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Case Report

Sphenoid sinus mucocele presenting with oculomotor nerve palsy and affecting the functions of trigeminal nerve: a case report

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Abstract: We report a case of first-episode sphenoid mucocele successfully treated via transnasal endoscopic drainage and marsupialization of the mucocele. A 55 year-old female presented with persistent right-side facial numbness (in the areas of the first and second branches of the trigeminal nerve) and right-side ptosis. Computed tomography (CT) imaging and Magnetic resonance imaging (MRI) revealed opacification and expansion of the right-side sphenoid sinus lesion. The lesion was diagnosed as right-side sphenoid mucocele affecting the functions of the trigeminal (first and second branches), and oculomotor nerves. Transnasal endoscopic drainage and marsupialization of the mucocele result in rapid regression of these symptoms.

Keywords: Sphenoid sinus mucocele, oculomotor nerve palsy, trigeminal nerve palsy, endoscopic sinus surgery

Introduction

Sphenoid sinus mucoceles are relatively rare, accounting for only 1% of all paranasal sinus mucoceles [1-3]. Symptoms occur when a mucocele impinges on surrounding structures. Therefore, they may have various clinical presentations, but to the best of our knowledge, no authors reported that first-episode sphenoid sinus mucoceles only caused persistent facial numbness and ptosis simultaneously. In this article, we present a case of first-episode sphenoid sinus mucocele with persistent right-side facial numbness (in the areas of the first and second branches of the trigeminal nerve) and right-side ptosis (right oculomotor nerve palsy) and point out the importance of surgery and diagnostic imaging.

Case report

A 55 year-old female presented with persistent right-side facial numbness for six months that worsened on the right-side of peri-orbit lateral nasal for one month and right-side ptosis of 25 days' duration. She denied diplopia, nasal obstruction, postnasal drainage, purulent discharge, hyposmia, and any impairment in her visual acuity. She had a 5-year history of hypertension, which was well controlled with plendil. She had no other significant medical problems.

On physical examination, the patient's blood pressure and other vital signs were normal. Her visual acuity in both eyes was 15/25, Pupils were equal at 3 mm OU with normal reactivity and no relative afferent pupillary defect. Pupil-sparing oculomotor nerve palsy was seen in the right eye (right-side ptosis). Supraduction, infraduction and adduction was diminished, but abduction was intact. On oto-laryngological examination, no positive finding was observed.

Computed tomography (CT) of the paranasal sinuses demonstrated a homogeneous soft tissue mass expanding the right sphenoid sinus and causing destruction of bone consistent with the effects of a chronic mucocele (**Figure 1**). Magnetic resonance imaging (MRI) of the paranasal sinuses showed little high intensity

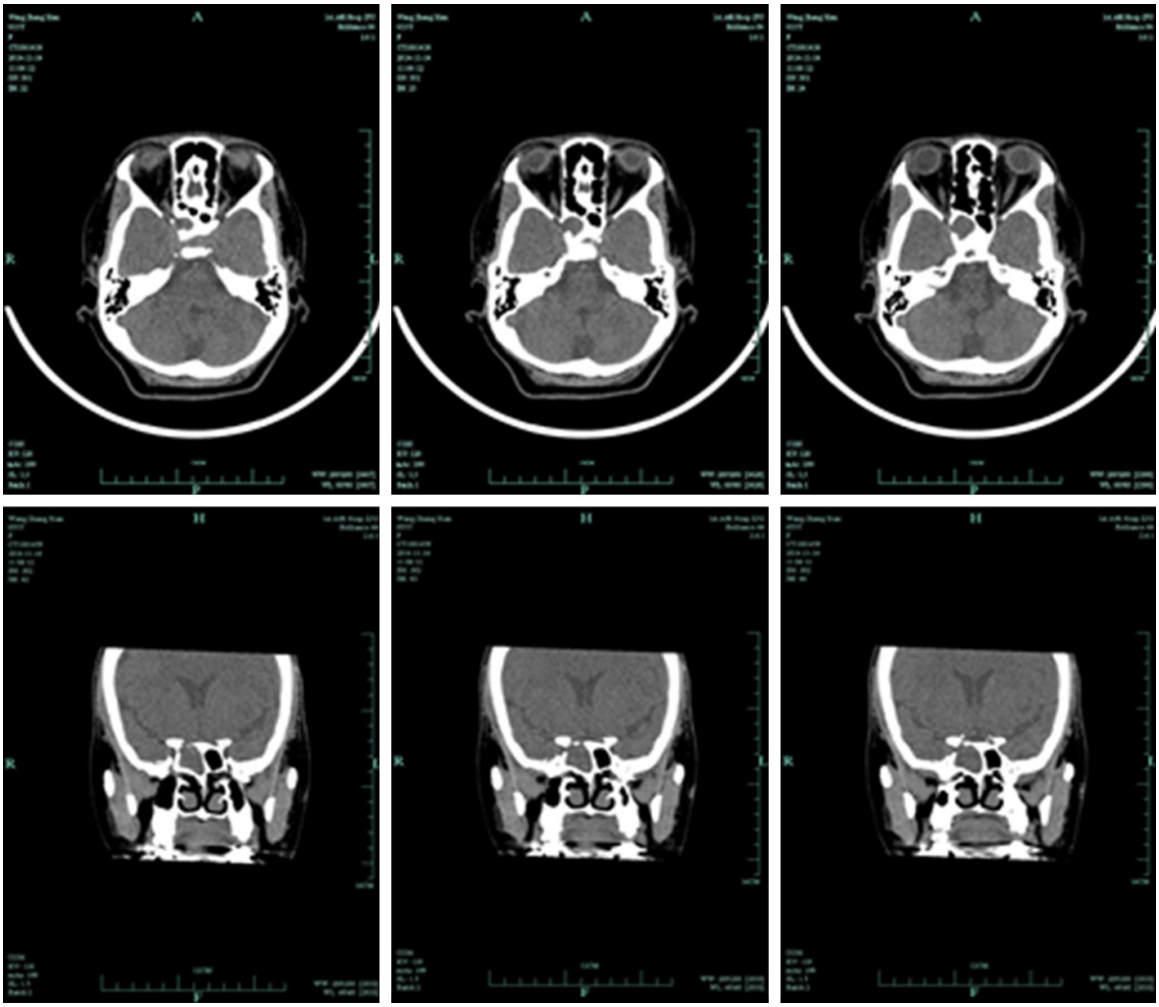

Figure 1. Computed tomography (CT) of the paranasal sinuses demonstrated a homogeneous soft tissue mass expanding the right sphenoid sinus and causing destruction of bone.

on Tl-weighted and marked intensity on T2-weighted imaging with Lesions rim enhanced significantly after gadolinium injection (**Figure 2**).

Since the findings on clinical symptoms, CT and MRI imaging studies were consistent with a sphenoid sinus mucocele, we performed an endoscopic transseptal sphenoidotomy. On operation, resection of the septum revealed a large mucocele containing thick viscid yellow material.

The first day after surgery, the right-side ptosis and right-side facial numbness especially the right-side of peri-orbit lateral nasa markedly alleviated. One month after surgery, the oculomotor nerve palsy and paralysis of trigeminal (first and second branches) nerve had completely resolved.

Discussion

Mucoceles are cyst-like lesions lined with respiratory epithelium that most commonly leads to thinning, erosion and destruction of the sinus bony walls [4]. Mucoceles arise most commonly in the frontal sinus followed by the ethmoid, maxillary and sphenoid sinuses. Sphenoidal mucoceles occur rarely and have an incidence of 1% [1-3]. Laterally, the wall is contiguous with the internal carotid artery, the optic nerve and the venous cavernous and intercavernous sinuses. These contain the third, fourth, ophthalmic and maxillary divisions of the fifth and the sixth cranial nerves. Superiorly lie the frontal lobes and olfactory apparatus and posteriorly lies the pituitary fossa [2].

Patients are usually asymptomatic or have nonspecific symptoms [3]. They usually start unilat-

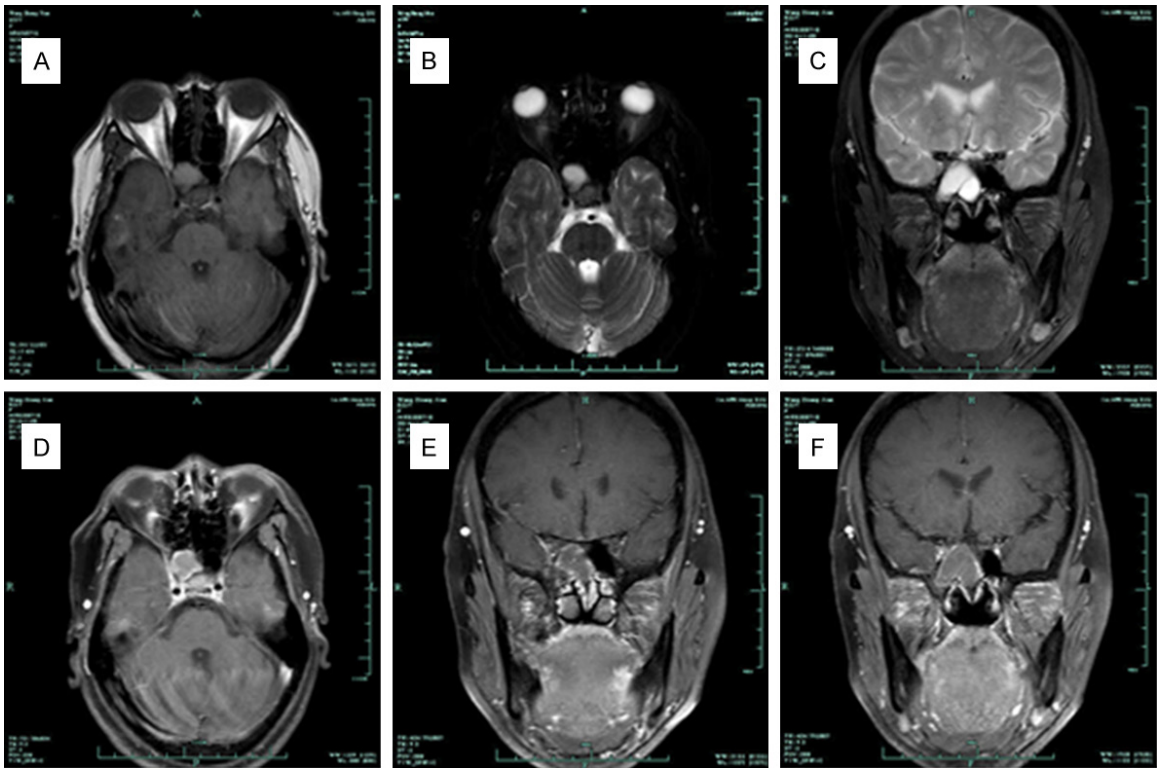

Figure 2. Magnetic resonance imaging (MRI) of the paranasal sinuses showed little high intensity on Tl-weighted (A) and marked intensity on T2-weighted imaging (B, C) with Lesions rim enhanced significantly after gadolinium injection (D-F).

erally, but by the time of presentation, the entire sphenoid sinus complex may be opacified and expanded with thinning of its bony walls. Symptoms occur when a mucocele impinges on surrounding structures, including cranial nerves II through VI. The most common symptom is headache, which is most often described as frontal or retroorbital in nature and is found in roughly 70% of patients [1, 5, 6]. It has been suggested that headache results from stretching of the dura over the planum sphenoidale [5]. The second most common symptom is visual disturbance, which is found in 65% of patients [7]. Cranial neuropathies are a feature in as many as 50% of cases [3], the sinus expands anteriorly at the level of the anterior clinoid process where the third cranial nerve bears closest relationship to the sinus, the oculomotor nerve is generally considered to be the most frequently involved nerve [8]. However, some studies found that the abducens nerve was the most commonly affected cranial nerve, due to its more medial location in the cavernous sinus [1, 7]. Nevertheless, some studies found that the optic nerve is the most frequently involved cranial nerve [5]. It is important to treat mucocoeles early because advanced cases causing optic neuropathy can lead to blindness.

Our patient presented with persistent right-side facial numbness for six months that worsened on the right-side of peri-orbit lateral nasal for one month and right-side ptosis of 25 days' duration. The lesion was diagnosed as right-side sphenoid mucocele affecting the functions of the trigeminal (first and second branches), and oculomotor nerves. Visual acuity and Visual fields were normal and there were no other cranial nerve abnormalities. To our knowledge, there was only one case of recurrent sphenoid sinus mucoceler affecting the functions of the trigeminal (first and second branches), oculomotor, and abducent nerves [9]. But our case was first-episode sphenoid sinus mucoceles, and only affecting the functions of the trigeminal (first and second branches), and oculomotor nerves.

The diagnosis of sphenoid sinus mucocele is mainly radiologic. The bone changes are best demonstrated by CT-scans and can easily be

overlooked on MRI scans. In cases of sphenoid sinus mucocele, CT of the paranasal sinuses will reveal an expansile, homogeneous lesion with no contrast enhancement in the sinus [10-13]. However, rim enhancement may rarely occur, and it is caused by capsular inflammation or peripheral induration. On MRI, the appearance of mucoceles varies because of alterations in the protein concentration of the obstructed mucoid secretions. Depending on their biochemical constituents, mucoceles can be hypo-, iso-, or hyperintense or signal void on both T1- and T2-weighted images. They may show peripheral enhancement after administration of contrast material [14]. However, the mass may be hyperintense on all sequences of MRI [15].

The treatment of sphenoid sinus mucocele is surgical, preferably via transnasal endoscopic drainage and marsupialization of the mucocele, usually resulting in rapid regression of the ophthalmic manifestations, as occurred in our case, the patient's symptoms gradually diminished.

Disclosure of conflict of interest

None.

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References

[1] Bocart D, Lecossier D, De Lassence A. A search for mycohacterial DNA in granulomatous tissues from patients with sarcoidosis using the polymerase chain reaction. Am Rev Respir Dis 1992; 145: 1142-8.

[2] Prepageran N, Subramaniam KN, Krishnan GG. Ocular presentation of sphenoid mucocele. Orbit 2004; 23: 45-7.

[3] Sethi DS, Lau DP, Chan C. Sphenoid sinus mucocoele presenting with isolated oculomotor nerve palsy. J Laryngol Otol 1997; 111: 471-3.

[4] Akan H, Cihan B, Celenk C. Sphenoid sinus mucocele causing third nerve paralysis: CT and MR findings. Dentomaxillofac Radiol 2004; 33: 342-4.

[5] Nugent GR, Sprinkle P, Bloor BM. Sphenoid sinus mucoceles. J Neurosurg 1970; 32: 443-451.

[6] Wyllie JW 3rd, Kern EB, Djalilian M. Isolated sphenoid sinus lesions. Laryngoscope 1973; 83: 1252-1265.

[7] Kron TK, Johnson CM 3rd. Diagnosis and management of the opacified sphenoid sinus. Laryngoscope 1983; 93: 1319-1327.

[8] Ashwin PT, Mahmood S, Pollock WS. Sphenoid sinus mucocoele mimicking aneurysmal oculomotor nerve palsy. Eye 2001; 15: 108-10.

[9] Sugiura N, Ochi K, Komatsuzaki Y, Koizuka I. Powered endoscopic marsupialization for recurrent sphenoid sinus mucocele: a case report. Auris Nasus Larynx 2003; 30: S107-10.

[10] Di Girolamo S, Cannizzaro P, Picciotti P, Nardi C. Ophthalmoplegia and ptosis as onset symptoms of an isolated primary mucocele of the sphenoid sinus. J Oral Maxillofac Surg 2002; 60: 1500-1502.

[11] Chui MC, Briant TD, Gray T, Horsey WJ, Hudson AR, Tucker W. Computed tomography of sphenoid sinus mucocele. J Otolaryngol 1983; 12: 263-269.

[12] Som PM. CT of the paranasal sinuses. Neuroradiology 1985; 27: 189-201.

[13] Mafee MF, Carter BL. Nasal cavity and paranasal sinuses. In: Valvassori GE, Mafee MF, Carter BL, editors. Imaging of the head and neck. New York: Thieme; 1995. pp. 286-288.

[14] Lim CC, Dillon WP, McDermott MW. Mucocele involving the anterior clinoid process: MR and CT findings. AJNR Am J Neuroradiol 1999; 20: 287-290.

[15] Stern BJ, Krumholz A, Johns C. Sarcoidosis and its neurological manifestations. Arch Neurol 1985; 42: 909-17.