Sphenoid sinus mucocele penetrating to the orbit, anterior and middle cranial fossae and parapharyngeal space: a case report

Mukocele zatoki klinowej penetrujące do oczodołu, przedniego i środkowego dołu czaszki oraz przestrzeni przygardłowej: opis przypadku

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SUMMARY

Mucocele, though is a common lesion, rarely penetrates to the surrounding intra- and extracranial spaces. We describe the case of 45-year-old male with 2 years history of a chronic left nasal obstruction and a concentric visual field deficit in the left eye as the only manifestations. Diagnostic CT and MRI imaging revealed a mucocele originating from the posterior ethmoid and sphenoid sinuses and penetrating intracranially to the anterior and middle cranial fossae and extracranially to the pterygopalatine fossa and the parapharyngeal space. This extensive localization appears to be an extremely rare entity, which, to our knowledge, has not been described in the English literature yet. The clinical features and a literature review are also presented.

Hasła indeksowe: mukocele, rozrost wewnątrzczaszkowy, rozrost zewnątrzczaszkowy, dół skrzydłowo-podniebienny, przestrzeń przygardłowa, powikłania

Key words: mucocele, intracranial extension, extracranial extension, pterygopalatine fossa, parapharyngeal space, complications

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Rafał Chmielewski zebrał materiał, opracował dane i napisał pracę, Arkadiusz Paprocki był lekarzem prowadzącym chorego i konsultował zebrany materiał, Krzysztof Morawski i Kazimierz Niemczyk byli operatorami oraz konsultowali pracę na wszystkich jej etapach powstawania.
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Introduction

Mucocele is a benign condition, still of controversial etiology. The variety of factors may lead to occlusion of the paranasal sinus mucous membrane gland ostium, causing the secretion accumulation. It results in development of the lesion with a potential for adjacent bony remodeling and resorption. Untreated cases have a tendency for spreading to the surrounding intra- and extracranial spaces, causing orbital complications (visual loss, gaze restrictions and proptosis), cerebrospinal fluid (CSF) leak and, in the advanced stage, the mass effect on the brain with accompanying neurological symptoms. We report on the case of mucocele of the posterior ethmoid and sphenoid sinuses penetrating intracranially to the anterior and middle cranial fossae and extracranially to the pterygopalatine fossa and the parapharyngeal space. This extensive localization appears to be an extremely rare entity, which, to our knowledge, has not been described in the English literature yet. The clinical features and a literature review are also presented.

Case report

A 45-year-old male patient presented to our ENT Department with 2 years history of chronic left nasal obstruction and concentric visual field deficit in the left eye as the only manifestations. Before the presentation he was initially diagnosed with a chronic rhinosinusitis and a glaucoma of the left eye, both of which being treated conservatively. On the physical examination he demonstrated significantly compromised left nasal cavity, bulging of the lateral nasopharyngeal wall on the left side and a concentric visual field deficit in his left eye. Computed Tomography (CT) revealed a tumor of the left middle cranial fossa with destruction of the greater wing of the sphenoid bone and the apex of the petrous part of the temporal bone, lateral clivus, lateral wall of the sphenoid sinus and the walls of the orbital apex. It was filling the left sphenoid and posterior ethmoid sinuses. In its extension to the skull base it was distending the left pterygopalatine fossa and transposing anteriorly the posterior wall of the left maxillary sinus. Inferiorly it reached the left parapharyngeal space and bulged out

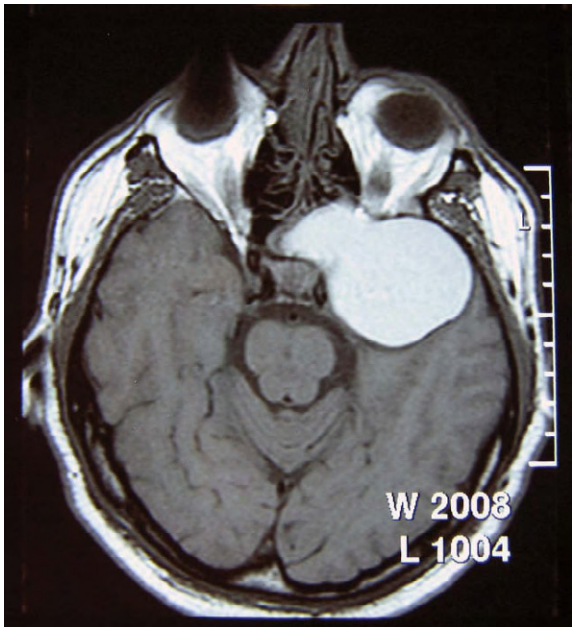

Fig. 1. MRI of the mucocele in the axial plane. Well defined lesion in the size of 67x41x66 mm in the left posterior ethmoid, sphenoid and most of the left middle cranial fossa. In both T1 and T2 weighted images the lesion is hyperintensive and is not enhanced by the contrast medium. The signal intensity of the adjacent brain tissue is not changed.

Ryc. 1. Mukocele w obrazie rezonansu magnetycznego, płaszczyzna pozioma. Dobrze odgraniczona zmiana o wymiarach 67x41x66 mm w okolicy lewego tylnego sitowia oraz zatoki klinowej i lewego dołu środkowego czaszki. W projekcjach T1 i T2 zależnych zmiana jest hiperintensywna i nie wzmacnia się po podaniu kontrastu. Sygnał otaczającej tkanki mózgowej pozostaje niezmieniony.

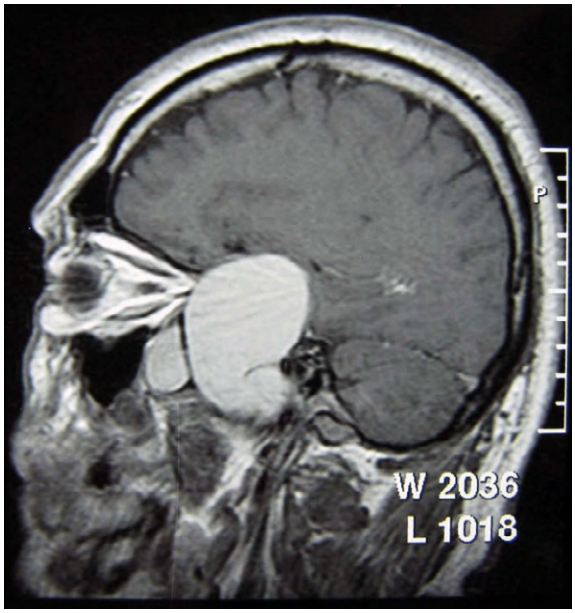

Fig. 2. MRI of the mucocele in the sagittal plane.

Ryc. 2. Mukocele w obrazie rezonansu magnetycznego, płaszczyzna strzałkowa.

the superior and lateral walls of the nasopharynx. The tumor density of 30 Hounsfield units and capsular enhancement were characteristic for the mucocele. Magnetic Resonance Imaging (MRI) confirmed the localization and the morphology of the tumor and determined the exact size – 67x41x66 millimeters (Figs. 1, 2). In both T1 and T2 weighted images the lesion was hyperintensive and did not show any enhancement. The adjacent brain tissue was normal. Nasal septum was deviated to the right.

The endonasal microscopic ethmoidectomy with excision of the left middle nasal concha and marsupialization of the mucocele wall was performed. The postoperative period was uneventful with an immediate full recovery from the left nasal and eye symptoms. The patient was released home 2 weeks after the surgery. He has been followed in our outpatient clinic at regular intervals for 4 years now and underwent yearly a complete reevaluation with the clinical assessment, sinonasal endoscopy, CT and MRI imaging (Figs. 3, 4). On endoscopy there is a healthy mucous membrane lined cavity widely open to the inferior and middle nasal meatus. Until now, no signs of recurrence nor other complications have been found and the patient remains asymptomatic.

Discussion

Mucoceles are common sinus lesions, frequently affecting the frontal and ethmoid sinuses, being less common in the maxillary sinuses, but rarely located in the sphenoid sinuses. Their frequency in the sphenoid sinus is presented by many authors at the level of 1-3% [1, 4], but some report higher incidence of 8.8% out of 57 cases – [2], 10% out of 60 cases – [7] or even as high as 18.75% out of 16 cases [3]. Kösling et al. [11] after Hejazi state that by 2001, there have been 130 sphenoid sinus mucocele described in the literature. In the literature review presented by Yokoyama et al. [1], of the total 188 mucocele cases reviewed, 11.2% had an intracranial extension. Most commonly it was to the suprasellar and anterior cranial fossa regions, but none of those cases had a mucocele penetrated through the skull base. Sautter et al. [2] analyzed 57 cases of mucoceles with either the skull base or the orbital walls erosion. The orbit was affected in 51% of cases, skull base in 40% and in the remaining 9% both regions were eroded. The extracranial extension of the mucocele has not been described in this group of patients. Koike et al. [12] mentions, that the mucocele causes the skull base destruction in about 10% to 20% of cases. Serrano in his report of 60 mucocele cases [13] reported 10% of sphenoid sinus mucocele in which two thirds were affecting only the sphenoid sinus and one third both the sphenoid and ethmoid sinuses were involved.