Traumatic Orbital Pseudo-Meningocele

Case Report

Y. S. Bhandari, M.B., B.S., M.S.
Midland Centre for Neurosurgery and Neurology, Smethwick, England

Orbital meningocoele is a rare but well-recognized cause of unilateral exophthalmos. Most of the reported cases are of congenital origin; the traumatic background for the case we are reporting makes it particularly interesting.

Case Report

On July 25, 1966, this 2½-year-old boy was dropped from a height of about 5 feet onto a concrete floor; he sustained a small laceration on the left side of the forehead and did not lose consciousness. The wound was sutured; following the injury there was considerable swelling of the left side of the face and the left orbit. When the edema subsided it became evident that there was proptosis of the left eye; at the same time the child complained of intermittent headache. After a week the prominence of the left eye partially subsided but then remained static to the day of admission to the North Staffordshire Royal Infirmary, Stoke-on-Trent, on February 2, 1967.

Examination. The child was intelligent and cooperative. The head circumference was 20½ inches, and the fontanels were closed. There was a small ½-inch scar on the left side of the forehead, downward displacement of the left eye, and a nonpulsatile proptosis measuring 4 mm (Fig. 1). The folds of the left upper lid were absent. No mass was palpable in the left orbit. The visual fields were full and the visual acuity was 20/60 bilaterally. Both fundi were normal. The pupils reacted to light; external ocular movements were normal. The other cranial nerves were normal as was the rest of the neurological examination. A systolic bruit, which did not disappear on carotid compression, was heard in both temporal regions.

Routine hematological and urine examinations were normal. Skull x-rays taken soon after the accident showed a fracture in the left frontal region extending into the roof of the orbit with a small depressed bone fragment in the frontal region (Fig. 2 left). There was slight diastasis of the coronal suture. Further x-rays of the skull taken on December 12, 1966, showed a ring of calcification surrounding a small oval cyst-like area below the left orbital roof, which even on review was not apparent in the earlier films (Figs. 2 right and 3 left). In view of the proptosis and the bruit, a left carotid angiogram was performed; it was normal. Since the proptosis had persisted without any change for 7 months, it was decided to carry out a craniotomy.

Operation. A left frontal craniotomy was carried out. The frontal lobe was elevated extradurally. A fracture line through the orbital roof was immediately visible, and a fold of dura was found to be passing into the fracture line. No cerebrospinal fluid leakage was seen. The dura was repaired and then the bone was nibbled from the edge of the fracture towards the left side. This uncovered a bluish cyst. As the bony exposure was

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extended, the cyst ruptured and clear colorless fluid escaped. The upper part of the capsule of the cyst was removed, leaving the white lining in the floor of the cyst which was firmly adherent to the eyeball. This layer felt quite soft. The wound was then closed in layers. Histologic examination of the membrane showed it to be collagenous connective tissue.

**Postoperative Course.** The proptosis gradually disappeared completely. The eyeball was freely mobile but was still displaced downward at the time of discharge.

The patient was seen again as an outpatient on April 1, 1967; there was still no proptosis. The left eyeball was freely mobile although it was still somewhat lower than the right eyeball. Postoperative radiographs showed decalcification in the lower part of the cyst wall (Fig. 3 right).

**Discussion**

Traumatic lesions of the orbital wall usually heal without effects on the eyeball but they may rarely be followed by a pulsatile eyeball or by exophthalmos. The pulsatile eyeball has been explained by transmission of cerebral pulsation to the eyeball either through a defect following absorption of the bone at the site of the fracture or through a preexisting congenital defect in the orbital wall. These cases are usually accompanied by exophthalmos, and diagnosis depends on the radiological demonstration of the defect in the bone. True traumatic meningoceles of the orbit are rare and usually cause progressive displacement of the eyeball. They are associated with extensive fractures and bone destruction, and present as meningo-encephaloceles rather than meningoceles.

Only one case of meningo-encephalocele of the orbit was reported by MacCarty and Brown, in a series of 186 cases of orbital tumors. Taptas has reported a case of a 6-year-old boy who developed an orbital pseudo-meningocele after a fall. The meningocele was bilobular; one lobe was behind the orbit and the other in the frontal region.

In our case the meningocele was unilocular, and the proptosis was not progressive. One can only speculate on the probable mechanism of its formation. Cerebrospinal
fluid probably leaked into the orbit through the torn dura and the fracture, and may then have become encysted, trapped within the cranial cavity by a local ball valve mechanism. With the formation of arachnoidal adhesions around the fracture site it became encysted in a pseudo-membrane which then gradually calcified and could be seen in the radiographs. This encysted meningocele maintained the exophthalmos, which was relieved only by the operative removal of the cyst fluid and partial removal of the membrane.

**Summary**

We have reported the successful surgical treatment of an encysted traumatic orbital pseudo-meningocele.

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**References**