-Hunt syndrome who responded to corticosteroid promptly, without complications, but suffered three recurrences of headache and retro-orbital pain and required maintenance on a low dose of steroid. (*Korean J Pediatr* 2006;49:696-699)

Key Words : Tolosa-Hunt syndrome, Painful ophthalmoplegia, Headache

Introduction

Painful ophthalmoplegia (ophthalmoplegia associated with ipsilateral retro-orbital or periorbital pain) is a rare complaint in children, with many etiologies. They include trauma; vascular causes such as carotid or cerebral aneurysms, carotid-cavernous fistulae, and cavernous sinus thrombosis; tumors; infection or inflammation such as sinusitis, periostitis, aspergillosis, mucormycosis, sarcoidosis, and Wegener's granulomatosis; diabetic neuritis; Horton's disease; ophthalmoplegic migraine; and Tolosa-Hunt syndrome (THS)¹⁾.

THS is one of the unusual causes of painful ophthalmoplegia, and involves granulomatous inflammation in the cavernous sinus, superior orbital fissure, or orbit²⁾. Since Tolosa initially described a group of patients with TSH in 1954³⁾, the diagnostic criteria for THS have been changed and were recently revised by the International Headache Society²⁾. The current criteria are one or more episodes of unilateral orbital pain persisting for weeks if untreated; paresis of one or more of the third, fourth, and sixth cranial nerves or the demonstration of a granuloma on magnetic resonance imaging (MRI) or biopsy; paresis that coincides with the onset of pain or follows it within 2 weeks; and pain and paresis that resolve within 72 hours when treated

adequately with corticosteroids, after excluding other causes.

Although there have been several reports on THS, only a few children with THS have been reported in the pediatric literature¹⁾ since Terrence and Samaha⁴⁾ reported the first pediatric patients in 1973. To our knowledge, this is the first case of THS reported in a Korean child.

Case Report

A previously healthy 11-year-old girl was referred to Chonnam National University Hospital (CNUH) after 10 days of a severe, steady, temporal headache associated with vomiting and diarrhea. Five days after the onset of her headache, she developed left retro-orbital pain with limitation of eyeball movement and diplopia. There was no preceding infection, fever, or head injury. Her family history was unremarkable, with no report of ophthalmoplegia, headache, or migraine.

Physical examination revealed palsy of the left third cranial nerve characterized by lateral deviation of the left eye at rest, inability of adduction and upward/downward gaze of the left eye, and nearly complete ptosis of the left eyelid. The pupil reacted to light and was not dilated. The visual acuity and fundoscopic examination of both eyes were normal. Corneal and facial sensation were intact, which was suggestive of an intact trigeminal nerve. There were no other neurological or systemic signs or symptoms.

Laboratory investigations were normal, including a complete blood picture, C-reactive protein, erythrocyte sedi-

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mentation rate, and electrolytes, as was the cerebrospinal fluid, including microscopy, biochemistry, and bacterial and viral cultures. The visual evoked potential showed abnormally delayed peak latencies on the left side of the face, but the cranial nerve electromyogram was normal. MRI of the brain showed a bulging, convex isointense lesion in the left cavernous sinus on both T1- and T2-weighted images (Fig. 1A, 1B). The lesion was intensely enhanced on contrast injection (Fig. 1C, 1D). The patency of the left internal carotid artery was preserved and the circle of Willis was unremarkable.

The patient's clinical characteristics and radiological findings were suggestive of THS. Therefore, treatment

with prednisolone 20 mg/dose three times a day (about 1 mg/kg/day) was begun and proved effective at slowly reducing the symptoms. The headache and left retro-orbital pain disappeared after 7 days of treatment, but the left eye ptosis and ophthalmoplegia required 3 weeks for complete resolution. After 3 weeks at the above dose, the prednisolone dose was reduced gradually. Brain MRI 3 months later showed almost complete resolution of the lesion. However, while tapering the prednisolone dose, the patient had again complained of temporal headache and left (ipsilateral) or right (contralateral) retro-orbital pain. However, there was no ophthalmoplegia or recurrent lesions on the brain MRI. She was readmitted to CNUH 6, 8, and 10 months

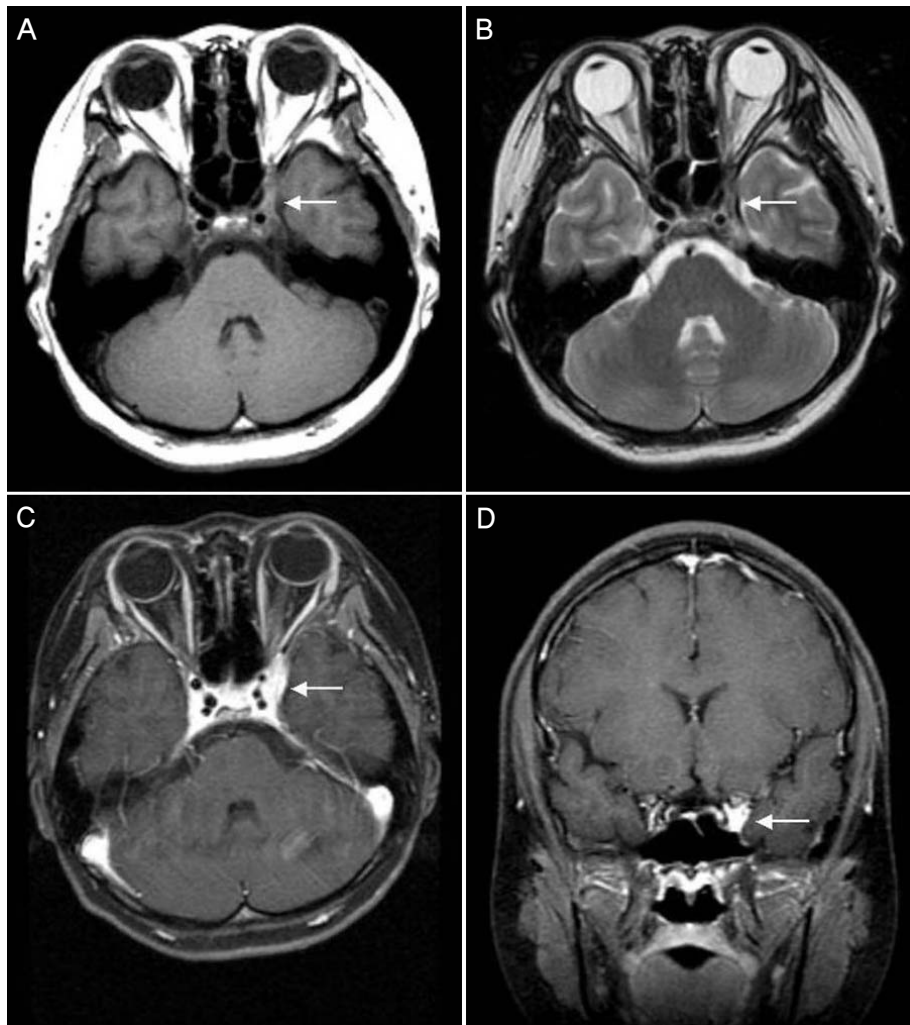


Fig. 1. (A) Axial T1-weighted image; (B) axial T2-weighted image; (C) axial T1-weighted image with gadolinium injection and fat saturation; (D) coronal T1-weighted image with gadolinium injection and fat saturation. MRI of the brain on admission shows an abnormal soft tissue mass occupying the left cavernous sinus (arrows) with bulging and convexity. The lesion is intensely enhanced by contrast injection (C, D).

after the initial admission. For 11 months, she has been maintained on low-dose prednisolone.

Discussion

THS is thought to result from inflammation of the cavernous sinus, resulting in compression of the cranial nerves and narrowing of the carotid artery¹, although the precise etiology of THS and the factors triggering the inflammation in TSH remain unknown. As the internal carotid artery and some cranial nerves (III, IV, the ophthalmic divisions of V and VI) pass through the cavernous sinus in close proximity¹, any process that causes the intracavernous sinus pressure to rise can cause extrinsic compression of these structures⁵.

THS is usually reported as unilateral, with no predisposition for the right or left cavernous sinus, while 4.1-5% of THS is bilateral⁶. THS has been reported at ages from 3 to 75 years, and occurs equally in males and females⁷. The cranial nerves involved in THS include the third cranial nerve in 85% of cases, the sixth cranial nerve in 70%, the first branch of the trigeminal nerve in 30%, and the fourth cranial nerve in 29%⁷. Facial palsy is not rare and systemic symptoms, such as back pain, arthralgia, chronic fatigue, and gastrointestinal upset, are also noted^{8, 9}.

The diagnosis of THS requires the exclusion of other known causes of painful ophthalmoplegia, such as infection, neoplasm, or vascular lesions, and is established based on the accompanying clinical symptoms and neuroradiologic findings¹⁰. As the precarious location and small size of the lesion in the cavernous sinus make surgical biopsy technically difficult and dangerous, imaging techniques play a major role in the diagnostic process¹⁰. In cases in which a surgical biopsy was performed, the pathological findings include nonspecific granulation tissue in the cavernous sinus, pachymeningitis of the superior orbital fissure, and necrotizing inflammation of the intracavernous and intracranial parts of the internal carotid artery¹¹. Radiologic evaluation consisting of plain X-rays, orbital venography, cerebral angiography, and computed tomography (CT) was widely used for the diagnosis of THS before the era of MRI, which is now considered the best method for detecting a cavernous sinus abnormality¹². In THS, MRI may reveal convex enlargement of the cavernous sinus with abnormal soft tissue that is isointense with the gray matter in pre-contrast T1-weighted images and isointense or

slightly hypointense on T2-weighted images¹³. The signal intensity of this abnormal soft tissue increases markedly on post-contrast MRI¹³. However, the MRI findings are nonspecific for THS because meningioma, lymphoma, and sarcoidosis can have similar findings to THS, and THS can also have normal MRI findings¹³. Dynamic MRI provides additional information about the detailed structure of the cavernous sinuses and the pathology of THS, even when no abnormalities are seen on the conventional images¹⁴. In our patient, brain MRI showed isointensity in the T1- and T2-weighted images and enhancement in the T1-weighted images with gadolinium injection.

Although spontaneous remissions may occur in TSH, corticosteroid treatment dramatically relieves the orbital-periorbital pain within 24-48 hours, and usually relieves the cranial nerve dysfunction within 2 weeks¹⁵. However, the response to steroid therapy can be nonspecific because some cases of THS fail to respond, while some painful parasellar tumors may improve on steroid treatment^{16, 17}. The recommended treatment for THS is usually prednisolone 1-1.5 mg/kg/day¹⁸, although there is little information on the optimal dosage, duration of treatment, or alternative forms of therapy. After steroid therapy in patients with THS, the disappearance of the abnormal soft tissue in follow-up MRI has been reported¹⁹. Follow-up MRI can support the diagnosis of THS if a fine response to steroid occurs, and can avoid an erroneous diagnosis of THS among other neoplastic conditions¹⁹. Our patient was initially prescribed prednisolone 1 mg/kg/day, which resulted in the disappearance of all her symptoms within 3 weeks and complete resolution in brain MRI 3 months later.

The reported prognosis of TSH is relatively good. Nevertheless, 30-40% of the patients who have been successfully treated for THS may relapse⁹. This typically occurs on the same side as the original lesion, but can occur on the opposite side²⁰. In our patient, there were two recurrences on the same side as the original lesion, while the third recurrence was on the opposite side. Our patient depended on low-dose steroid for 11 months because her headache and retro-orbital pain worsened when the steroid was reduced. Therefore, our case was an unusual chronic variant.

한 글 요약

소아에서 발생한 Tolosa-Hunt 증후군 1례

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소아에서 드물게 보고되는 토로사-헌트 증후군은 둔하면서 지속적인 안와 주위의 통증과 안구운동 장애 및 해면동 주위의 뇌신경 침범을 특징으로 하는 질환으로 비특이적 염증조직에 기인한 것으로 알려져 있다. 이는 자연 치유도 가능하나 대개 스테로이드가 증상의 회복에 효과적이며 신속한 호전을 유도한다. 토로사-헌트 증후군은 그 예후가 양호하다고 알려져 있으나 일부는 치료 후에 재발하기도 한다. 우리는 토로사-헌트 증후군으로 진단받고 스테로이드 치료 후 특별한 휴유증 없이 회복되었다가 스테로이드를 감량 중 잦은 두통과 안와 주위 통증의 재발을 호소하여 장기간 저용량 스테로이드를 투여 받고 있는 여아 1례를 경험하였기에 이를 보고하는 바이다.

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