

Isolated sphenoid sinus disease: review of some cases

Abstract

Isolated Sphenoid Sinus Disease is a rare disease that usually discovered by radiologic assessment, but it could lead to serious complications if it is misdiagnosed, radiologic assessment has crucial role in the diagnosis of this lesions, and optimal treatment is still controversial.

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Cases for Study

- a. 35year old male c/o meningitis with PMH of RTA, on CTS can a lesion was noticed in right sphenoid area on MRI the signal of lesion is similar TO CSF.
- b. 45year old female c/o of recurrent headache on CT scan a lesion was noted on left sphenoid Sinus, the mucosa of the sinus is thickened and the bony wall of sphenoid sinus is thickened.
- c. 30year old female c/o of acute onset of let eye proptosis, Left EOM movements are restricted on CT scan an expansible lesion destroying bone margins was noticed on left sphenoid spreading to left orbit with marginal enhancement.
- d. 66year male c/o of gradual right vision loss, left sixth cranial nerve palsy, proptosis and headache since one year, on CT Scan a right sphenoid mass was noted spread to right orbit, nose, selle and cavernous sinus area, with moderate enhancement.
- e. 45year old male c/o headache, on CT a lesion was noticed on left sphenoid with calcification.
- f. 9year old female c/o of face and cranial malformation, on CT Scan a ground glass lesion was noticed on the right sphenoid.
- g. 28year old male c/o of right nasal obstruction, on nasoscope a polypoid filing posterior choane area was observed, on CT scan polyp seemed to come from right sphenoid area with no enhancement.
- h. 30year old male came emergency department c/o of acute onset headache, fever and decreased vision ability, on exam the EOM movements of both eyes were limited with conjunctival ecchymosis, meningeal irritation was also observed, on CT scan an air - liquid level was observed in sphenoid sinus with enhancement in cavernous sinus.
- i. 20year old male with history of falling from height, come to you C/O left nasal epistaxis and gradual onset of pulsation in left eye. On CT-Scan lesion was noticed in left sphenoid.
- j. 35year old female come to your clinic c/o of left chronic nasal obstruction on nasoscope a fleshy polypoid mass noticed in the posterior choane, On CT Scan polypoid mass from left sphenoid sinus was observed with mild enhancement.
- k. 40year old obese lady c/o of chronic postural headache with salty taste in her throat on CT scan la lesion was observed in left sinus of sphenoid sinus. on MRI signal of this lesion is similar to CSF.

Introduction

Isolated sphenoid sinus lesion is a rare disorder, but it can lead to serious complications if it is misdiagnosed or mismanaged. The complications result from its anatomic relationship. Radiologic assessment has great role in the diagnosis of sphenoid lesions. The optimal management of isolated sphenoid lesion is still controversial.¹

Clinical symptoms¹⁻⁵

- A. Asymptomatic: discovered accidentally during Head CT Scan
- B. Headache: is the most common symptom, but it is atypical, do not respond to analgesic and related to head movement, mostly located at vertex and per orbital area.
- C. Nasal symptoms: nasal obstruction, Anosmia, epistaxis nasal purulent discharge ,and clear nasal discharge are observed
- D. Eye symptom: diplopia, blurred vision and proptosis may be observed
- E. Neurologic symptom: cranial nerve (III,IV,VI) paralysis, facial numbness due trigeminal irritation, vidian nerve involvement, vision loss due optic nerve compression, meningitis and cerebral abscess may observed in advanced cases
- F. General symptom: fever, anorexia and Malaise (Table 1).
- G. Differential diagnosis¹⁻⁷ (Table 2)

Nasal physical exam

Nasal endoscopic examination is normal in most cases but may revealed mucopurulent nasal secretion, hemorrhagic crust, clear nasal secretion in CSF leak, tumor extension to nose, edema in sphenoethmoid recess.

Radiologic assessment

CT or MRI is essential to find diagnosis of ISSDs. MRI should be done in cases of the bone erosion of the sphenoid sinus wall on CT, intracranial or cranial nerve involvement, and suspected spread beyond the sphenoid sinus. Angiography may useful 1 to distinguish between carotid artery pseudo aneurysm and ISSDs in patients with a history of head trauma.³

Discussion

Isolated sphenoiditis

Headache is the most common symptom of isolated sphenoiditis,

ophthalmic symptoms such diplopia due cranial nerve III, IV or VI paresis and blurred vision may appear, symptoms of rhino sinusitis may also observed. The disease may spread outside sphenoid causing orbit or intracranial complications.

Nasal endoscopic examination is good tool for diagnosis but it

is normal in 60%, and CT scan showed air-liquid level , thickness of mucosa and thickness of bone wall of sphenoid sinus ha . The initial management is conservative with antibiotics and surgery for unresponsive cases. The endoscopic transnasal approach is widely used either transeethmoid or direct above choane⁸ (Table 2).

Table 1 Showing the Symptoms of Isolated Sphenoid in Multiple Studies

	Asymptomatic	Headache	Nasal symptom	Eye symptom	Neurologic symptoms	General symptom
Friedman, et al. [1]		-72%	Rhinorrhea (46%), and nasal congestion (26%) Nasal obstruction (32.6%), cerebrospinal fluid rhinorrhea (15.2%), and mucopurulent rhinorrhea in 6 patients (13.0%). Also, epistaxis (4.3%)		14%	
Marcolini, et al. [2]		-71.70%		epiphora (4.3%), 5 2 with, 1 with diplopia (2.1%); another		fever (10.9%), patient's level of consciousness was altered and he required hospitalization (2.1%).
Kim, et al. [3]	5,2	65.80%	Nasal obstruction 22.4, Postnasal drip 21.0, Rhinorrhea 9,2	Decreased visual acuity 11.8 Visual field defect 3.9	Facial numbnes 3.9	15.8
Martin, et al. [4]		[69%] purulent rhinorrhea (3 [10%]), and Two	Unilateral nasal obstruction [24%].	decreased visual acuity or diplopia (6 [21%]).	facial pain (5 [17%]),	patients presented with symptoms consistent with meningitis, 3 presented with cerebrospinal fluid (CSF) rhinorrhea, and 2 presented with endocrine abnormalities
Ruoppi, et al. [5]		82%	Rhinitis 38%	28%	Cranial nerve palsy 21%	Dizziness 26% Fever 18%

Table 2 Showing the D/D of isolated Sphenoid Sinus Lesion in multiple studies

	Inflammatory					Tumor		Other		
	Acute	Chronic	Fungal	Mucocele	Sphenochonal Polype	Malignant	Benign	CSF Leak	Fibrous Dysplasia	Other
Friedman, et al. [1]	4	34	22	12		444	10	8	4	
Marcolini, et al. [2]	26,1	6,1	47,8	6,1		2,1	2,1	2,1	2,1	
Kim, et al. [3]	47,4	26,1	17,5			11	8		13,1	
Martin, et al. [4]	38	3	17			24		3		
Ruoppi, et al. [5]	67	33								
Cakmak, et al. [6]	53/182		15/182	44/182						
Lawson, et al. [7]	39/123		28/132	6/132	7/123	15/132 10/132 Adjacent 3/132 Metastasis	10/132	2/132	4/132	Foreign Body 5/132, Aneurysm 2/132 Clival Cyst 1/132

Sphenoid mucocele

The Mucocele is an expansive cystic lesion due the accumulation of mucus secretions in the sinus when its opening is closed, it could be primary or secondary to trauma or surgery, it is rare in sphenoid sinus and may compress the adjacent structure such orbit, cranium and nose.

The clinical symptoms of sphenoid Mucocele are variable with headache is the most common symptom, blurred vision ,ophthalmoplegia, Anosmia and nasal obstruction may occur. Severe complications such meningitis , cerebellar abscess and bilateral amaurosis may occur in advanced disease.

Diagnosis is confirmed by CT scan that revealed an expansile bone destruction cyst lesion with only marginal enhancement. Treatment with surgery to drainage and excision or marsupialization of the cyst's wall.⁹

Fungal sinusitis

Headache is the most common symptom, it may be accompanied with postnasal drip and facial pain, ophthalmologic complications like diplopia and vision loss may be seen. On CTS can the lack of air fluid level and the presence of calcification with void signal on T2W raise doubt to fungal sinusitis. Surgery to remove fungal debris is the optimal treatment.¹⁰

Sphenocoanal polyp

It is rare solitary mass disorder, originate from sphenoid sinus and spread to choane via sphenoid ostium causing nasal obstruction, it should differentiate meningoencephalocele, nasopharyngeal, inverted papillomas and nasal tumor. Surgery is the optimal treatment.¹¹

Cerebrospinal fluid leak

History of recurrent meningitis with PMH of nasal surgery or head trauma raise the suspicion, On CT Scan a bone desistance with air fluid level may appear, on MRI mass with signal like CSF appear on sphenoid sinus, the presence of postnasal drip and beta transfer in studies from postnasal drip confirm the diagnosis. Surgery is the optimal treatment.²

Inverted papilloma

Isolated inverted papilloma of the sphenoid sinus is rare. It is rare benign tumor with high rate of recurrence. The diagnosis is achieved by CT scan. The most of patients with inverted papilloma present with nasal complaints such as unilateral nasal obstruction, rhinorrhea, epistaxis. However, the clinical presentation of inverted papillomas confined to the sphenoid sinus is often nonspecific and insidious, with headache being the most common presentation.¹²

Tumor

Tumor of sphenoid sinus is rare, SCC is the most common cancer of Sphenoid cancer, CTS can showed expansible mass destroying bone with enhancement, MRI showed low signal on T1 and high signal in T2 with gadilium enhancement. Treatment with complete resection with surgery is difficult and postoperative radiotherapy is needed.²

Fibrous dysplasia

Is a Rare bone disease that affect mostly facial bone, it is rare in sphenoid sinus and affect female children mostly, diagnosis is confirmed by CT scan that showed a ground glass picture. Treatment with surgery for symptomatic cases.⁶

Cases solution

1- CSF Leak, 2- chronic sphenoiditis, 3- Mucocele, 4- sphenoid sinus tumor, 5- fungul sphenoiditis, 6- Fibrous Dysplasia, 7- Sphenocoanal Polyp, 8- Acute Sphenoiditis, 9- carotid artery pseudoaneurysm, 10- Inverted papilloma, 11- Spontaneous Sphenoid CSF Leak.

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Conflicts of interest

Author declares there are no conflicts of interest.

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