

Ophthalmic Manifestations of Paranasal Sinus Mucocoeles

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Background: Paranasal sinus mucocoeles are mucus-containing cysts caused by obstruction of the sinus orifice. Although such mucocoeles originate in the paranasal sinuses, they are usually only associated with ophthalmic and not rhinologic symptoms. The purpose of this study was to demonstrate the presence of ophthalmic manifestations in patients with paranasal sinus mucocoeles, and to discuss the possible mechanisms and prognosis for such manifestations.

Methods: Medical records for 41 patients with paranasal sinus mucocoeles, who presented with ophthalmic complaints at our department over a 10-year period (1989–1999), were reviewed retrospectively. For analysis of the relationships between ophthalmic complaints and the affected paranasal sinuses, we considered the paranasal sinuses as anterior and posterior.

Results: Proptosis ($n = 19$), periorbital pain (7), and impairment of ocular mobility (5), were common manifestations associated with mucocoeles in the anterior paranasal sinuses (25 patients), while blurred vision ($n = 9$) and impairment of ocular mobility (3) were frequently associated with mucocoeles in the posterior paranasal sinuses (11 patients). Ophthalmic complaints resolved in 38 of 41 patients (92.7%) after operation.

Conclusion: The clinical ophthalmic manifestations of paranasal sinus mucocoeles correlated with the paranasal sinuses involved (i.e. anterior or posterior). Because of cranial nerve involvement, mucocoeles in the posterior paranasal sinuses had a worse prognosis than those in the anterior paranasal sinuses. [*J Chin Med Assoc* 2005;68(6):260–264]

Key Words: mucocoeles, ophthalmic manifestations, paranasal sinuses, proptosis, vision

Introduction

A paranasal sinus mucocoele is defined as a collection of mucus lined by the mucus-secreting epithelium of a paranasal sinus. It occurs when a sinus ostium or a compartment of a septated sinus becomes obstructed, thus causing the sinus cavity to become filled with mucus and to become airless. Paranasal sinus mucocoeles may result from inflammation, tumor, trauma or surgical manipulation.¹ Because of the anatomic proximity of the orbit, the pathologic process of paranasal sinus mucocoeles will easily affect the orbit.^{2,3} The frontal, ethmoid, sphenoid and maxillary sinuses all have an interface with the orbit. The maxillary sinus

shares the floor of the orbit, the frontal sinus is part of the orbital roof, the ethmoid extends along most of the medial wall of the orbit, and the sphenoid almost completely surrounds the orbital apex.^{2,3} Therefore, mucocoeles in the paranasal sinuses can easily affect the orbit and cause ophthalmic symptoms such as proptosis, blurred vision, and displacement of the globe.^{3,4} Patients with such mucocoeles and symptoms are often seen by ophthalmologists first, and then referred to otorhinolaryngologists.⁴

The objectives of this study were to examine the ophthalmic manifestations in patients with paranasal sinus mucocoeles, and to evaluate prognosis in terms of the paranasal sinuses involved.

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Methods

Study protocol

We retrospectively reviewed the medical charts of 41 patients with paranasal sinus mucoceles, who initially presented with ophthalmic symptoms between 1989 and 1999. All patients required an operation and underwent preoperative ophthalmologic and otorhinolaryngologic examinations, including tests of visual acuity, ocular movement, the visual field, sinuscopy, and a computed tomography (CT) scan. The diagnosis was based on clinical and CT findings, and surgical specimens were verified by histopathology. Factors analyzed included age, gender, number of years since the first nasal operation, clinical symptoms, imaging findings, and surgical procedures. Visual disturbances, treatment complications, duration of follow-up and disease recurrences were also reviewed.

Paranasal sinuses analyzed

For analysis of the relationships between ophthalmic manifestations and lesion locations, the paranasal sinuses were divided into anterior and posterior sinuses based on preoperative, radiologic and intraoperative findings. The anterior sinuses comprised the maxillary, frontal and anterior ethmoid sinuses, whereas the posterior sinuses comprised the posterior ethmoid and sphenoid sinuses.⁴

Results

The mean $\pm$ standard deviation (SD) age of the 41 patients, 17 men and 24 women, was 53.7 ± 16.6 years (range, 13–76 years). Mucocoeles were evident in sinuses on the right ($n = 22$), left (15), and both sides (4). The time from initial presentation of ophthalmic symptoms until operation ranged from 2 days to 3 years (mean $\pm$ SD, 5.2 ± 7.1 months). Patients with visual disturbances

usually sought help earlier than those with other ophthalmic manifestations (e.g. proptosis). Nineteen patients (46.3%) had a history of chronic sinusitis, sinus trauma, or nasal surgery. Thirteen (31.7%) had previously undergone nasal surgery, e.g. endoscopic sinus surgery. The period from previous nasal surgery until the first visit to our department ranged from 1 month to 30 years (mean $\pm$ SD, 15 ± 11.5 years).

Several ophthalmic signs and symptoms were found in patients with paranasal sinus mucocoeles: proptosis ($n = 23$; 56.1%), blurred vision (13; 31.7%); impairment of ocular mobility (9; 22.0%); periorbital pain (8; 19.5%); and both ptosis and epiphoria (3; 7.3%). Measurements with a Hertel exophthalmometer showed mean $\pm$ SD axial proptosis of 4.7 ± 2.9 mm.

The relationships between ophthalmic signs and symptoms, and the sites affected by mucocoeles, are shown in Table 1 and Figure 1. Proptosis was present in 19 of 25 patients (76.0%) with mucocoeles in the anterior paranasal sinuses, and in 2 of 11 (18.2%) with mucocoeles in the posterior paranasal sinuses. Corresponding rates were 12.0% (3 of 25 patients) and 81.8% (9 of 11) for blurred vision, and 20.0% (5 of 25 patients) and 27.3% (3 of 11) for impairment of ocular

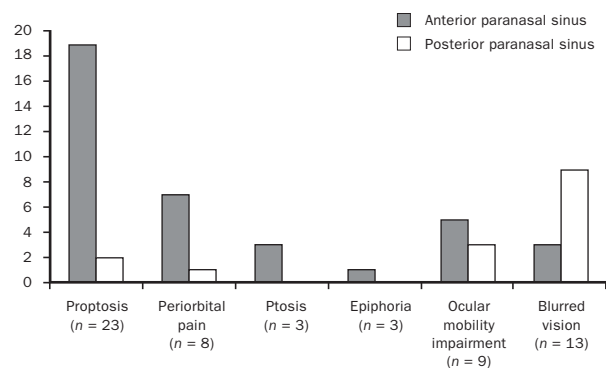


Figure 1. Relationships between ophthalmic signs/symptoms and the paranasal sinuses affected by mucocoeles.

Table 1. Ophthalmic signs/symptoms and sites affected by mucocoeles

	Mucocoele location		
	Anterior paranasal sinus (n = 25)	Posterior paranasal sinus (n = 11)	Anterior + posterior paranasal sinuses (n = 5)
Proptosis (n = 23)	19	2	2
Periorbital pain (n = 8)	7	1	0
Ptosis (n = 3)	3	0	0
Epiphoria (n = 3)	1	0	2
Impairment of ocular mobility (n = 9)	5	3	1
Blurred vision (n = 13)	3	9	1

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