

## RESEARCH LETTER

**Audit of the multidisciplinary management of orbital infection secondary to sinusitis****N. Eze BSc MRCS MRCS (Ed) DO-HNS, S. Lo BMedSc MBA MRCS DLO and H. Daya MB ChB FRCS (ORL)**

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**To the Editor**

Acute infection of the orbit may have several aetiologies such as conjunctivitis, trauma and stye, and it may also be idiopathic. However, the most common cause is acute sinusitis spreading directly from the paranasal sinuses which are intimately related to the orbit. The maxillary and ethmoidal sinus infections are the most common causes of orbital involvement (Mill & Kartush 1985). Only the thin translucent bone of the lamina papyracea separates the ethmoidal air cells and the orbit. The infection may enter the orbit either by direct extension, by local thrombophlebitis or by infected thromboemboli along valveless venous connections (Chandler *et al.* 1970). Neurovascular foramina, congenital or acquired bony dehiscences and valveless venous channels provide potential routes for bacteria to spread from the sinus through the lamina papyracea to the periosteum of the orbit (Harris 1983). A classification of orbital infection secondary to sinusitis was advanced by Chandler in 1970 (Chandler *et al.* 1970). It is based on local pathological changes and does not include intracranial complications but does indicate worsening morbidity, long-term complications and even death. In the preantibiotic era, orbital cellulitis resulted in blindness in 20% of patients, 13% had grave impairment of vision and 17% died of meningitis (Gamble 1933; Duke Elder & MacFaul 1974). Despite advances in imaging and antibiotics, there is a significant 10% incidence of visual loss (Patt & Manning 1991).

We report here an audit designed to improve current practice and instigate a multidisciplinary approach to the management of orbital infections

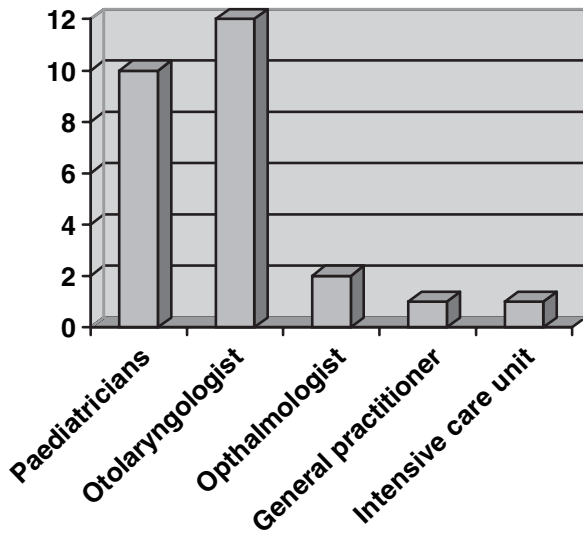
secondary to sinusitis and improve the quality of care offered to these patients.

**Method**

All patients admitted with orbital complications of sinusitis to St George's Hospital from October 2002 to October 2003 were included in the audit. The case records of 24 patients were reviewed. Various details of their management were assessed particularly if and when the following specialists were involved: paediatricians, ophthalmologists, otolaryngologists and microbiologists. The multidisciplinary meeting held in April 2003 involving these specialties was organized because of perceived shortcomings in management, particularly of paediatric cases. The agreed standard set at this meeting stated that all the invited specialties should be involved in the early assessment and care of these patients. The presence and timing of specialty referrals and the time spent in hospital were used as outcome measures.

**Results**

A total of 24 patients with orbital complication of sinusitis were admitted, of whom 10 were males and 14 were females. There were 15 children and 9 adults. The mean age of the adults was 55.3 years and of the children 5.3 years. Two patients had more than one admission. Ten patients were initially admitted by the paediatricians, 12 by the otolaryngologists, 2 by the ophthalmologists, 1 by the general physicians and 1 by the intensive care unit (see Fig. 1). Of the 26 admissions, 14 were admitted between October 2002



**Figure 1** The admitting specialty of patients with orbital cellulitis.

and mid April 2003 prior to the setting of standards agreed in the multidisciplinary meeting on 11 April 2003. The remaining 12 were admitted between mid April 2003 and October 2003. Between October 2002 and April 2003, 50% of the admissions were by the otolaryngologists and all seven patients had a daily ears, nose and throat (ENT) assessment. They were referred on the day of admission to the ophthalmologist for eye assessment and to the paediatricians if under 16 years. Of the five patients admitted under the paediatricians, three (60%) had no ENT or ophthalmology referral. The remaining two patients were referred to ENT on day 3 and 4 after admission as they were not improving. Both these patients improved after a change of antibiotics. Between April 2003 and October 2003 after the setting of standards, 11 out of 12 patients (91% cf 71%) were assessed by ENT and ophthalmology. Seven patients were admitted by a different specialty. Five were referred to ENT and ophthalmology and were assessed on day 1 or 2 after admission (71% cf 40%). One was discharged with no ENT or ophthalmology input. Before the change, 1 out of 14 patients (7%) was discussed with the microbiologists. This increased to 40% after April 2003. There was no statistical difference in the average time spent in the hospital between the two groups ( $P = 0.157$ , Mann-Whitney Rank Sum Test).

## Discussion

Recommendations for the management of acute orbital cellulitis and orbital abscess are conflicting between clinicians in various specialties and also between clinicians within the same specialty. There are debates related to the timing of computed tomography (CT) scans, type and duration of antimicrobial therapy, and the need for surgical drainage. Conflicts arise about the need for a multidisciplinary approach to the management of this condition. Some clinicians have forcibly recommended urgent drainage of an abscess and surgical drainage of the sinuses when a periosteal abscess is seen on a CT scan (Fairbanks & Milmoie 1985). On the other hand, others cite many patients who recovered after antibiotic therapy avoiding the need for surgical intervention (Catalano & Smoot 1990).

The set standards in this audit are not 'evidence-based' but a consensus-based standard agreed at the consultant-led multidisciplinary meeting in April 2003. Prior to the change, only 29% (4 out of 14) of patients were seen by all the relevant specialties. This improved to 91.6% (11 out of 12) afterwards. The improvement in case discussion with microbiology was more marked from 7% to 40%. Their involvement consisted of telephone advice regarding antibiotic recommendations. The results suggest otolaryngologists are most likely to have a multidisciplinary approach to their management when the patients are admitted by them (100%). When admitted by other specialties including paediatrics, ophthalmology and general medicine, this figure falls to 79% (19 out of 24). Paediatricians adopted a multidisciplinary approach to 40% of their admissions before the change and 80% afterwards.

The change in practice demonstrated by this audit could be considered successful, as more patients particularly those admitted by specialties other than otolaryngology are referred for ENT and ophthalmology assessment now.

## References

- Catalano R. & Smoot C. (1990) Subperiosteal orbital masses in children with orbital cellulitis: time for re-evaluation? *Journal of Pediatric Ophthalmology and Strabismus* **27**, 141–142.

- Chandler J., Langenbrunner D. & Stevens E. (1970) The pathogenesis of orbital complications in acute sinusitis. *The Laryngoscope* **80**, 1414–1428.
- Duke Elder S. & MacFaul P. (1974) *System of Ophthalmology. Part II Lacrimal, Orbital and Paraorbital Diseases*. Henry Kimpton, London.
- Fairbanks D. & Milmo G. (1985) The diagnosis and management of sinusitis in children. *The Pediatrics Infectious Disease Journal* **4**, 575–578.
- Gamble R. (1933) Acute inflammation of the orbit in children. *Archives of Ophthalmology* **10**, 483–497.
- Harris G. (1983) Subperiosteal abscess of the orbit. *Archives of Ophthalmology* **101**, 751–757.
- Mills R. & Kartush J. (1985) Orbital wall thickness and spread of infection from the paranasal sinuses. *Clinical Otolaryngology and Allied Sciences* **10**, 209–216.
- Patt B. & Manning S. (1991) Blindness resulting from orbital complications of sinusitis. *Otolaryngology – Head and Neck Surgery* **104** (4), 789–795.