PARANASAL SINUSITIS IN THE AETIOLOGY OF ORBITAL CELLULITIS

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SUMMARY

Aim: The purpose of this study was to assess the prevalence of paranasal sinusitis as a cause of orbital cellulitis and to identify the commonest sinus(es) involved in our setting.

Methods: A retrospective review of the case notes of 47 patients with orbital cellulitis admitted into the ophthalmic ward of the University College Hospital, Ibadan within a ten-year period (1988-1987) was done.

Results: Sinusitis (34.2%) was the most common cause of orbital cellulitis with the maxillary sinus being the most involved (38%). Patients in the second decade of life had the highest prevalence of 56%. More cases were seen during the dry season — November to February.

Conclusion: Paranasal sinusitis is probably the most frequent cause of orbital cellulitis with the maxillary sinus being the most involved.

Key words: orbital cellulitis, paranasal sinusitis, Ibadan, Nigeria

INTRODUCTION

Orbital cellulitis is the inflammation of the soft tissues of the orbit which could result in loss of vision[1]. It typically affects young children[2,3] and has been reported even in a five-week-old child.[2]

Patients usually present with painful proptosis, oedema of the lids and conjunctiva, and limitation of extraocular muscle movement. Also fever and malaise are not unusual. An asymptomatic variant of posterior orbital cellulitis has also been reported.[4]

Orbital cellulitis as a complication of paranasal sinusitis is well known.[3, 5-7] Allan Wulc[8] stated that sinusitis was responsible for orbital infection in 75-85% of a large series of patients with orbital cellulitis.

The sinuses are air spaces enclosed within the bones of the skull. Ideally, the bones should provide a barrier to the outward spread of infection from the sinuses. However, it does spread, especially to the orbit. It may result from direct spread through a defect in the sinus wall or by local thrombosis.[9, 10]

Sinusitis is often diagnosed using a combination of radiological tests (such as X-rays of the sinuses or computerized tomography scan) and clinical findings.

In this study, we assess the frequency of paranasal sinusitis in the causation of orbital cellulitis and find out which sinus is the most frequently involved in the Nigerian environment.

MATERIALS AND METHODS

A retrospective study of the case notes of 82 patients with orbital cellulitis who were admitted to the ophthalmic ward of the University College Hospital, Ibadan over a ten-year period (1988–1997) was carried out. Of these 82 case notes, 47 had near complete information and these were the ones analysed. The diagnosis of sinusitis was made based on history, X-ray findings and proof puncture. The X-ray showed air-fluid level, complete opacification or mucosal thickening of the involved sinus(es).

Data extracted included age, occupation, and sinus involvement. These were analysed using simple statistical averages.

RESULTS

Causes of orbital cellulitis

A total of 47 cases of orbital cellulitis were analysed. Paranasal sinusitis was the most common cause of orbital cellulitis (34.2%) followed by trauma (21.3%). Other causes included tumour, metastatic infection, furunculosis, panophthalmitis, tuberculosis, and dacryoadenitis. In 23.4% of the cases, the cause could not be identified (see table 1).

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Sinus involvement
The maxillary sinus was the most frequently involved (38%) as shown in table 2.

Age
The mean age of the patients was 15.72 years (from 45 days to 60 years). More than half (56%) of the patients were in the 11-20 year age group. Only three patients were within the 0-10 year age group (table 3).

Table 1. Causes of orbital cellulitis

Cause	Number	% frequency
Paranasal sinusitis	16	34
Trauma	10	21.3
Tumour	3	6.4
Metastatic infection	2	4.3
Furunculosis	2	4.3
Panophthalmitis	1	2.1
Tuberculosis	1	2.1
Dacryoadenitis	1	2.1
Unknown	11	23.4
Total	47	100

Table 2. Frequency of sinus involvement

Sinus	No. affected	%
Max	6	37.5
Max/eth/fro/sph	4	25
Eth/max	4	25
Fro/max	1	6.3
Fro/eth/max	1	6.3
Total	16	100

Max = maxillary Eth = ethmoidal
Fro = frontal Sph = sphenoidal

Table 3. Age distribution in years

Age Group (yrs)	Max	Eth/Max	Fro/Max	Fro/Eth /Max	All sinuses
0-10	1	1	0	0	1
11-20	3	1	1	1	3
21-30	0	0	0	0	0
31-40	2	0	0	0	0
41-50	0	1	0	0	0
>50	0	1	0	0	0
Total	6	4	1	1	4

Seasonal Variation
All the patients were seen in the dry season, in the months of November to April (figure 1).

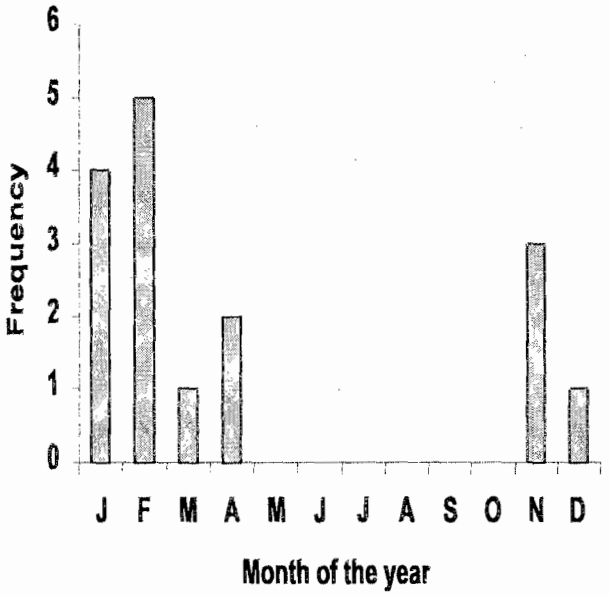

Figure 1. Seasonal variation in presentation of orbital cellulitis

DISCUSSION

Our findings correlate with those in previous studies which identified paranasal sinusitis as the most common cause of orbital cellulitis.[3, 10, 11] A study by Ogunleye et al.[12] identified orbital complications as occurring in 41% of cases of paranasal sinusitis. In 71% of the cases, the orbital complication was cellulitis. Mortimore et al.[5] also reported that the most common complication of acute sinusitis was orbital (80%).

The maxillary sinus was most often involved in this series in contrast to previous studies which reported either the maxillary sinus,[3,10,11] or the maxillary/ethmoidal/frontal.[5] This finding may be explained by the fact that the sinus is already present at birth in contrast to others which develop gradually after birth.

Majority of the patients were in their second decade of life. Mortimore et al.[5] also reported the majority being in their second and third decades of life, the former being the higher of the two.

The higher frequency of presentation recorded in January and February may be due to dry weather during the period and dust particles associated with dryness, causing obstruction of the ostia of the sinuses or increased irritation leading to inflammation and nasal obstruction. In addition, patients may also be allergic to the fumes from bush burning which is used by farmers to clear the land for planting during this period. There was a fall recorded in the month of December, which may be because the month is a festive period during which hospital attendance drops drastically.

CONCLUSION

It was found in this study that the maxillary sinus is the

most frequently involved sinus in paranasal sinusitis leading to orbital cellulitis.

One of the major limitations of this study, however, is the narrowness of its scope owing to the small number of cases analysed. A subsequent study with a wider scope is proposed.

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