FRONTAL MUCOCELE AS A CAUSE OF GROSS UNILATERAL PROPTOSIS

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Introduction

Frontal mucocele is an uncommon cause of proptosis. We present one such case resulting in gross proptosis with marked bony erosion of roof of orbit and floor of the anterior cranial fossa. In the absence of CT scan facility and ENT surgical expertise, the surgical procedure entailing drainage of mucocele and obliteration of cavity using abdominal fat, has resulted in a very satisfying outcome.

Case Report

A 34 year Sierra Leonean national was referred to our level III facility with history of painless, slowly growing mass over the left forehead of 2 years duration. There was no history of antecedent trauma. On examination there was a 12cmx8cm tense swelling over the left frontal region. It was non tender, non reducible, there were no transmitted impulses and local temperature was not raised. There was associated gross proptosis with the globe pushed down and out. Visual acuity in left eye was reduced to 6/36. There was relative afferent pupillary defect, papilledema and macular edema. Ocular movements were restricted in all directions.

Haematological parameters and urinalysis were within normal limits. Radiograph of paranasal sinuses revealed erosion of roof of orbit and increased size of sinus cavity. Ultrasonography revealed echogenic debris and eroded bone. Facilities for CT scan/MRI were not available within the country and the destitute patient could not travel abroad to get these investigations done. Needle aspiration resulted in a mucoid aspirate, which was culture negative.

A provisional diagnosis of a frontal mucocele was made and the patient was subjected to surgery. A curvilinear incision was given 1 cm above and parallel to the eyebrow. All the mucoid material was aspirated and diseased mucosa, which could be removed, was removed. The entire orbital roof was eroded and the globe could be "pushed out" using the index finger. Postero-superiorly the brain pulsations could be seen through the dura. The cavity did not reveal any growth or vascularised tissue.

A PTFE coated biocompatible tube (suction drain) with multiple fenestrations was passed through the inferomedial recess into the nose and anchored there. Through a left anterior abdominal wall incision, fat was removed and used to obliterate the sinus cavity.

Post operatively the patient was kept on antibiotics and analge-

Fig. 1 : 12 x 8 cm swelling over left frontal region

Fig. 2 : Post operative photograph, no recurrence at 3 months follow up

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sics and discharged on the 5th day. Drainage tube was removed after 3 months. Visual acuity left eye had improved to 6/18 and papilloedema regressed. At the end of another 3 months follow up there had been no recurrence of the mucocele.

Discussion

Mucoceles were first described by Langenbeck (1820) under the name of hydatides, and Rollet (1909) suggested the name mucocele. Mucoceles have been described as collections of mucous enclosed in a sac of lining sinus epithelium within an air sinus resulting from an obstruction to the outlet of the cavity which may cause an expansion of the sinus by resorption of the bony walls [1].

The paired frontal sinuses are lined with pseudos-tratified ciliated columnar epithelium, which provides mucous secretion to trap bacteria. This secretion then extrudes through the ostium via the nasofrontal duct into the infundibulum to be swallowed or expectorated. Frontal sinus mucoceles develop secondary to a blockage of the nasofrontal duct which may be secondary to infection, allergy, trauma, tumours, congenitally narrowed ostium or previous sinus surgery [2]. In nearly 30% cases no prior nasal symptoms can be elicited. As the lesion expands, there is thinning and erosion of the walls of the frontal sinus. Primarily the orbital roof is eroded resulting in proptosis, diplopia, periorbital or upper lid swelling, decreased visual acuity and restricted ocular movements, causing the patient to first seek an ophthalmologists opinion, as it happened in our case [3].

Incidence of mucocele of the paranasal sinuses as a cause of unilateral proptosis has been estimated to be between 1.5%-4% [4], making it a rare etiological factor of proptosis. In perhaps the largest series of 98 patients of fronto-ethmoidal mucoceles covering a period between 1962-1986, Lund et al found proptosis in 91 % of patients (average 6 mm) and lateral and inferior displacement in only about half the patients [5], thus indicating the usual small size of these lesions. Our patient in comparison had a huge mucocele and, therefore is a rarer entity.

In a series of 46 patients covering a 13 year period, Evans (1981) found preoperative evidence of bony erosion in 34 (74%) patients. The floor of the frontal sinus was involved in 31(91%) and only 13(38%) had loss of posterior wall with exposure of the dura [6].

The Howarth and Lynch surgical procedure empha-

sized the importance of removing all diseased mucosa and creating adequate drainage. However, it may not be possible to always remove all the mucosa as it happened in our case. Inferiorly there was the danger of prolapse of orbital fat and superiorly the dura would have been exposed.

Failure to maintain long-term patency of the fronto-nasal recess is one of the chief causes of failure. This we achieved by using a PTFE coated biocompatible tube with multiple fenestrations which was left in situ for 3 months.

It is also important to obliterate the sinus cavity. A variety of exogenous and endogenous materials have been used but abdominal fat has proved to be the most popular [7] and was used in our patient.

In spite of a massive proptosis vision was fairly well preserved probably because of the longer length of the optic nerve relative to the orbital axis allowing a degree of "stretch", Fujitani et al (1984) state that visual loss associated with mucocele is rare, and once established the chances of recovery are slight. Our case showed an improvement of two lines on the Snellen's chart probably as a result of resolution of papilloedema and macular edema following decompression of the orbit.

Today the best surgical approach would probably be an endoscopic approach, considering the functional and cosmetic aspects. However, its drawbacks are the requirement of equipment, expertise and incomplete exposure of the sinus cavity.

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