EMERGENCY CASEBOOK

An eye for trouble: orbital cellulitis

P A R Armstrong, N M Nichol

Emerg Med J 2006;23:e66 (<http://www.emjonline.com/cgi/content/full/23/12/e66>). doi: 10.1136/emj.2006.041194

Patients with orbital cellulitis present to emergency departments occasionally. Symptoms usually develop rapidly, with patients being distressed by painful ocular movements and systemic upset. The case of a 24-year-old man who had a 1-month gradual history of intermittent periorbital swelling after a flu-like illness, and subsequently developed a large intracranial extradural abscess eroding through the temporal bone, ultimately requiring neurosurgical intervention is presented.

Although orbital and periorbital swelling is common after acute sinusitis, cellulitis and intracranial abscess are rare but potentially life threatening and sight threatening. Accurate diagnosis is therefore of great importance.

In this case, the patient presented with few clinical signs but relevant pathology. The importance of assessing ocular movement, which is a major clinical abnormality indicating orbital disorder and thus an aid to accurate diagnosis, should be highlighted.

Patients with orbital cellulitis present to emergency departments occasionally. Symptoms usually develop rapidly, with patients being distressed by painful ocular movements and systemic upset. We present a case of a patient who had a 1-month gradual history of intermittent periorbital swelling, and subsequently developed a large intracranial extradural abscess eroding through the temporal bone, ultimately requiring neurosurgical intervention.

CASE REPORT

A 24-year-old man presented to the emergency department with a swollen left eyelid. Further questioning disclosed a 1-month history of intermittent lid erythema and swelling, for which he had consulted his general practitioner and was treated with chloramphenicol ointment and chlorpheniramine. Although initially this helped his symptoms, later it became ineffective. He had attended his local emergency department 2 weeks after the initial episode, and after a comprehensive examination showing no new acute findings and normal ocular movements, was appropriately referred back to his primary care service.

Five days before his most recent presentation, he again consulted his general practitioner describing deteriorating symptoms. Concerned that his periorbital symptoms were the result of an oral infection, he was reviewed at the local dental hospital where an obvious dental infection was excluded, and was treated with co-amoxiclav and metronidazole.

He failed to improve and re-presented to the emergency department the next day, having been encouraged to do so by his mother. Apart from antibiotics he was not taking any regular drugs and denied any important medical history other than a flu-like illness with associated sinus pain about 4–5 weeks previously. Specifically, he denied episodes of systemic upset or fever. His mother did comment that she thought he was mentally “slightly slower than normal”.

Examination disclosed a swollen and erythematous left upper and lower eyelid (fig 1), with erythema and fluctuant swelling extending on to the left temporal scalp region. Visual acuity was recorded as 6/4 bilaterally. Ocular movements were painless, but a restriction of upward gaze was noted, with associated diplopia (fig 1). Funduscopy suggested slight blurring of the left disc margin. Baseline observations were recorded as temperature 36.1°C, pulse rate 88 beats/min, blood pressure 138/80 mm Hg, beside blood glucose 4.3 mmol. Given the unusual and atypical nature of the presentation, facial x rays were taken which showed signs of frontal sinus thickening.

Despite the patient appearing well, with no associated signs of systemic upset, a diagnosis of orbital cellulitis was made and the patient was referred to the ophthalmology team who arranged an urgent computed tomography of the brain, reported as follows:

There is evidence of diffuse sinusitis involving bilateral maxillary, ethmoidal, frontal and sphenoidal sinuses. There is a large abscess (5×4.5 cm) arising from the left ethmoid sinus extending into the cranial cavity with erosion of the left fovea ethmoidalis. The abscess is seen tracking along the extra dural space into the cerebral parenchyma of the left frontal and temporal lobes. The abscess erodes the lateral aspect of the left temporal bone and forms another collection measuring 4×1.5 cm deep to the left temporalis muscle. Normal ventricles and basal cisterns. There is no midline shift.

Figure 1 Photograph showing orbital and temporal cellulitis. Patient consent was obtained for publication of this figure.

The patient was subsequently transferred to the combined care of ENT surgeons and neurosurgeons. Pus isolated from the temporal scalp region cultured a growth of *Streptococcus milleri* group for which treatment was started with intravenous cefuroxime, metronidazole and flucloxacillin. The next day, he underwent drainage of the extradural abscess under general anaesthesia. Pus was drained via a burr hole and the region washed out with hydrogen peroxide. ENT surgeons then performed a left middle meatal antrostomy and left anterior ethmoidectomy, draining copious amounts of pus.

The patient improved postoperatively, with a decreasing C reactive protein level and a subjective improvement in symptoms. One week after admission, he underwent repeat computed tomography scanning, confirming the reduction in size, but persisting presence of an extradural and subcutaneous abscess. Intravenous antibiotics were discontinued, and treatment with oral clindamycin was started for a further 3 weeks. He was discharged 10 days after admission, with plans for outpatient follow-up.

DISCUSSION

Previous publications have commented that orbital and periorbital (pre-septal) swelling secondary to acute sinusitis is common.^{1,2} Orbital cellulitis and intracranial abscess formation are, however, rare complications.³ They are potentially life threatening and sight threatening.^{1,2} Reports have described the importance of accurate diagnosis, and also the difficulties in differentiating orbital cellulitis from allergy and orbital inflammation (occurring in up to 70% of patients with acute sinusitis).² These conditions are more common among children.

Patients tend to present with a rapid development of symptoms. Periorbital cellulitis tends to present with swelling of eyelids and skin erythema or discoloration. Fever,

conjunctival injection and associated discharge may be present; however, visual acuity, movements and pupillary response will be normal. Orbital cellulitis has similar, but more severe symptoms, often including proptosis, ocular pain, raised intraocular pressure, painful and restricted movements, and reduced or complete loss of trigeminal nerve sensation.^{1,4} *Streptococcus milleri* has previously been identified as the most common organism isolated in such cases.³

In this case, the patient presented with a protracted and atypical history, with few clinical signs but relevant pathology. We wish to remind clinicians of the importance of assessing ocular movement, which is a major clinical abnormality indicating orbital pathology and aiding accurate diagnosis.

Authors' affiliations

P A R Armstrong, N M Nichol, Emergency Department, Ninewells Hospital, Dundee, UK

Competing interests: None.

Correspondence to: P Armstrong, Emergency Department, Ninewells Hospital, Dundee DD1 9SY, UK; peter.armstrong@nhs.net

Accepted 15 August 2006

REFERENCES

- 1 **Howe L**, Jones NS. Guidelines for the management of periorbital cellulitis/abscess. *Clin Otolaryngol* 2004;**29**:725–8.
- 2 **Goodyear PWA**, Firth AL, Strachan DR, *et al*. Periorbital swelling: the important distinction between allergy and infection. *Emerg Med J* 2004;**21**:240–2.
- 3 **Jones NS**, Walker JL, Bassi S, *et al*. The intracranial complications of rhinosinusitis: can they be prevented? *Laryngoscope* 2002;**112**:59–63.
- 4 **Givner LB**. Periorbital versus orbital cellulitis. *Pediatr Infect Dis J* 2002;**21**:1157.