Sinonasal Tumour- A Clinico-Pathological Study in a Tertiary Care Hospital

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ABSTRACT

Introduction: Sinonasal tumours are relatively uncommon tumours in the head-neck region. The aim of the present study was to study the clinico-pathological profile of the sinonasal tumours and its management.

Material and methods: It was a Prospective, observational study. Forty Patients with sinonasal tumours, attending the otorhinolaryngology and Head-Neck surgery department of a tertiary-care hospital, Kolkata from October 2017 to September 2018 were selected for the study. Previously treated cases of sinonasal tumour with recurrence were excluded. They were evaluated by detailed history taking, proper clinical examination, relevant radiological imaging followed by biopsy. A clinico-pathological profile was made from the data obtained from these patients. Patients were treated either by surgery, radiotherapy or chemotherapy or a combination as appropriate and followed up regularly.

Results: There were 27 males and 13 females in the present study with a male: female ratio of 2:1. Commonest age group was 11 to 20 years. Maximum number of patients encountered were students (30%) followed by domestic workers (20%). Nasal obstruction and epistaxis were the most common mode of presentation (65% each). Out of 40 cases, 25 (62%) had benign and 15(38%) had malignant tumour. Juvenile angiofibroma and maxillary carcinoma were the most common under the benign and malignant varieties of sinonasal tumours respectively.

Conclusion: Timely diagnosis and early treatment will decrease the burden of morbidity and mortality in these patients. This study recommends awareness regarding the disease process and health education to people regarding maintenance of hygienic conditions and utilization of health facilities.

Keywords: Sinonasal Tumour, Benign, Malignant.

INTRODUCTION

The nose is the most prominent part in the human face. Previously man thought nose as the gateway of life and death. The nose has drawn attention of artists and writers through the ages and its importance is realized when a part of it is damaged. The tumours of nose and paranasal sinuses aroused the interest of otolaryngologists from the ancient days. Sinonasal tumours are relatively uncommon tumours in the head and neck region accounting for about 3% of all head and neck malignancies and also about 1% of the total body tumor.[1,2] A variety of both benign and malignant tumours can be present in this area. The common benign ones are inverted papilloma and hemangioma, whereas the common malignant ones are squamous cell carcinomas which constitute 80% of the malignant type in the nose and paranasal sinuses.[3,4]

A detailed history, clinical examination, proper imaging, and most importantly thorough histopathologic evaluation are essential part of work up of patients so that a required and timely intervention is done.[5]

The aims and objectives of the present study were to find out the incidence of various types of benign and malignant tumours of nose and paranasal sinuses presenting in the otorhinolaryngology and head-neck surgery department of the tertiary care hospital, Kolkata, to provide the clinico-pathological profile of these sinonasal tumours and to study the management of these tumours and its outcome on follow-up.

MATERIAL AND METHODS

The study was undertaken in the department of Otorhinolaryngology and Head-Neck Surgery of a tertiary care hospital in kolkata, over a period of one year (October 2017 to September 2018). The study design was a prospective observational one.

Inclusion Criteria: All the patients attending the otorhinolaryngology department with tumour arising from nose or paranasal sinuses were included in the study.

Exclusion Criteria: Previously treated cases of sinonasal tumour with recurrence were excluded from the study.

The study was approved by the Institutional Review Board. Forty patients were selected as per the inclusion and exclusion criteria. Informed, written consents were obtained from all individual participants included in the study. Detailed history was noted in a customized proforma. Demographic data (Name, Age, Sex, Address, Occupation, Socio-economic status) are properly collected from each patient during history takin. The patients selected for this study were subjected to a detailed clinical examination as per proforma and relevant radiologic investigations like CT scan (axial/coronal section) or MRI nose and paranasal sinuses (whenever required). Pre-

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operative biopsy was done in most of the cases excepting suspected angiomatous lesions affecting paranasal sinuses and nose. Tissue for histopathological examination was taken either by nasal endoscopic biopsy from nose or punch biopsy when the mass was quite obvious in the nose itself or by Caldwell–Luc approach in case of mass in maxillary antrum. Whole specimen biopsy was sent to pathology department for detailed histopathological examination in cases where radical operation was performed as treatment protocol. Histopathological examination was done usually by hematoxylin and eosin staining. In some cases special stain like PAS, reticulin stain was used. After staining it was examined under high and low power. At the end, final diagnosis was made and treatment was started accordingly. Patients were treated either by surgery, radiotherapy or chemotherapy or a combination as appropriate. All the patients were followed up for 6 months. Data was analysed using Microsoft Office Excel 2007.

RESULTS

The total number of patients having sinonasal tumour included in this study was 40. There were 27 males and 13 females in the present study with a male: female ratio of 2:1. The overall sex distribution showed a male preponderance over female (Table 1). Youngest patient was 8 years female and oldest was a 77 years male. Commonest age group was 11 to 20 years.

Inhabitation: Study of inhabitation of these patients revealed 26 cases came from urban population and rest 14 cases came from rural areas with urban and rural ratio of 13 : 7. It might be due to the increase source of environmental pollution.

Socio-economic distribution: 28 patients came from lower socio–economic group against 12 patients from the middle-income group. Nasal obstruction and epistaxis were the most common mode of presentation (65% each), followed by nasal or facial swelling (28%), proptosis and headache (18% each), facial pain (15%), nasal discharge and epiphora (10% each). Anosmia was the least common presenting symptom (3%) (Table 2).

Maximum number of patients encountered were students (30%) followed by domestic workers (20%), agriculture workers and manual labour (12.5% each), jute workers (5%) and plastic factory workers (2.5%). Total 20% cases were found as smokers and 10% cases were snuffs (Table-3).

Out of 40 cases, 25 (62%) had benign and 15(38%) had malignant tumour. Among the benign variety, 4 (10%) had haemangioma, 1 (2.5%) presented with haemangiopericytoma, 2 (5%) had ossifying fibroma, 5 (12.5%) had inverted papiloma, 2 (5%) had osteoma, 1 (2.5%) presented with osteoblastoma, 2 (5%) had neurofibroma and rest 8 (20%) had juvenile angiofibroma which was the most common variety among all benign tumours. On the other hand, maxillary carcinoma was the most commonly found type [6, (15%)] under the malignant variety. 4 (10%) had sinonasal carcinoma, 2 (5%) had rhabdomyosarcoma, and rest 3 (7.5%) had lymphoma (Table 4). Juvenile angiofibroma, osteoblastoma and lymphoma presented exclusively in males and haemangiopericytoma exclusively in females. Male preponderance was seen in

Age in years	Total sinonasal tumours		
	Male	Female	Total
0-10	1	2	3
11-20	10	2	12
21-30	3	2	5
31-40	5	2	7
41-50	3	5	8
51-60	4	-	4
>60	1	-	1
Total	27	13	40

Table-1: age and sex distribution of sinonasal tumours.

Symptoms	No of cases	Percentage
Nasal obstruction	26	65%
Epistaxis	26	65%
Nasal discharge	4	10%
Nasal/ facial swelling	11	28%
Facial pain	6	15%
Epiphora	4	10%
Proptosis	7	18%
Headache	7	18%
Anosmia	1	3%

Table-2: clinical presentation among patients

	Total	Percentage
Student	12	30%
Jute worker (Dust)	2	5%
Plastic factory worker	1	2.5%
Agriculture worker	5	12.5%
Domestic worker	8	20%
Manual labour	5	12.5%
Snuff	4	10%
Smoker	8	20%

Table-3: Relation of different occupational exposure and habit with sinonasal tumours

	No. of cases	Percentage
Benign		
Haemangioma	4	10%
Haemangiopericytoma	1	2.5%
Ossifying fibroma	2	5%
Inverted papiloma	5	12.5%
Osteoma	2	5%
Osteoblastoma	1	2.5%
Juvenile angiofibroma	8	20%
Neurofibroma	2	5%
Malignant		
Sinonasal carcinoma	10	25%
Rhabdomyosarcoma	2	5%
Lymphoma	3	7.5%
Total	40	100%

Table-4: the distribution of different neoplastic masses among all

Sinonasal tumours	0-10 Yrs		11-20 Yrs		21-30 Yrs		31-40 Yrs		41-50 Yrs		51-60 Yrs		>60 Yrs		Grand Total		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	T
Haemangioma	-	-	1	-	-	-	1	-	-	2	-	-	-	-	2	2	4
Haemangio pericytoma	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Juvenile angiofibroma	1	-	7	-	-	-	-	-	-	-	-	-	-	-	8	-	8
Neurofibroma	-	-	-	-	-	-	1	1	-	-	-	-	-	-	1	1	2
Inverted papilloma	-	-	-	-	-	1	2	-	-	1	1	-	-	-	3	2	5
Osteoma	-	-	-	-	1	-	-	-	-	1	-	-	-	-	1	1	2
Ossifying fibroma	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1	1	2
Osteoblastoma	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Lymphoma	-	-	-	-	-	-	-	-	1	-	2	-	-	-	3	-	3
Rhabdomyosarcoma	-	1	1	-	-	-	-	-	-	-	-	-	-	-	1	1	2
Sinonasal carcinoma	-	-	-	1	1	1	1	1	2	1	1	-	1	-	6	4	10

Table-5: Age and Sex distribution of different sinonasal tumours

inverted papilloma among benign varieties and in sinonasal carcinoma among malignant varieties (M:F= 3:2 in both). Equal male and female presentation was seen in other varieties. The average age of presentation was the highest in sinonasal carcinoma (77 yrs) and lowest in juvenile angiofibroma (8 yrs) (Table 5).

Different modalities of treatments were used for different lesions. In cases of all benign tumours, the main treatment mode was surgery via different approaches with a few exceptions where radiotherapy or chemotherapy was added. Out of 8 cases of juvenile angiofibroma, 7 were treated by surgical excision (transpalatal or lateral rhinotomy approach) and rest 1, who had intracranial extension, was treated by radiotherapy. 5 cases of inverted papilloma were treated by excision via lateral rhinotomy and only 1 case was treated by endoscopy guided removal. All the haemangioma cases were underwent endoscopy guided excision with cauterisation of base. All osseous and fibro-osseous type of tumours (osteoma, fibrous dysplsia, ossifying fibroma, osteoblastoma and giant cell tumours) were treated by local excision either Caldwell Luc procedure, or lateal rhinotomy or maxillectomy. Only one treated with chemotherapy. On the other hand, chemo-radiotherapy (with or without surgery) was the main mode of treatment among malignant varieties. All the lymphoma cases were treated by radiotherapy after diagnosis and adjuvant chemotherapy was also given in one case among them. All rhabdomyosarcoma cases were underwent surgery followed by chemotherapy & radiotherapy. Among the 10 sinonasal carcinomas, 5 cases were primarily treated by surgical excision followed by radiotherapy, 4 cases were treated by radiotherapy and 1 case received chemoradiotherapy. No cases were found to have residual or recurrence in their 6 months follow-up period.

DISCUSSION

In the present study, the highest incidence of sinonasal tumour was found in the age group of 11-20 years (30%), whereas Aminu Bakari et al[6] in their study found the majority of the patients with sinonasal masses in the age group of 21–50 years. The observed male : female ratio was 2:1, which was almost similar to the study done by U Zafar et al[5] (1.7:1). In our study, nasal obstruction and epistaxis were the most common mode of presentation (65% each), followed by nasal or facial swelling (28%), proptosis and headache (18% each), facial pain (15%), nasal discharge and epiphora (10% each). Similar observation was done by Narayan Swamy et al.[7] They similarly found nasal obstruction (76.66%) as the most common presentation, followed by epistaxis (53%). Aminu Bakari et al[6] and S.S. Bist et al[8] in their studies also found nasal obstruction as the most common mode of presentation among all symptoms with 97.4% and 87.27% respectively.

We studied different occupational exposures among the study population and we surprisingly found domestic workers were the most vulnerable groups among all (20%) followed by agricultural workers and manual labour (12.5% each). This finding is very similar with the findings by B. S. Alabi et al.[9] They conducted a research on sinonasal malignancy in the Nigerian tertiary hospital over 6 years where they similarly found largest group (29%) was exposed to indoor cooking and wood dust most likely in the form of firewood for cooking. In addition, cigarette smoking (18%) was found to be an important risk factor in their study which is similar to our results. We observed smoking as risk factor among 20% of all cases.

In our study of the 25 benign cases, angiofibroma was the most common (20%) followed by inverted papilloma (12.5%). This finding is similar to the findings of N. Khan et al[5] where out of 56 cases of benign tumors, angiofibroma was 42.85% followed by inverted papilloma (26.78%). On the other hand, maxillary carcinoma was the most commonly found type 6, (15%) under the malignant variety. 4(10%) had sinonasal carcinoma, 2 (5%) had rhabdomyosarcoma, and rest 3 (7.5%) had lymphoma. Similarly in the studies by Jayson Jl[10], Humayun et al[11] and Raj J et al[12]; squamous cell carcinoma of the maxillary sinus was the commonest malignant lesion. All the angiofibroma cases were between the age group of 10-20 years and all of them were males. This finding coincide with the results of KV Narayanswami et al[7] where the age of onset of this tumour varies between 18 to 21 years and all patients were male.

In case of all the benign tumours the definitive line of management was surgical excision via different approaches and this is corroborative with various studies. Bielamowicz

Steven et al[13] advocate lateral rhinotomy and medial maxillectomy as the treatment of choice for the inverted papilloma in their study. KV Narayanswami et al[7] also recommended surgical excision for all benign tumours of nose and paranasal sinuses. They performed transpalatal excision for angiofibomas, trannasal as well as lateral rhinotomy for inverted papillomas, Caldwell-Luc or external fronto-ethmoid approach for various fibrous tumours, transnasal excision with base cauterization for hemangiomas. These all treatment approaches of these authors are almost similar with our approaches. Regarding treatment of malignant tumours of the nose and paranasal sinuses, chemo-radiotherapy (with or without surgery) was the main mode of treatment. For maxillary sinus malignancy, lateral rhinotomy combined with total maxillectomy was done. In a study by Aminu Bakari et al[6], 72.4% of cases underwent surgical excision while 9.2% had medical treatment with nasal topical steroid spray. About 17.1% of cases were lost to follow-up. As per the study conducted by by A. Lathi et al[14], surgery was the major mode of treatment in all cases. Sutar HB[15] stated that most non-neoplastic and benign neoplastic nasal masses require surgical excision, while malignant neoplastic nasal masses require wide surgical excision, radiotherapy, or chemotherapy either alone or in combination. Our results are at par with their findings.

CONCLUSION

A variety of benign and malignant tumours can be present in the nose and paranasal sinuses. Tumours of vascular origin are the commonest type of neoplastic lesion and among these, angiofrbroma is commonly found. Angiofibroma occurs mainly in adolescent age group and it is exclusively a disease of male. Maxillary carcinoma is the commonest type of all malignant tumours in sinonasal area and it is mostly squamous cell in nature. Detailed history, meticulous clinical examination and advanced imaging technique help to reach a provisional diagnosis but histopathological examination remains the mainstay of final definitive diagnosis. Surgical excision via different convenient approaches is the definitive plan of treatment for all benign tumours. On the other hand, chemo-radiotherapy (with or without surgery) is the main mode of treatment among malignant varieties.

The 11-20 years age group, low social class, some occupations, urban residence and male gender were the most important sociodemographic risk factors for sinonasal tumours. Smoking and indoor cooking with firewood were found to be important clinical risk factors. Our study recommends awareness regarding the disease process and health education to people regarding maintenance of hygienic conditions and utilization of health facilities.

The limitations of the study was limited number of cases with short duration of total study period and short follow-up period for each patient. More works should be conducted in a bigger way in many more areas.

REFERENCES

1. Goepfert H, Luna MA, Lindberg RD, White AK. Malignant salivary gland tumors of the paranasal sinuses and nasal cavity. Arch Otolaryngol. 1983;109:662–8.
2. Osguthorpe JD. Sinus neoplasia. Arch Otolaryngol Head Neck Surg. 1994;120:19–25.
3. Lango MN, Topham NS, Perlis CS, Flieder DB, Weaver MW, Turaka A, et al. Surgery in the Multimodality Treatment of Sinonasal Malignancies. 2010;34:304–21.
4. Groves J, Gray RF, editors. A Synopsis of Otolaryngology. 4th ed. Bristol: Wright; 1985. Tumours and cysts of the nose, paranasal sinuses and jaws; pp. 215–26.
5. Khan N, Zafar U, Afroz N, Ahmad SS, Hasan SA. Masses of nasal cavity, paranasal sinuses and nasopharynx: A clinicopathological study. Indian J Otolaryngol Head Neck Surg. 2006;58:259–63.
6. Bakari A, Afolabi OA, Adoga AA, Kodiya AM, Ahmad BM. Clinico-pathological profile of sinonasal masses: an experience in national ear care centre Kaduna, Nigeria. BMC Research Notes. 2010;3:186.
7. Narayanaswamy KV, Chandre Gowda BV. A clinical study of the benign tumors of nose and paranasal sinuses. Ind J of Otolaryngol and Head and Neck Surgery. 2004;56:265–268.
8. Bist SS, Varshney S, Baunthiyal V, Bhagat S, Kusum A. Clinico-pathological profile of sinonasal masses: an experience in tertiary care hospital of Uttarakhand. National Journal of Maxillofacial Surgery. 2012;3:180–186.
9. B.S. Alabi, O.A. Afolabi and S.O. Ayodele. Clinical Presentation and Outcome of Sinonasal Tumors in a Nnigerian Tertiary Hospital-6 year review.Nigerian, edical journal: Journal of the Nigeria Medical Association. 2017;58: 92-95.
10. Jaison J, Tekwani DT. Histopathological lesions of nasal cavity, paranasal sinuses and nasopharynx. Annals of applied Bio-sciences. 2015;2:A40–A45.
11. Humayun AHMP, Zahurul Huq AHM, Tarequddin Ahmed SM, Kamal MS, Kyaw Khin U, Bhattacharjee N. Clinicopathological study of sinonasal masses. Bangladesh Journal of Otorhinolaryngology. 2010;16:15–22
12. Raj JA, Sharmila PS, Shrivastava M, Mahantachar V, Rajaram T. Morphological sectrum of lesions in the sinonasal region. J Evol Med Dent Sci. 2013;2:7175–7186
13. Bielamowicz steven et al. inverting papilloma of the head and neck,the ULCA update. Otolaryngology and head and neck surgery. 1993;109:71-6.
14. Lathi A, Syed MMA, Kalakoti P, Qutub D, Kishve SP. Clinico-pathological profile of sinonasal masses: a study from a tertiary care hospital of India. Acta Otorhinolaryngol Ital. 2011;31:372–377.
15. Sutar HB. Clinicopathological study of nasal polypoidal masses. Annals of International Medical and Dental research. 2015;1:315–319.

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