

EYE COMPLICATIONS RELATED TO SINO-NASAL TUMOURS IN IBADAN

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SUMMARY

Objective: To determine the eye complications related to sino-nasal tumours at the University College Hospital, Ibadan with a view to making suggestions for improved management.

Methodology: A retrospective review of cases of sino-nasal tumours seen at the Eye, ENT and Radiotherapy clinics of the University College Hospital, Ibadan using the case records of patients seen between January 1998 and December 2002.

Results: Thirty-four cases of sino-nasal tumours were reviewed. The age range was between 3 and 83 years, with an average of 42 years. Twenty-six (76.5%) of the cases occurred in males.

The majority of the tumours 17 (50%) were located primarily in the maxillary antrum. Squamous cell carcinoma 7 (20.6%) was the commonest histological diagnosis.

A total of 24 (70.6 %) of the cases reviewed had ocular complications at presentation or in the course of management. These complications included proptosis 15 (44.1%), epiphora 12 (35.4%), limitation of ocular movement 8(23.5%), ocular pain 7 (17.7%) and less commonly, optic atrophy 2 (5.9 %), and keratinised desiccated cornea 1 (2.9 %). Out of 13 patients who had formal visual acuity measurement done by ophthalmologists, 2 had normal vision (6/5-6/18), 6 had low vision (6/24-6/60), 1 had light perception vision while 4 had vision of no perception of light.

Conclusion: A significant proportion of patients with sino-nasal tumours have ocular complications either at presentation or in the course of treatment. Despite this, only a minority are seen by ophthalmologists in the course of the management of these patients. It is hoped that the outcome of this study will sensitize the primary care physicians and ENT specialists to involve ophthalmologists as early as possible in the

management of these patients for optimal visual outcome. Also, ophthalmologists need to consider sino-nasal tumours in their evaluation of orbital disease in order to ensure prompt diagnosis and treatment.

Key words: sinonasal tumour, cancer, proptosis, visual loss

Introduction

Sino-nasal tumours are a diverse group of benign and malignant neoplasms that may occur in the nose and para-nasal sinuses. The para-nasal sinuses are four paired hollow asymmetrical structures in the skull. They are lined by mucous membranes and drain into the middle meatus of the nasal cavity, except the posterior ethmoidal cells which drain into the superior meatus and the sphenoid which drain into the sphenoidal recess. The sinuses are closely related to the roof (frontal and sphenoidal), medial wall (ethmoidal), and floor (maxillary) of the orbit. Because of their proximity to the eyes, pathology of these sinuses can readily involve the eyes and orbit.¹

The nose and para-nasal sinuses are two of the rarest sites of head and neck cancers, and sino-nasal tumours account for 0.2-0.8% of all carcinomas.² The incidence of sino-nasal tumours in the United States of America is about 10 per million per year.³ In Africa, the rates are much higher, 2.2% from Ibadan, Nigeria and 1.2% from Kenya.⁴ Racial and geographical differences have been explained on the basis of socioeconomic as well as behavioural differences.⁵

Approximately 55% of nasal and sinus tumours originate from the maxillary sinus, 35% originate from the nasal cavity, 9% from the ethmoid sinus, and 1% from the frontal and sphenoid sinuses and septum. With large tumours, the site of origin may be difficult to

identify.⁶ Clinical presentation of sino-nasal tumours include: epistaxis, nasal obstruction, cheek swelling, headache, trismus, oroantral fistula, proptosis, epiphora, and diplopia.^{7,8} Visual loss may result from exposure keratopathy in the presence of severe proptosis or compression of the optic nerve by an orbital spread of tumour. The aim of this study is to determine the eye complications related to sino-nasal tumours at the University College Hospital, Ibadan with a view to making recommendations for improvement in the overall management of affected patients.

METHODOLOGY

A retrospective review of all cases of patients clinically diagnosed with sino-nasal tumour, seen between January 1998 and December 2002 was done using case records from the ENT, Eye, and Radiotherapy clinics of the University College Hospital, Ibadan. The case notes were retrieved and the following data collected and analysed: patient's age, sex, and occupation; site of tumour; histological diagnosis and ocular complications. Data analysis and presentation were subsequently done with the aid of frequency distribution tables and charts.

RESULTS

A total of thirty-four cases of sino-nasal tumours seen within a five-year period (1998 to 2002) were reviewed. The age range was 3- 83 years, with an average of 42 years. The majority of the cases were seen in people in their thirties and fifties. 26 (76.5%) males were affected as opposed to 8 (23.5%) females. Females, however, tended to present later than the males (fig. 1). The age and sex distribution are as shown in figure 1. Table 1 shows the distribution by occupation. Students (23.5%)

made up the highest proportion of the cases reviewed followed by farmers (20.6%), traders (17.7%) and civil servants (17.7%).

Table 1. Distribution by occupation of sino-nasal tumour patients

Occupation	No.	%
Students	8	23.5
Farmers	7	20.6
Civil servants	6	17.7
Traders	6	17.7
Drivers	3	8.8
Artisans	2	5.9
Unknown	2	5.9
Total	34	100.0

The majority of the tumours 17 (50%) were located primarily in the maxillary antrum, 6 (17.7%) were naso-antral, 3 (8.8%) did not have the location stated and in 8 (23.5%) it was uncertain due to extensive disease. The histological diagnosis included squamous cell carcinoma 7(20.6%), adenoid cystic carcinoma 4(11.8%), anaplastic carcinoma 3(8.8%), and others 10(29%).

A total of 24 (70.6 %) of the cases reviewed had ocular complications either at presentation or in the course of management, however, only 13 were actually reviewed by an ophthalmologist. Out of these 13 patients, only 2 had normal vision of 6/5-6/18 at the time of discharge, 6 had impaired vision of 6/24-CF; 1 had light perception; while 4 had no light perception.

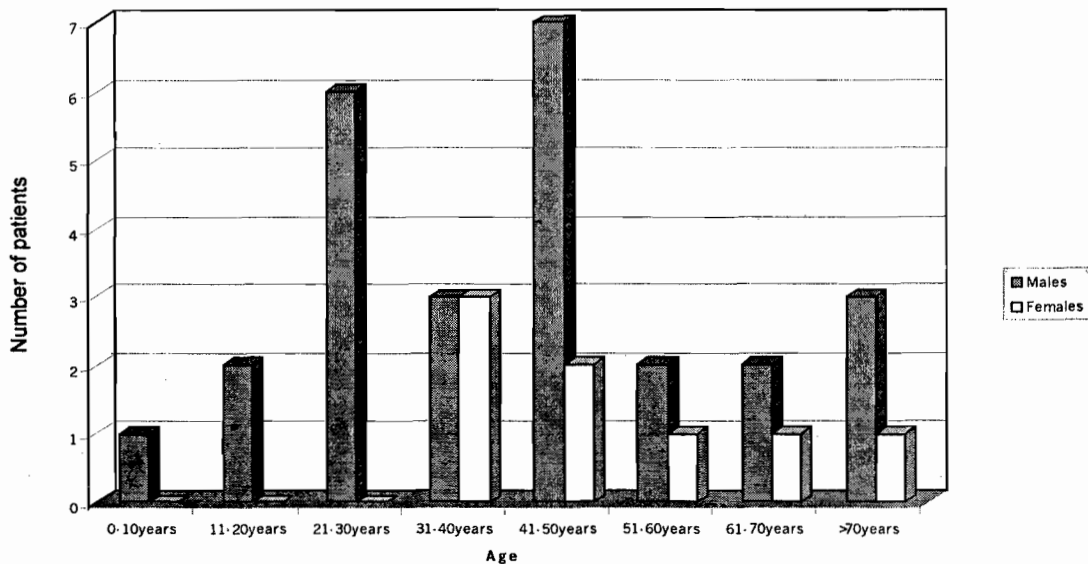


Figure 1. Age and sex distribution of 34 patients with sino-nasal tumour

Tables 2 and 3 show details of the visual acuities and ocular complications.

Table 2. Visual acuity measurements of sino-nasal tumour patients

Visual Acuity	No.	%
6/5-6/18	2	5.9
6/24-6/60	6	17.7
Light perception	1	2.9
No light perception	4	11.8
Vision not done	21	61.8
Total	34	100.0

Table 3. Eye complication in 24 of 34 patients with sino-nasal tumours

Eye Complication	No.	%
Symptoms		
Proptosis	15	44.1
Reduced vision	11	32.4
Epiphora	12	35.4
Ocular pain	7	17.7
Diplopia	2	5.9
Signs		
Proptosis	15	44.1
Restriction of ocular movement	8	23.5
Eyelid swelling	2	5.9
Conjunctival inflammation/Chemosis	6	17.7
Keratinised cornea	1	2.9
Periorbital pigmentation	3	8.8
Non-reactive pupil	3	8.8
Optic atrophy	2	5.9
Retinal haemorrhage	1	2.9

DISCUSSION

There were 26 males and 8 females, suggesting a male preponderance with a ratio 3:1, this is similar to findings in other series.^{3,4}

The majority of the cases in this study were seen in people in the third to fifth decade of life, with a mean age of 42 years. The observed peak age is similar to earlier reports, where it was reported to occur more commonly during the fourth and fifth decades of life.⁴ With the exception of non-epithelial neoplasms, malignant nasal tumours are primarily a disease of adults because it takes years of exposure for compounds such as nickel, polycyclic hydrocarbons and chromium^{6,8} which have been linked with the causation of such tumours to accumulate.

The pattern of occurrence in Africans is slightly different from that in Europeans and Americans.⁴ It is said to be less common in Europe and America (0.3%), than in Africa - 1.2% in Kenya, 0.8% in Uganda and 2.2% in Nigeria. It also presents at an earlier age in Africans. Snuffing, which has been implicated in the causation of such sino-nasal tumours, is a common habit amongst the Bantu of Southern Africa. Bantu snuff was found to be rich in carcinogens such as benzpyrene (also a condensate of cigarette smoke). Thus, carcinoma of the antrum was found to be very common amongst the Bantu.⁵ The observed higher prevalence in students who are most likely to smoke tobacco products, and traders and farmers who are also likely to take tobacco or be exposed to smoke from wood fires is also in keeping with this.

In this study, females were observed to present later in life than the males. This was also the observation by Arotiba¹¹ in Ibadan and Ogunlewe et al.¹² in Lagos; the reason for this is not precisely known and needs further investigation but may be related to the protective effect of the female hormone in the pre-menopausal woman. It may also suggest a future role for hormonal therapy.¹²

Fifty percent of the patients in this series had their tumour originating primarily from the maxillary sinus. This is similar to the 55% reported in the literature.⁶ Squamous cell carcinoma (20.6 %) was the commonest histological diagnosis. This is also in keeping with reports in the literature.⁹

A significant proportion of the patients (70.6%) had ocular complications at presentation or developed complications during the course of treatment. Proptosis, epiphora and diplopia were the major complaints. This is similar to findings in previous reports. Miller et al.¹⁰ reported a case of sinoantral tumour presenting primarily with epiphora, while Hayasaki et al.,⁷ in their study of 34 patients reported presenting symptoms to include, proptosis, epiphora, lid swelling, globe displacement, orbital mass and sudden visual loss. Permanent visual disability occurred in 5 of these patients following exenteration for tumour extension to the orbit. It should be noted that proptosis, when inadequately managed, predisposes the eye to exposure keratopathy, desiccation of the cornea and possible perforation with loss of intraocular contents. The optic nerve can also be compromised by infiltration of the tumour into the superior orbit to cause vascular occlusion or optic nerve compression.

Treatment for sino-nasal tumours may include surgery, radiotherapy and chemotherapy, with globe preservation where possible. Extensive orbital involvement may however require exenteration. Ocular complications from radiotherapy may include lens damage, retinopathy and optic atrophy. Three of the cases reviewed in this series had evidence of optic

neuropathy and retinal vascular compromise. Thus, of the 13 patients who had visual acuity measurements, only 2 had normal vision of 6/5-6/18 at the time of discharge, 6 had impaired vision of 6/24-CF; 1 had light perception; and 4 had no light perception. The observed poor vision in a large proportion of these patients is due to a combination of these factors acting together to cause permanent visual disability, which can only be prevented by prompt and timely intervention by an ophthalmologist. This, therefore, emphasizes the need to involve an ophthalmologist in the joint management of patients with sino-nasal tumours.

CONCLUSION

It has been observed from this study that a significant proportion of patients with sino-nasal tumours have ocular complications, either at presentation or in the course of treatment. Despite this, only a minority are eventually seen by an ophthalmologist. It is hoped that the result of this study will sensitize the primary care physicians and the ENT specialists to the need to involve ophthalmologists early in the management of these patients for optimal visual outcome. Also, ophthalmologists need to consider sino-nasal tumours in their evaluation of orbital disease in order to ensure prompt diagnosis and treatment.

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