

## Case Report

**Giant mucopyocele associated with intracranial hypertension: Case report and literature review**

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**Abstract**

**Background:** Mucocoeles are epithelial lined sacs that contain mucous. Eventually, they can be infected and so called mucopyoceles, which are usually slow growing lesions with common bone destruction located in the facial sinus. Mucocoeles show multivariate etiology and occur between the fourth and seventh decade of life.

**Case Description:** Patient, 55-year-old, female, was referred unconscious with Cushing's triad to our department; she had fever since four days. The findings of skull computer tomography highlighted a large bifrontal lesion with an invasion of the rear wall of the frontal sinus, compression of the frontal lobes, and midline deviation. She was taken for an emergency surgery, which showed invasion of the dura and mucous infection. Postoperatively, there was a fast recovery of neurologic level and extubation on the second postoperative day. She took antibiotics for 14 days and was discharged from the hospital without neurologic deficits.

**Conclusions:** Mucopyoceles are usually slow growing lesions that rarely increases rapidly. Our patient presented signs of intracranial hypertension; therefore, it was necessary to have quick surgical intervention.

**Key Words:** Complication, Cushing signs, intracranial hypertension, mucocoele, mucopyocele, paranasal infection

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**Quick Response Code:****INTRODUCTION**

Mucocoele is a chronic collection of mucous mostly located in the paranasal sinus of the face because of an inflammatory procedure, trauma, tumor, or surgical manipulation that obstructs the ostium of the sinus.<sup>[2,12]</sup> Frontal and ethmoidal mucocoeles are most common during the fourth and seventh decade of life.<sup>[12]</sup> When infected, this collection characterizes the mucopyocele,

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which can obstruct adjacent bone structures causing a fast expansion because of early infection.<sup>[5,9]</sup>

## CASE DESCRIPTION

Patient was a 55-year-old female with smoking history; she checked in the Medical Center with low level of conscience, fever, and headache for four days. She was comatose, bradycardic, and hypertensive; under these circumstances, she was submitted to orotracheal intubation owing to Glasgow Coma Scale (GCS) 6.

Urgent Computer Tomography (CT) scan highlighted extra-axial expansive lesion located in an anterior frontal region measuring  $8.5 \times 7 \times 5$  cm with homogenous and iso-hypodense content, compressing the bilateral frontal cerebral parenchyma, and thinning of the frontal bone with sclerotic margin [Figure 1a and b].

## Treatment

After CT scan, she was referred to the surgical center to emergency craniotomy for bifrontal expansive injury draining. Bicoronal incision was done followed by bifrontal craniotomy to access the extra-axial injury and frontal sinus [Figure 2].

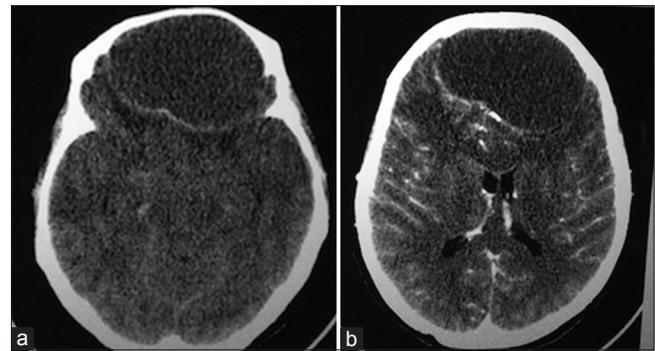
During the surgical procedure, we observed greenish mucoid secretion associated with the presence of infection, dural laceration, and erosion of the frontal sinus (rear wall). The mucosa of the rear wall of the frontal sinus was scooped and covered by muscle.

After the surgical procedure, the patient began the use of antibiotics, ceftriaxone, and metronidazole, which were taken for fourteen days. On the first postoperative day, the patient presented recovery of the level of conscience, being extubated on the second postoperative day and performed CT scan [Figure 3]. All the cultures were negative and cerebrospinal fluid (CSF) did not present alterations. Histopathological examination showed fragments of cystic wall covered by respiratory epithelium, permeated by purulent exudate mucoid lesions.

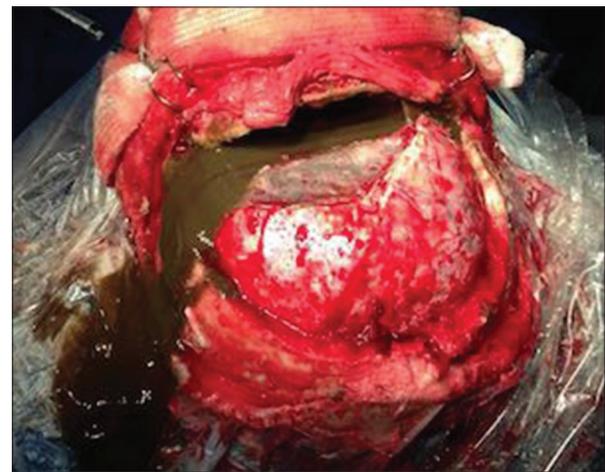
On the first postoperative day, a team of Ophthalmologists evaluated the eye and retina after surgery and did not find alterations. The patient was discharged from the hospital without neurologic deficits after the end of the antibiotics, with 6 months of follow up with no evidence of recurrence or new neurological deficits.

## DISCUSSION

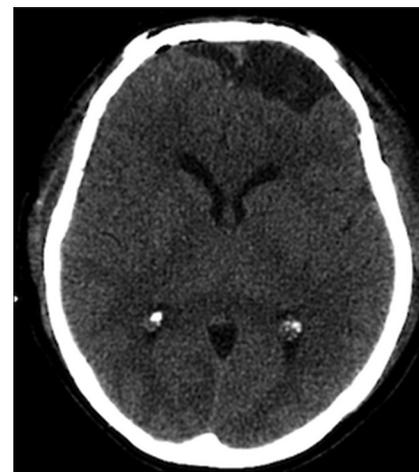
The destruction of the paranasal sinus is described in 10–20% of the mucopyoceles and it is contained by dura mater that is rarely penetrated by inflammation or tumor originated from the frontal sinus.<sup>[3]</sup> The clinical signs arise progressively with diplopia, loss of visual



**Figure 1:** (a) Skull CT in axial cut without contrast showing expansive frontal lesion with hyperdense margin with thinning of the frontal bone. (b) Skull CT in axial cut with contrast showing contrast enhancement at the margin lesion



**Figure 2:** Intraoperative picture



**Figure 3:** CT axial cut postoperatively

accuracy, proptosis, loss of eyepiece documentation, meningitis, meningoencephalitis, pneumocephalus, brain abscess, convulsive crisis, and CSF fistula.<sup>[4,7,12]</sup> The giant frontal mucocele with intracranial extension can cause personality disturbed perception and frontal lobe syndrome.<sup>[12]</sup>

We believe that the patient had mucocele for a long time as a result of erosion of the rear wall of the frontal sinus and invasion of dura mater, passing to present as headache and fever because of an infection that lasted for a short period. The infection caused increase of the lesion with compression of the frontal lobe and rear signs of intracranial hypertension.

Magnetic Resonance Imaging (MRI) of skull presented hypertension in T1 and T2, intra and extra cranial lesion, and intraorbital structures. The differential radiology diagnoses were dermoid cyst, histiocytosis, fungal infection, low-grade gliomas, and post-traumatic injury.<sup>[3,5,6]</sup>

The first treatment is the draining of accumulated secretion in the sinus and antibiotic therapy.<sup>[3,11]</sup> The transcranial access is necessary due to frequent dural laceration and bone defects that must be corrected with pericranium, muscle or communication of frontal sinus to the cranial cavity.<sup>[1]</sup> The culture is multifactorial (most common germs are *Staphylococcus species* and *Fusobacterium species*) and many times they can be sterile culture.<sup>[8,10]</sup>

An alternative surgical approach would be endoscopic surgery, which allows access to the frontal sinus and anterior cranial fossa. This access can be performed through transnasal approach, by orbit or even a combination of both access routes, adding versatility, a shorter surgical time, and an equal result.<sup>[8]</sup> However, this technique requires endoscopic training and the availability of trained neurosurgeons.

In the case presented, the patient had signs of intracranial hypertension, Cushing's triad; urgent CT scan was done to elucidate the diagnosis. We believe there was no time for MRI because of the signs of intracranial hypertension. The CT scan showed a significant lesion in a bilateral front region that justifies the clinical signs, which forced an emergency surgery. After the procedure, there was a clinical recovery that confirmed the diagnosis. The patient stayed under antibiotic for fourteen days due to an invasion of dura mater and purulent characteristic of the lesion in intra-operative, even though it showed negative cultures. Our infectology department made the decision for 2 weeks antibiotics due to the good resection

of the mucopyocele with no intraoperative signs of osteomyelitis and negative bone cultures.

## CONCLUSION

The mucopyeloceles have indolent growth and increased volume after infection, but rarely course with acute mass effect. Previous cases of mucopyocele associated to intracranial hypertension have not been mentioned in any literature. Thus, the case is relevant for literature due to the necessity of active intervention for better prognosis of the patient.

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## Conflicts of interest

There are no conflicts of interest.

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