Frontoethmoidal Mucocele with Intracranial Extension an Interesting Case Report and Review of Literature

Corresponding Author:
Dr. Balasubramanian Thiagarajan,
Professor, Department of otolaryngology, Stanley Medical College, Chennai Tamilnadu, Otolaryngology Online, Sreemagal, 20 Officers colony Rajaram metha nagar Chennai India 600029, 600029 - India

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Author(s): Thiagarajan B, Arjunan K

Abstract

Mucoceles are gradually expanding lesion involving paranasal sinuses [1]. This is usually caused due to obstruction to the normal drainage channels of paranasal sinuses leading on to pent up secretions within it. These patients classically don’t present with symptoms pertaining to nose and sinuses but with ophthalmological signs and symptoms. They invariably present to the ophthalmologist before finding their way to an otolaryngologist. This interesting case report describes a patient with a large frontoethmoidal mucocele who presented with extensive proptosis and intracranial extension of the lesion. This case is reported to stress the importance of endoscopic approach in managing these lesions.

Introduction

A mucocele is defined as mucous filled epithelium lined sac. Mucoceles are commonly caused due to obstruction of drainage channels of paranasal sinuses. These lesions commonly involve frontal and ethmoidal sinuses. These expansile lesions can sometimes be filled with purulent secretions[2] in which case it is known as a pyocele. These expanding lesion can also cause bone destruction causing expansion into adjacent structures like cranial and orbital cavities [3]. The term mucocele was coined by Rollet in 1896, and Onodi was the first to describe its histology in 1901 [4].

Case Report(s)

History:
68 year old female patient reported to ENT out patient department with
1. C/O swelling left side of forehead - 2 years duration
2. Headache on and off - 2 years
3. Swelling over left eye – 1 1/2 years
The preoperative picture shows the patient having swelling over her left forehead with the left eye pushed downwards and outwards.

O/E

1. Vision normal in both eyes
2. Swelling over left forehead, boggy to touch, with bone deficit.
3. Proptosis left eye. Left eye pushed downwards and outwards.

CT scan paranasal sinuses coronal cuts showed:
1. Hyperdense mass involving the left frontal sinus
2. The mass could be seen extending into the anterior cranial fossa with erosion of both anterior and posterior tables of frontal bone.
3. The left eye could be seen pushed outwards and downwards

Management:
Patient was taken up for endoscopic decompression of the lesion following which eye ball on the left side reverted back to normal position. During the surgical procedure anterior and posterior walls of frontal sinus were found to be eroded. Brain pulsations could be seen during the surgical procedure.

Discussion

Since orbital symptoms predominate these patients present to the ophthalmologist commonly first [5]. Symptoms may be unremarkable except for dull aching pain and fullness in the frontal sinus area.

Ophthalmological manifestations include:
1. Periorbital swelling and pain
2. Exophthalmos
3. Visual disturbances
4. Diplopia
5. Epiphora
6. Optic neuropathy can lead to vision loss

Mucoceles are commonly caused due to obstruction to drainage channels of frontal sinus due to infections / allergy [6]. Previous trauma / sinus surgical procedures can also cause secondary mucocele formation.

Theories of pathogenesis of mucocele formation:
1. Pressure erosion
2. Cystic degeneration of glandular tissue
3. Active bone resorption and regeneration

**Classification of frontal mucoceles[4]:**

Frontal mucoceles have been classified into 5 types depending on its extent.

**Type I:** In this type the mucocele is limited to the frontal sinus only with or without orbital extension.

**Type II:** Here the mucocele is found involving the frontal and ethmoidal sinuses with or without orbital extension.

**Type IIIa:** In this type the mucocele erodes the posterior wall of the frontal sinus with minimal or no intracranial involvement.

**Type IIIb:** In this type the mucocele erodes the posterior wall with major intracranial extension.

**Type IV:** In this type the mucocele erodes the anterior wall of the frontal sinus.

**Type Va:** In this type there is erosion of both anterior and posterior walls of frontal sinus without or minimal intracranial extension.

**Type Vb:** In this type there is erosion of both anterior and posterior walls of frontal sinus with a major intracranial extension.

**Advantages of endoscopic sinus decompression:**

*Endoscopic approach has the following advantages -*

1. Morbidity and mortality is less
2. No incision is involved
3. Endoscopic examination can be performed for regular follow up of these patients

**Conclusion**

Endoscopic decompression is currently the accepted management in treating patients with fronto-ethmoidal mucoceles. This procedure is safe and gives lasting relief to the patient.

**References**

Illustrations

Illustration 1

Clinical photograph of the patient showing frontal swelling and proptosis on the left side

Illustration 2

Coronal CT scan of the patient
Illustration 3

Post operative clinical photograph
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