Case Report

Orbital meningocele in two case studies

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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 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. 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 meningitis 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].

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
Delay of management

Early surgical intervention can minimize postoperative morbidity and improve functional and cosmetic results. 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. 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. 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.

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

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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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Badilla J, Dolman PJ. Cerebrospinal fluid leaks complicating orbital or oculoplastic surgery. Arch Ophthalmol 2007;125:1631-4.
2. Benharbit M, Rifi LL, El Khamlichi A, Mohcine Z. La méningo-encéphalocèle orbitaire: À propos de 2 cas. J Fr Ophtalmol 2004;27:613-6.
3. Connon FV, Austin SJ, Nastri AL. Orbital roof fractures: A clinically based classification and treatment algorithm. Craniomaxillofac Trauma Reconstr 2015;8:198-204.
4. Ha AY, Mangham W, Frommer SA, Choi D, Klinge P, Taylor HO, et al. Interdisciplinary management of minimally displaced orbital roof fractures: Delayed pulsatile exophthalmos and orbital encephalocele. Craniomaxillofac Trauma Reconstr 2017;10:11-5.
5. Haug RH, Van Sickels JE, Jenkins WS. Demographics and treatment options for orbital roof fractures. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2002;93:238-46.
6. Kim JW, Bae TH, Kim WS, Kim HK. Early reconstruction of orbital roof fractures: Clinical features and treatment outcomes. Arch Plast Surg 2012;39:31-5.
7. Mohindra S, Mukherjee KK, Chhabra R, Gupta R. Orbital roof growing fractures: A report of four cases and literature review. Br J Neurosurg 2006;20:420-3.
8. Van Rumund A, Verrips A, Verhagen WI. Pulsatile proptosis due to intraorbital meningocele. Front Neurol 2017;8:290.

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