Original Research Article

Sinonasal tumours: a clinical study and management

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ABSTRACT

Background: Sinonasal tumours are rare. Malignant lesions are more common than benign ones and prognosis is grave. This study was undertaken to understand clinical and histological features in addition to diagnostic workup, treatment outcomes, survival and prognostic factors of sinonasal tumours.

Methods: Time bound descriptive study at Department of ENT, KIMS, HUBLI, of 31 patients presenting with features suggestive of sinonasal tumours from October 2014 to September 2016. All patients were subjected to diagnostic nasal endoscopy, biopsy and radiological assessment of nose and paranasal Sinuses.

Results: 31 patients with sinonasal tumours were included in study group. Male patients outnumbered the female patients (2.4:1). Cigarette smoking was found to be important risk factor and was statistically significant ($p < 0.05$). Patients mainly presented with complaints like nasal obstruction, nasal discharge, headache, hyposmia/ anosmia, facial swelling, facial pain, etc. Malignant tumours were more than benign tumours. JNA and IP were most common among benign and SCC was most common among malignant tumours.

Conclusions: Sinonasal tumours are rare. Early diagnosis is important. Nasal endoscopic examination and CT scan can diagnose sinonasal tumours at an early stage. With many etiological factors analysed, cigarette smoking was found to be an important risk factor even for sinonasal tumours.

Keywords: Inverted papilloma, Sinonasal tumours, Juvenile nasopharyngeal angiofibroma

INTRODUCTION

More than 70 benign and malignant sinonasal tumours and tumour like conditions have been described. However, sinonasal tumours are rare, and sinonasal cancers comprise of only 3% of all head and neck cancers and 1% of all malignancies, with a peak incidence in the 5th to 7th decades and with a male preponderance.¹

These lesions may originate from any of the histopathologic components of the sinonasal cavities, including Schneiderian mucosa, minor salivary glands, neural tissue and lymphatics. Sixty percent of sinonasal tumours arise in the maxillary sinus, whereas

approximately 20% arise in the nasal cavity, 5% in the ethmoid sinus, and 3% in the sphenoid and frontal sinuses.²

Benign tumours of the nasal cavity and paranasal sinuses are rare pathologies with extremely varied etiopathology, clinical behaviour, treatment and prognosis. Clinically it becomes quite impossible to distinguish between inflammatory conditions presenting as simple polyps, polypoidal lesions due to specific disease and benign polypoidal neoplasms with resultant delay of diagnosis. The clinical and radiological features of masses of nasal cavity and Paranasal sinuses are overlapping and often only a provisional diagnosis is possible.

Definite diagnosis requires histopathological examination as most of the lesions are inaccessible for fine needle aspiration or FNAC is not recommended because of fear of hemorrhage.³

The importance of oral and Sinonasal tumours lies in the fact that they are rare, and cause disfiguring of the face necessitating subsequent reconstructive surgery. The skull, jaws and facial bones are not only the site of number of unusual lesions but, also pose unique histological problems ranging from potentially malignant to pseudomalignant features.⁴

Sinonasal malignancies are uncommon neoplasm with several histological subtypes. These malignancies have a poor prognosis and because of nonspecific nature of symptoms, most patients are diagnosed late when the disease is at an advanced stage. Therefore most sinonasal malignancies tend to be treated with surgery and postoperative radiotherapy.⁵

METHODS

Data for this descriptive study was collected from the patients attending the outpatient department of ENT, at Karnataka Institute of Medical Sciences, Hubballi, Karnataka, India between October 2014 to September 2016. A total of 31 patients with benign sinonasal tumours were included in the study. All cases were clinically diagnosed as sinonasal tumours after taking a detailed history regarding nasal obstruction, nasal discharge, headache, anosmia, Facial swelling and Facial pain.

A proforma was filled for each patient documenting name, age, sex, address and clinical information, including chief complaints and duration of symptoms. All cases were then subjected to general systemic examination. Then a thorough clinical ENT examination was performed and all the clinical findings were recorded in detail. After taking consent from the patients they were made to undergo investigations like haemoglobin percentage, bleeding time, clotting time, blood sugar,

ESR and serological investigations, HIV I and HIV II and HBsAg.

Work up before the treatment included a nasal endoscopic examination with incisional biopsy, computed tomography (CT), magnetic resonance imaging (MRI), in the assessment of invasion to the adjacent sites. All patients consulted to the prosthodontics, impressions were taken for the provision of dentate obturator. Stages were classified according to the seventh edition of American Joint Committee on Cancer TNM classification.

All the data were entered in to the SPSS version 20.0 computer software for descriptive analysis and results presented in tables and figures. Level of significance was considered at $p < 0.05$ at 95% Confidence interval. Statistical analysis of parameters was done and two parameters were compared using Chi-square test.

RESULTS

The male patients outnumbered the female patients with a male to female ratio of 2.4:1. In our study the youngest patient was 12 years of age and the oldest being 90 years. About half patients belonged to the age group >41 years. The patients were from various occupational backgrounds like labourers, home makers, farmers and students. Sinonasal tumours were more commonly noted among Manual labourers that constituted more than half of the patients in our study group. Cigarette smoking was seen in nearly one fourth (eight)) of the patients. Analyzing male and female risk factors, smoking tobacco was found to be statistically significant risk factor. Cigarette smoking was found to be one of the risk factor, and was statistically significant ($p < 0.05$) (Table 1).

The symptoms with which patients presented are nasal obstruction, epistaxis, headache, hyposmia/anosmia, facial swelling, facial pain, diplopia, and loose tooth. The symptoms seen in benign tumours were nasal obstruction, epistaxis, headache, facial swelling and hyposmia/anosmia.

Table 1: Smoking in male and female patients.

Parameter	Male	Percentage	Female	Percentage	Total	p-value
Cigarette smoking	8	100.00	0	0.00	8	0.036*

* $P < 0.05$

The symptoms seen in malignant tumours are similar to benign tumours as mentioned above, in addition malignant tumour patients also presented with facial pain, diplopia and loose tooth. Nasal obstruction which was the commonest symptom was noted in 22(70.97%) patients of which it was unilateral in 15(48.39%) and bilateral in 7(22.58%) patients.

Signs like cranial neuropathy and proptosis which were seen in 5 cases were all turned out to be malignant.

25% of malignant tumours recurred in the study group. Among benign tumours, recurrence was seen in 1 patient (3.22%) which was seen in Inverted papilloma.

Table: 2 Post surgery HPR wise distributions of patients.

Post-surgery HPR	Number of patients	% of patients
A.C.C	1	3.23
ADE.CA	2	6.45
CXPA	1	3.23
OFMT	1	3.23
IP	4	12.90
JNA	4	12.90
Lymphoma	1	3.23
ONB	2	6.45
PAP.CA	2	6.45
Plasmacytoma	1	3.23
SCC	5	16.12
SNUC	1	3.23

Table:3 Various treatment modalities in sinonasal tumours.

Treatment	Benign	Malignant
Surgery	08	4
Chemotherapy	-	2
Chemoradiotherapy	-	2
Both (surgery with adjuvant radiotherapy)	-	10

DISCUSSION

This study evaluated the patient with sinonasal tumours, both benign and malignant. The present study was conducted on 31 patients, where in males predominated with the male:female ratio being 2.4:1, where as in the study conducted by Fasunla AJ and Ogunkeyede SA females outnumbered male patients, but our study was comparable to study “Sinonasal Tract Malignancies: Prognostic Factors and Surgery Outcomes” conducted by Abdurrahman Bugra Cengiz and revealed that males were more commonly affected by sinonasal tumours and male/female ratio was 3:1 in their study group.^{6,7}

Nearly half patients in the study group were older than 40 years, cigarette smoking was present in one fourth patients and all patients were males, whereas Carolina M, found that median age group was 68 years in either gender and smokers were both males and females, almost 70% among males and about 40% among women.⁸ We found closer association between smoking and squamous cell carcinomas, as found by Carolina M et al.⁸

Bist SS et al in his study “Clinicopathological Profile of Sinonasal masses” on 110 cases, found that maximum number of patients were homemakers, i.e., 28 patients followed by students with 21 patients, where as in the study group, more than 50% patients were manual laborers with low socioeconomic status, 7 patients were students and 3 patients were homemakers.⁵ Binazzi A et

al revealed significant association between exposures to wood dust, leather dust, formaldehyde, nickel/chromium compounds, organic solvents, welding fumes and arsenic.⁹

In the present study, most of the patients were from rural community. The general observation of the patient’s socioeconomic classes showed that there were more patients in lower socioeconomic classes than those in the upper classes as observed by Fasunla AJ and Ogunkeyede SA in their study “Factors contributing to poor management outcome of sinonasal Malignancies in south west Nigeria”.⁶

In this study, most of the patients presented with nasal obstruction which was the most common symptom present in more than half patients which was also observed by Abdurrahman in their study.⁷ Epistaxis was seen in more than half patients. Intranasal mass on examination was the most common clinical finding followed by intraoral mass, facial deformity and palpable neck mass.

More than half patients presented with facial swelling in our study, whereas Das S, Kirsch CF¹⁰ made similar observation in nearly half patients in their study “Imaging of lumps and bumps in the nose”. Proptosis was present in 2 patients in study group, which was unilateral whereas studies conducted by Das S and Kirsch CF reported the incidence of 5.88% and 24% respectively. Proptosis was due to involvement of orbit by the tumour.¹⁰

Study found diplopia in 2 patients. In both the patients it was due to lateral rectus palsy. Loose tooth was present in 9 patients, hyposmia in 7 patients and Cranial neuropathy was present in 3 patients, of which cranial nerve I was the most commonly involved followed by cranial nerve VI, whereas Bist SS found hyposmia in about 35% patients.⁵ On ocular examination, 6% patients had diplopia and cranial nerve involvement in 35% patients, of which cranial nerve I was the most commonly involved, followed by cranial nerve II and V.

There was no evidence of distant metastases in their study. The malignancies were classified according to the AJCC classification. In this study, more than one third of patients presented in locally advanced stage of disease, which was comparable to study conducted by Abdurrahman.⁷

As reported by Maliha K et al, Stage 1 was present in sixteen (15.6%), stage 2 in 58 (57%), stage 3 in eight (8%) and stage 4 in twenty (19.6%) individuals.¹¹ According to Bist SS, maximum number of patients underwent CT scan comprising 95 patients (86.36%), and MRI in 2 (2.02%) patients. In this study, most of the patients underwent CT scan. MRI was done in 2 patients to rule out intracranial extension of tumour.⁵ Biopsy of the lesion was performed under local or general

anaesthesia transnasally using endoscope as was done by Abdurrahman.⁷

Bist SS reported high incidence of malignant neoplastic lesions. Among the malignant lesions, carcinoma nasal cavity was the commonest lesion seen in 45.83% patients and the commonest histopathological type was squamous cell carcinoma (SCC) seen in 33.33% patients. Benign lesions were present in twentyone patients and Angiofibroma was the commonest among benign lesions.⁵

In our study, all patients underwent histopathological examination of the specimen. Malignant tumours were more common than benign lesions. Among malignant lesions Carcinoma of Maxilla was the most common and most common histopathological type of malignancy is squamous cell carcinoma (21.7%). Cantu G et al has reported similar trend in his study.¹²

In our study, all benign tumours (8 patients), were treated by lateral rhinotomy approach, whereas according to study conducted by Bathma S et al “endoscopic management of sinonasal inverted papilloma” on 13 patients, all patients were treated by transnasal endoscopic approach as necessary.¹³

Kazi M et al, in their study “Management of sinonasal tumours: prognostic factors and outcomes: a 10 year experience at a tertiary care hospital” observed that, malignant tumours were treated by surgery in case of 50 (79%) patients, 38 (60%) individuals were managed by surgery followed by radiation (22%) and fourteen underwent surgery followed by chemoradiation, where as in our study 4 patients were treated with surgery, 2 patients were treated with chemoradiotherapy and 10 patients with combined surgery and radiotherapy.¹¹

The radiation dose given was, a total of 60 Gy in 25-30 fractions, and the complications associated with radiotherapy were recurrence, radiation induced blindness, radiation induced retinopathy, neovascular glaucoma and osteoradionecrosis of the maxilla.

Two patients were treated with chemotherapy, the chemotherapeutic drugs used were combinations of cyclophosphamide, doxorubicin, vincristine and prednisone. Cengiz AB et al conducted study on 36 patients, and observed, 1 and 3 year survival rates were 82.5% and 39.3%, in early stages (I-II) and advanced stages (III-IVa) respectively where as in our study, one and three year survival rates were, in early is about 85% and in advanced stages is more than 40% respectively.⁷

We observed recurrence in one (12.5%) patient with inverted papilloma(IP), whereas Bathma S et al conducted study “Endoscopic management of sinonasal inverted papilloma” on thirteen patients, and observed recurrence in two patients. Seven (30.43%) malignant tumours in our study group recurred, whereas

Abdurrahman observed local recurrences in sixteen (44.4%) patients with positive surgical margins and in six (16.6%) patients with free margins according to their own histopathological specimen results.^{7,13}

Although pathologic diagnosis is not always possible, therefore knowledge of CT and MR imaging is required for proper diagnosis. Blanch JL et al conducted study and found that the prognosis of sinonasal malignancies is poor, because the tumor is usually clinically advanced at the time of diagnosis. In the present study, follow up period was short, so we couldn't draw conclusion on prognosis.¹⁴

CONCLUSION

Sinonasal tumours are rare. Male patients outnumbered the female patients with a male to female ratio of 2.4:1. More commonly involved age group is >41 years. Cigarette smoking was found to be major risk factor. Manual laborers with poor socioeconomic status were most commonly affected. Patients presented with symptoms like nasal obstruction, epistaxis, headache, hyposmia, facial swelling etc. Early diagnosis is important considering the poor prognosis of malignant tumours. Nasal endoscopic examination and CT scan are useful to diagnose the sinonasal tumours at an early stage. Diverse tissue types in the sinonasal space give rise to a variety of tumours, most of which are malignant.

Although pathologic diagnosis is not always possible, knowledge of CT and MR Imaging features of individual is required to arrive at a working differential. CT and MR Imaging done together may give better overall information for staging and treatment. Malignant tumours may be masquerading as benign tumours, so strong suspicion is required for diagnosing these tumours. Prognosis is poor, because the tumour is usually clinically advanced at the time of diagnosis. There was no significant relationship between survival rates and type of surgery. Sinonasal tumours are aggressive tumours, due to complex anatomy of this site with close proximity to vital structures and even with multimodality approach to treatment, the outcome is generally poor. Larger prospective series, with research to develop newer effective treatment, including targeted therapy, should improve outcome.

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