

**ORIGINAL RESEARCH****Isolated sphenoid sinusitis –  
Clinical and therapeutic aspects****Codrut Sarafoleanu, Claudiu Manea, Roxana Duda**

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**ABSTRACT**

**BACKGROUND:** Isolated sphenoid sinusitis is a relatively rare pathologic entity, but which may represent a diagnostic and therapeutic challenge for the ENT specialist, due to its non-specific symptoms that often lead to confusion. The aim of our study was to determine the incidence of isolated sphenoid sinusitis, its clinical symptoms and the correspondence with imaging, the differential diagnosis and the potential therapeutic difficulties that may arise.

**MATERIAL AND METHODS:** We have studied retrospectively a group of 87 patients diagnosed with chronic rhinosinusitis touching also the sphenoid sinus. 17 patients (19%) of our study group were diagnosed with isolated sphenoid rhinosinusitis. The main symptoms related by patients were represented by headache (with different characteristics and irradiation), postnasal drip and changes in visual sensations. The diagnosis was established on the basis of an endoscopic examination of the nose and imaging tests (nasal-sinus CT and MRI). Data validation is also confirmed by the fact that all patients underwent endoscopic surgery performed by the same surgeon.

**RESULTS:** Out of 17 cases of isolated sphenoid rhinosinusitis, 5 (29%) were identified as mycetomas (fungal ball) and the remaining 12 were diagnosed as non-specific inflammatory isolated sphenoid rhinosinusitis. In 6 cases, we noticed a significant inconsistency between imaging and aspects observed during surgery. There were no major postoperative complications, in two cases (11%) the patients developed synechiae between the middle turbinate and septum, without affecting the drainage.

**CONCLUSIONS:** The isolated sphenoid sinusitis is present in clinical practice with both non-specific inflammatory etiology and fungal etiology, the latter having become increasingly frequent. The early diagnosis is difficult because of the wide variety of symptoms and endoscopic surgery is and remains the gold standard in the treatment of isolated sphenoid sinusitis.

**KEYWORDS:** sphenoid sinusitis, isolated, fungal ball, inflammatory.

**INTRODUCTION**

The isolated sphenoid sinusitis is a relatively rare pathologic entity representing about 1-2% of all sinus infections<sup>1-3</sup>.

The sphenoid sinusitis is often misdiagnosed because the sphenoid sinus is not accessible to clinical examination and it is not properly visualized with routine imaging. It is potentially associated with significant morbidity and mortality and requires early identification and aggressive treatment.

Headache is the most common symptom of acute sphenoid sinusitis. It is present in all patients and is exacerbated by the upright posture, walking, bending, coughing; it often interferes with sleep and is poorly relieved by analgesics. Sphenoid headaches are deep retro-orbital pains. They can be localized in the occiput, the vertex or the temporo-parietal region.

The pain may mimic pain of neuralgic type: atypi-

cal trigeminal neuralgia or of cluster headache type and it may involve eye disorders. Rhinologic symptoms are nonspecific and totally inconsistent.

Their diagnosis is sometimes difficult - non-specific symptoms that can often lead to diagnostic confusion with other sphenoid pathologic entities (benign or malignant) or neurological ones. Radiological assessment is essential for diagnosis.

The aim of our study was to determine the incidence of isolated sphenoid sinusitis, with emphasis on its suggestive clinical symptoms, the concordance between clinical signs and imaging, the differential diagnosis and the evaluation of therapeutic difficulties.

**MATERIAL AND METHODS**

We present a retrospective study on a group of 87 consecutive patients diagnosed with chronic sphenoid sinusitis.

noid sinusitis, from January to December 2007. All patients underwent endoscopic surgery performed by the same surgeon.

17 patients (19%) of our study group were diagnosed with isolated sphenoid rhinosinusitis. All patients were evaluated before surgery by a neurologist, ophthalmologist and neurosurgeon, in order to rule out other causes generating the symptoms presented.

#### Inclusion criteria:

- symptoms consistent with a diagnosis of chronic isolated sphenoid rhinosinusitis
- radiologic changes (CT / MRI) compatible with the diagnosis of sphenoid sinusitis
- the absence of inflammatory or tumor implications for other paranasal sinuses
- the patient's consent for surgery
- the absence of associated diseases incompatible with surgery under general anesthesia
- compliant patients ready to be periodically monitored

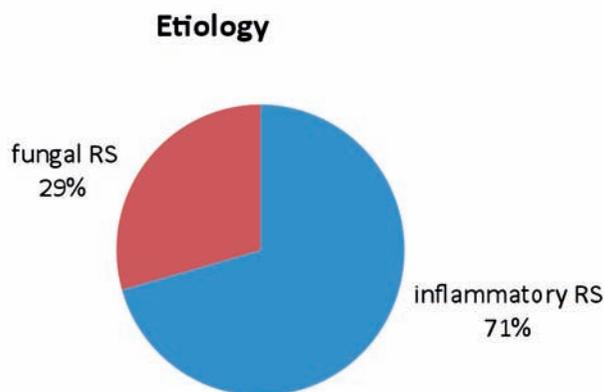
All surgical procedures were performed by addressing the sphenoid sinus ostium.

After treatment patients were assessed by:

- endoscopic examinations performed at 1 month, 3 months and 6 months after surgery, and then every 6 months
- imaging – CT (when local conditions require).

Symptomatology was assessed by asking patients before and after surgery to complete a form, a Visual Analogue Scale (VAS) with values ranging from 0 (absent symptoms) to 10 (very bothersome symptoms) including the symptoms most often encountered in the sphenoid rhinosinusitis: headache, postnasal drip, nasal obstruction, vision problems, etc.

The monitoring period varied between 12 and 28 months, with an average of 19.6 months.



**Figure 1** Etiology of sphenoid rhinosinusitis.

## RESULTS

In a group of patients, the etiology of sphenoid rhinosinusitis was:

- 17 isolated sphenoid rhinosinusitis
- 5 (29%) were identified as mycetomas (fungal ball)
- 12 (71%) were diagnosed as non-specific inflammatory isolated sphenoid rhinosinusitis (10 inflammatory rhinosinusitis and 2 mucocèles) (Figure 1).

In 6 cases (35%), we noticed a significant inconsistency between imaging and aspects observed during surgery.

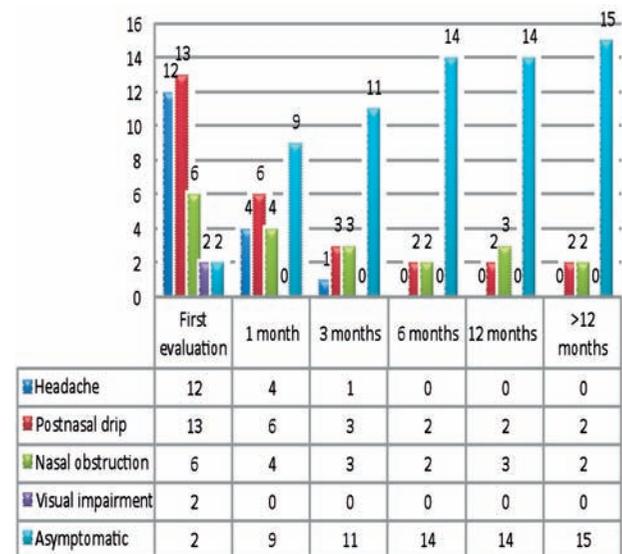
In terms of symptomatology, the main symptoms encountered in our patients were craniofacial pain and postnasal drip (Figure 2).

There were no significant changes of symptoms in our group, in case of fungal or inflammatory etiology; the patient's progress after the treatment was shown in Figures 3 and 4.

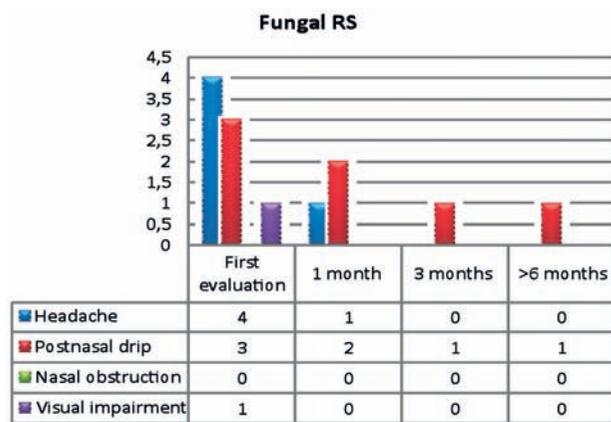
All patients underwent transnasal endoscopic surgery (Figure 5, 6). We did not encounter any intraoperatively complication.

Postoperatively, in two cases (11%), the patients developed synechiae between the middle turbinate and septum, without affecting the drainage (easily removed in the office).

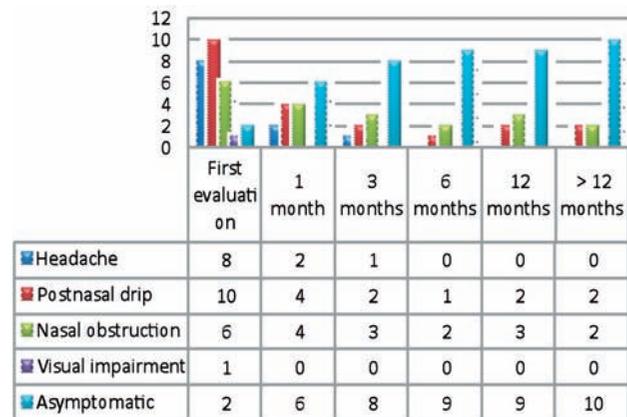
Intraoperatively, we encountered several difficulties such as the carotid canal dehiscence with the carotid protruding into the sphenoid sinus (2 cases) (Figure 7), protrusion of the optic nerve (1 case) and failure to find the natural sinus ostium (1 case).



**Figure 2** Isolated sphenoid sinusitis symptoms before and after surgical treatment.



**Figure 3** Fungal isolated sphenoid sinusitis symptoms before and after surgical treatment



**Figure 4** Symptoms of the isolated sphenoid sinusitis of non-specific inflammatory etiology before and after surgical treatment.

## DISCUSSIONS

The isolated sphenoid sinusitis is a relatively rare pathologic entity, where clinical diagnosis can be difficult due to its non-specific symptoms that often lead to confusion. Symptoms are often non-specific. The progress of imaging (CT/MRI) (Figure 8) associated with the use of endoscopic examinations has increased the frequency of sphenoid sinusitis diagnosis.

The symptoms most frequently complained of are retro-orbital headache and postnasal drip, which was confirmed by our group of patients.

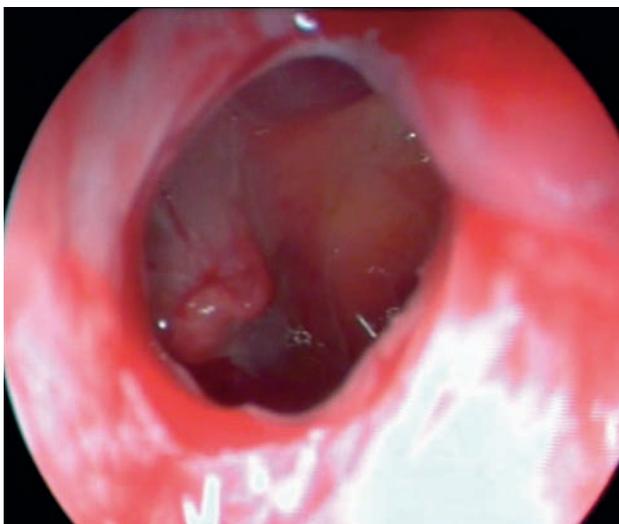
In our group of patients, out of 87 patients with chronic rhinosinusitis, 17 (19%) were diagnosed with isolated sphenoid sinusitis. Most cases were inflammatory nonspecific rhinosinusitis (12 cases, 71%).

Despite the fact that the fungal disease, involving the sphenoid sinus, is considered rare, in our group

of patients it had a high incidence (19% -5 patients) – all the patients were diagnosed with isolated non-invasive forms (fungal ball). Microscopic examination identified in all cases the presence of *Aspergillus fumigatus*. Regarding the predisposing factors, in our patients, there were no significant correlations such as the use of steroids, uncontrolled diabetes or immunosuppression.

Craniofacial pain is the main symptom of sphenoid sinus diseases and, therefore, the sphenoid sinusitis should be considered in the differential diagnosis of any person complaining of acute and subacute headaches<sup>1,4-8</sup>.

The typical headache is generally deep-rooted and stabbing being located near the vertex. Clinical observations have also highlighted the involvement of the retro-orbital, occipital and mastoid area. Thus, the retro-orbital headache was encountered in 12 pa-



**Figure 5** Intraoperative view - thickening of the sphenoid sinus mucosa.



**Figure 6** Allergic fungal sinusitis, with fungal debris which must be surgically removed in order to maintain the inflammatory condition under control.



**Figure 7** Dehiscence of the carotid canal with the carotid protruding into the sphenoid



**Figure 8** CT - opacity of the right sphenoid sinus, with areas of hyperattenuation and different densities, and no evidence of osteolysis, characteristic of the fungal sinusitis.

tients (71%), 8 of them with forms of nonspecific inflammatory sinusitis (67%) and 4 with sphenoid fungal balls (80%).

The postnasal drip was also a common symptom in our patient group. It was found in 13 of them (76%), more frequently in patients with inflammatory forms (10 patients, 83%) than in those with fungal ball (3 patients, 60%).

Nasal obstruction was isolated in our study, only 6 patients, that is 35%, complained of breathing difficulty.

More importantly, an aspect that should raise the suspicion of sphenoid rhinosinusitis is represented by visual impairment (diplopia) - present in 2 patients of our group. The loss of visual acuity in association with sphenoid sinusitis should always be considered an emergency<sup>4</sup>. The visual changes have only been frequent in previous studies<sup>6-8</sup>, ranging from 12% to 70% of isolated sphenoid sinusitis.

It is also important to mention that some sphenoid sinusitis can be completely silent, their diagnosis being exclusively radiological (2 cases).

Headache, encountered in 12 patients before treatment, was no longer present in any of them after 1 year (100% treatment success).

Moreover, we noted a significant improvement in postnasal drip (13 complained of it before treatment, 2 patients with persistent symptoms after 1 year), therefore 85% success rate.

In both cases presenting visual impairment before treatment, they disappeared immediately after surgery, with persistent effects on subsequent checkups.

## CONCLUSIONS

Isolated sphenoid sinusitis is a rare pathologic entity. For clinical diagnosis, a higher dose of suspicion is required because the clinical picture is often non-specific.

The symptoms most often encountered in the sphenoid rhinosinusitis are: headache, postnasal drip, nasal obstruction, decreased visual acuity.

Imaging (CT/MRI) associated with the use of endoscopic nasal examinations confirm the diagnosis.

The inflammatory etiology is the most frequent, but fungal diseases should not be excluded.

Endoscopic surgery is the gold standard in the treatment of sphenoid sinusitis.

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