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Case Report

Orbital meningocele in two case studies

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ABSTRACT

Background: Orbital meningocele is a rare congenital malformation characterized by herniation of the meninges into the orbit through a congenital defect in the orbital bones. Much less commonly, it occurs at the site of natural openings (e.g., optic foramen and sphenoidal fissure) or can be attributed to trauma.

Cases Description: We report two patients with progressive proptosis found to have orbital meningoceles, respectively, attributed to congenital and traumatic lesions. The computed tomography scan in one case documented a traumatic orbital bony defect, but in the other case, led the mistaken diagnosis of an arachnoid cyst.

Conclusion: Both patients underwent two operations each to ultimately achieve successful surgical correction of their respective traumatic and congenital orbital meningoceles.

Keys words: Children, Orbital meningocele, Trauma

INTRODUCTION

Primitive orbital meningocele is a rare congenital malformation defined as a herniation of the meninges into the orbit through a congenital or traumatic defect in the orbital bone.[4,6] Here, we present two cases of orbital meningocele representing these two different etiologies.

CASE DESCRIPTION

Case 1

A 3-year-old female sustained a fall resulting, and 1 week later presented with the right orbital swelling. Ten days after the fall, ophthalmology observed persistent swelling; the periorbital tap revealed cerebrospinal fluid (CSF). Two computed tomography (CT) scans were performed 1.5 and 3.5 months after the fall for persistent right periorbital swelling (i.e. the eye remaining closed). The CT studies revealed; (1) a right frontal orbital fracture with parenchymal right frontal brain contusion and an osteodural breach (e.g., displaced fracture of the roof of the right orbit extending to the ipsilateral upper wall/frontal bone) [Figure 1], (2) a nonenhancing low-density fluid collection anterior to the right eyeball and communicating with the right

subarachnoid space, and (3) a chronic right low-density subdural hematoma [Figure 2].

Surgery

The surgical repair included closure of the meningocele and repair of the fracture utilizing a bone graft to the orbital roof. Postoperatively, she had a persistent CSF leak accompanied by proptosis unresponsive to acetazolamide 250 mg. The postoperative CT scan documented the same findings as recounted above [Figure 3].

Treatment

When repeated lumbar punctures failed to resolve the problem, secondary surgery was performed to close the roof of the orbit utilizing abdominal fat. Postoperatively, she developed meningitidis that was appropriately treated with multiple antibiotic. One month later, the meningitis resolved along with her right side proptosis. Further, there was an improvement in the downward gaze/displacement/ophthalmoplegia [Figure 4].

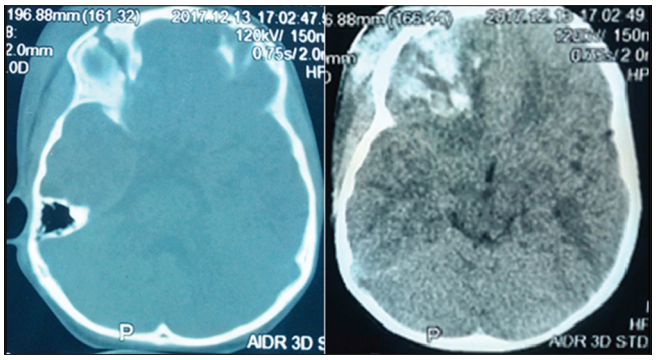

Figure 1: The first brain computed tomography scan shows fracture of the orbital roof and frontobasal hemorrhagic contusion.

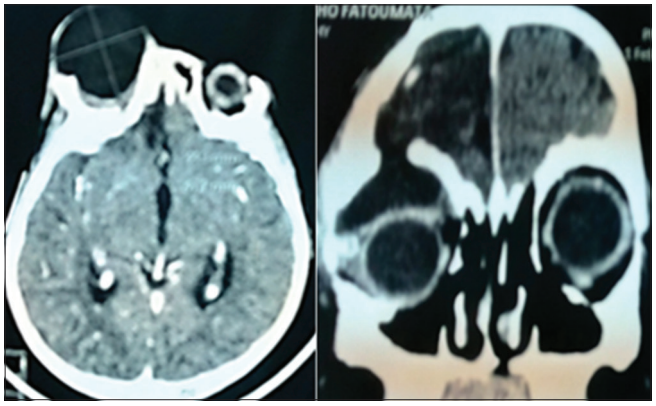

Figure 2: The second brain computed tomography scan showing an intraorbital collection communicating with the right frontal subarachnoid space.

Case 2

A 7-year-old male presented with a solid right orbital lesion. He had been born with an "inner canthi lesion" extending to the nose and had a "procedure" performed at 1 month of age without resolution of the problem. Six years later, he presented with a solid right eye inner canthus lesion accompanied by increased lacrimation but without any visual loss [Figure 5]. The brain CT scan showed a right intraorbital cystic mass plus a temporal/frontal arachnoid cyst [Figure 6]. Initially, he underwent closure of the meningocele. One day postoperatively, he developed right-sided rhinorrhea, treated with 250 mg acetazolamide. Secondarily, he underwent placement of a cystoperitoneal shunt; it malfunctioned 4 days later and the CT scan showed that the shunt was in the cerebral parenchyma. One month later, a third operation included revision of the cystoperitoneal shunt. Finally, 3 months after the final procedure, the patient's CSF leak resolved, along with the inner canthus lesion, but there was persistent/residual slight downward displacement of the right eye [Figure 7].

DISCUSSION

Epidemiology

Orbital meningoceles account for between 1 and 1.5% of all meningoceles.[8] Most are primarily congenital abnormalities, but a subset is due to trauma.[2,5] CT scans alone are typically

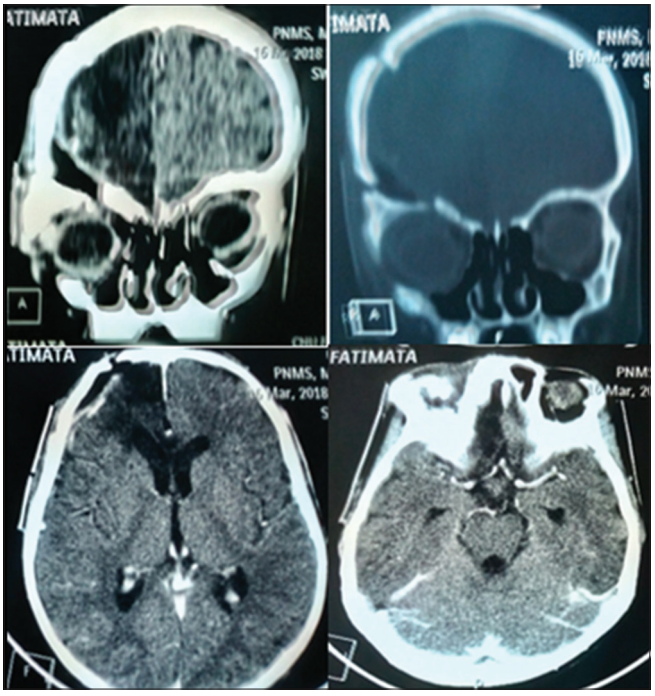

Figure 3: Postoperative brain computed tomography scan showing the resolution of intraorbital meningocele and exophthalmia.

Figure 4: Esthetical evolution before surgery (a), 2 months after the first surgery (b), final result after 1 year of follow-up (c).

Figure 5: Matinal aspect with solid right eye inner canthus tumefaction and lacrimation observable on the t-shirt.

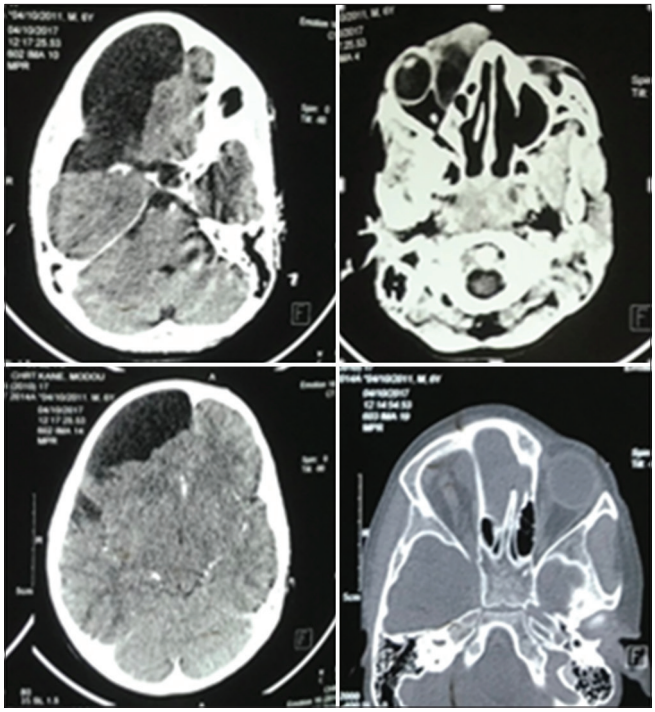

Figure 6: The right intraorbital cyst and temporal and frontal arachnoid cyst.

sufficient to establish the diagnosis and plan for surgical repair.[1,4,6,8]

Figure 7: Final aspect after the third surgery.

Delay of management

Early surgical intervention can minimize postoperative morbidity and improve functional and cosmetic results.[3,5,7,8] The delays in our two cases were due to the lack of access to appropriate specialists, facilities, and diagnostic studies.

Surgery

For congenital meningoceles, the best treatment is for excision and/ligation of the cyst plus closure of the defect.[2,4] Large defects can typically be closed by reconstructing the orbital roof with titanium plates and microscrews; when these are not available, bone graft may be utilized.[4,6,8] To address persistent postoperative CSF leaks, repeated lumbar punctures may be performed if lumbar drains are not available. Notably, the incidence of perioperative meningitis is high at 9–10% and requires appropriate antibiotic therapy.[3,8]

In this report, both patients exhibited postoperative sequelae consisting of 6–12 months of postoperative residual unilateral downward displacement/ophthalmoplegia.[8] Long-term outcomes would likely have been improved had both patients undergone earlier surgery.[3,4,6,8]

CONCLUSION

We presented two cases of orbital meningocele; one traumatic and one congenital, where the surgical outcomes could have been improved with earlier diagnosis and treatment.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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