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Original Article

Clinicopathological study of sinonasal malignancy

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Abstract:

This cross sectional study was done in the Otolaryngology and Head-Neck Surgery Department of Banghabandhu Sheikh Mujib Medical University, Dhaka Medical College Hospital and Sir Salimullah Medical College Hospital during the period of September 2003 to February 2004. In this study 30 patients of sinonasal malignancy were studied and to observe the clinicopathological pattern of sinonasal malignancy. The diagnosis was made by detailed history, clinical, radiological and histopathological examinations.

In this study majority of the patients were within 40 to 70 years of age (77%). Male to female ratio was 2.33:1. Majority of the malignancy came from maxillary sinuses 15(50.00%); ethmoidal sinuses were involved in 8(26.66%) cases, multiple sinuses were involved in 5(16.66%). Neck node metastases was found in 4(14%) cases. Squamous cell carcinoma was the most common histological type (70.00%); the other less common histological types were adenoid cystic carcinoma (06.66%), adenocarcinoma (06.66%), Non-Hodgkin's lymphoma (06.66%), least frequent types were malignant fibrous histocytoma, transitional cell carcinoma, olfactory neuroblastoma.

Key words: *Sinonasal malignancy, clinicopathological study.*

Introduction:

Sinonasal malignancy is not an uncommon finding in the ENT Department. It is found in almost all age groups of people[1]. A wide variety of malignant tumours of different histological types are found in nasal cavity & paranasal sinuses are rare constituting less than 1 percent of all malignancies (3% of head and neck tumours)[2]. The presenting symptomatology of all tumours are similar and histological examination is necessary to decide whether any particular tumour is malignant.

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The majority 55% of sinonasal malignancy appear to be of antral origin, 35% arise in the nasal cavities and the remaining 9% arise from the ethmoids. Primary frontal & sphenoid tumours are very rare 1%[3]. The relative unawareness of the primary physician about the disease and the similarity of the symptoms with the more common upper respiratory tract infection results in failure of true diagnosis before the tumour extend beyond the bony margins of the sinuses[4].

Sinonasal malignancy is usually diagnosed late; therefore it is important to determine the most common signs and symptoms that should alert the physician and dentist to suspect the possibility of this disease. The initial symptoms reported by the patients are diverse and in the majority of cases are related to the face, nose & oral cavity[5]. The Peculiarity of antral malignancy is that the involvement of the surrounding structures with the lesion is much more extensive than the symptoms revealed at presentation[5].

The results in the past have been unsatisfactory with a 30% over all 5-year survival[6]. The unsatisfactory results could be attributed to a number of factors: (a) The disease was invariably advanced on presentation, (b) The complex anatomy of the region and close relationship to the orbit and skull base, (c) The reluctance of surgeon and radiotherapist to treat aggressively for fear of increasing the natural mutilation of the disease complication[3].

The presentation of sinonasal malignancy depends on the primary site, the direction and extent of spread. The most common initial symptoms are nasal obstruction, epistaxis, proptosis, epiphora, diplopia, loose teeth, facial pain & swelling, buccal or palatal swelling. Exposure to industrial fumes, wood dust, nickel refining process, and leather tanning have been implicated in the carcinogenesis of certain types of sinonasal malignant tumour. Other industrial exposures associated with an increased incidence of sinonasal cancer include mineral oils, chromium, lacquers paint, soldering and welding[7,11].

Histologically, most common type is squamons cell carcinoma (about 80%), adenocarcinoma, adenoid cystic carcinoma, transitional cell carcinoma and neuroblastoma may occur but their incidences are less. Sarcomas are also rare and tend to occur at younger age and behave in a very malignant fashion[17]. Non-Hodgkin's lymphoma may occur but Burkitt's lymphoma rarely occurs in children of this subcontinent[8,18].

The presence of nodal involvement drastically reduces the prognosis and 5 years survival rate come down from 27.2% to 6.8%.[9] Overall incidence of distant metastases of antral malignancy is about 0.8%. The most common site of distant metastases are bone. Metastases may also occur in the lungs, liver, brain and kidney[10,12].

Materials and Methods:

This was a cross sectional study done during the period from September 2003 to February 2004 in the Department of Otolaryngology and Head-Neck Surgery of BSMMU, Dhaka Medical College Hospital, Sir Salimullah Medial College & Mitford Hospital. A representative sample (30) were collected from respective Otolaryngology and Head-Neck Surgery Department.

Aims and Objectives

1. To find out the relative frequency of different sinonasal malignancy.
2. To assess the clinical presentation of sinonasal malignancy.
3. To find out the histopathological types of sinonasal malignancy.

Results:

The age range of the patient was from 5 years to 80 years with the mean of 56 years. Most of the patients were in 5th to 7th decade (75.65%).

Table-I

Age distribution in sinonasal malignancy (n=30)

Age group in yrs.	No. of Patients	Percentage
5-19	1	3.33%
20-29	2	6.68%
30-39	3	10.00%
40-49	5	16.66%
50-59	11	36.66%
60-69	7	23.33%
70-80	1	3.33%

Table-II

Presenting symptoms in sinonasal malignancy (n=30)

Symptoms	No. of cases	Percentage
Nasal Obstruction	20	66.66%
Nasal Discharge	16	53.33%
Swelling of the face	15	50.00%
Facial pain	12	40.00%
Headache	12	40.00%
Epistaxis	10	33.33%
Proptosis	9	30.00%
Diplopia	7	23.33%
Toothache	7	23.33%
Swelling of the palate	6	20.00%
Epiphora	6	20.00%
Loss of vision	6	20.00%
Loose tooth	5	16.66%
Facial paresthesia	4	13.33%
Ill fitting dentures	4	13.33%
Neck swelling	3	10.00%
Trismus	2	6.66%
Earache	2	6.66%
Anaesthesia of check	1	3.33%

Table-III

Correlation between socioeconomic status in sinonasal malignancy (n=30)

Class	No. of Patients	Percentage
Poor Class	22	73.33%
Middle class	7	23.33%
Affluent Class	1	3.33%

Poor : Less than taka 5,000.00 per month per unit family.
Middle : between taka 5,000.00 to 10,000.00 per month per unit family.
Affluent : more than taka 10,000.00 per month per unit family

Table-IV
Site distribution in sinonasal malignancy (n=30)

Site	No. of Patients	Percentage
Maxillary sinus	15	50.00%
Ethmoidal	8	26.66%
Multiple sinuses involvement	5	16.66%
Nasal Cavity	1	3.33%
Lateral wall of nose	1	3.33%

Table-V
Tumour extension in sinonasal malignancy (n=30)

T (Extension)	Number of cases	Percentage
T4	10	33.33%
T3	16	53.33%
T2	3	10.00%
T1	1	3.33%

Table-VI
Neck-node metastasis in sinonasal malignancy (n=4)

Nodal Metastasis	Number of cases	Percentage
Submandibular	3	75.00%
Jugulodigastric	1	25.00%

Neck-nodal involvement in sinonasal malignancy about 14%.

Table-VII
Radiological Findings of sinonasal malignancy on presentation (n=30)

Radiological findings	No. of patients		Percentage
1. X-ray PNS (OM) view	With bone destruction	25	83.33%
	Without bone destruction	5	16.66%
2. CT-Scan of PNS	With bone destruction	30	100.0%
	Without bone destruction	0	0.0%

Table-VIII
Histopathological types in sinonasal malignancy (n=30)

Histology	Number of cases	Percentage
Squamous cell carcinoma	21	70.00%
Adenoid cystic carcinoma	2	6.66%
Adenocarcinoma	2	6.66%
Non Hodgkins lymphoma	2	6.66%
Malignant Fibrous histocytoma	1	3.33%
Transitional cell carcinoma	1	3.33%
Olfectory neuroblastoma	1	3.33%

In sinonasal salignancy, squamous cell carcinoma is the most common 70%.

Table-IX
Histopathological grading of sinonasal malignancy (n=21)

Grade	Level of differentiation	No. of cases	Percentage
Grade-I	Well differentiated	3	16.66%
Grade-II	Moderately differentiated	3	16.66%
Grade-III	Poorly differentiated	10	50.00%
Grade-IV	Undifferentiated	5	27.77%

Discussion:

Sinonasal malignancy is rare, comprising less than 3% of all aerodigestive tract tumours. Malignant tumours of the nasal cavity and paranasal sinuses occur predominantly in 4th, 5th and 6th decade with a mean of 56 years, which is not consistent with Mundy[13], Who showed median age of 60.3 years. This discrepancy due to the fact that the longevity of European people are greater than those of our country.

The age range in this study was 5-80 years with male to female ratio of 2.33:1, which differs with the findings of N. Hopkins[14], who showed age range of 5-92 years and male to female ratio of approximately 3:2.

Almost all the patients presented with multiple symptoms, Nasal obstruction was the commonest symptoms 66.66% followed by nasal discharge 53.33%, swelling of the face 50.00%, facial pain

40.00%, headache 40.00%, epistaxis 33.33%, proptosis 30.00%. Less commonly diplopia 30.00%, toothache 23.33%, swelling of the palate 23.33%, epiphora 20.00%, loss of vision 20.00%, loose tooth 16.66%, facial paraesthesia 13.33%, ill fitting denture 13.33%, neck swelling 14%, earache 6.66%, trismus 6.66%, anaesthesia of cheek 3.33%.

Regarding clinical presentation, the figures of nasal obstruction, epistaxis, diplopia and anaesthesia of check are consistent with the findings of N. Hopkins who showed nasal obstruction in 45.40% of cases, epistaxis 29.40%, diplopia 5.10% and anaesthesia of check in 3.2% of cases[15]. The number of the patients presented with facial swelling agrees with Mundy who showed facial involvement in 69.7% of cases. Symptoms of sinonasal malignancy in our series are not consistent with the findings of N. Hopkins and Mundy and this discrepancy is provably due to late presentation of most of the patients.

Most of the patients 20 (66.66%) came from rural areas and the rest 10(33.33%) were urban dwellers. The increased number of the patients coming from rural area. Regarding occupation, House wives was 9(30.00%) followed by Farmer 8(26.66%), Industrial worker 5(16.66%), Businessman 3(10.00), Driver 2(6.66%), Service holder 2(6.66%), Wood worker 1(3.33%). Most of the patient came from poor class 22 (73.33%) with monthly income less than taka 5000 per month.

Regarding T (extension) status were assessed by through clinical and radiological examinations. T' status were assessed in decreasing order of frequency were T_3 16(53.33%), T_4 10(33.33%), T_2 3(10.00%), T_1 1(3.33%). These findings are nearly consistent with the findings of Lavertu[19], who showed T lesions in 42% cases, T_4 lesions in 33% cases, T_2 lesions in 18.75% of cases and T_1 lesions in 6.25% of cases.

Lymphatic spread to regional nodes becomes apparent in 25-35% of patients at sometime during the course of their disease, though only 14% have nodal disease at the time of presentation. Those with involved nodes almost always have locally advanced disease. The submandibular and jugulodigastric nodes are the most commonly involved.

In our series, out of 4 cases of nodal involvement, 3 had homolateral palpable mobile lymph nodes (<3 cm in size) N_1 and 1 had homolateral palpable mobile lymph nodes (3-6 cm in size) N_2. As to the nodal involvement, 4(14%) had cervical lymph node involved (submandibular 3 & Jugulodigastric 1) which nearly agrees with the findings of S.E Kent and B. Majumder[19] but differ with the findings of 16.4% of P.E. Robin and D. Jean Powell[20].

The bone of the antronasal wall, canine fossa and orbital floor is very thin and early destroyed by tumour. Only 25% of maxillary sinus carcinomas are contained within the antrum at the time of presentation.

Bone destruction is commonly found in sinonasal malignancy at time of presentation. Regarding radiological findings, X-ray PNS (OM) view shows with bone destruction 25(83.33%) cases and without bone destruction 5(16.66%) cases but in CT scan of paranasal sinuses both axial and coronal view show with bone destruction were found in all cases. In CT scan nearly every patient will show bone destruction.

Histopathologically majority of the patients 21(70.00%) had squamous cell carcinoma followed by adenoid cystic carcinoma 2(6.66%), adenocarcinma 2(6.66), non Hodgkins lymphoma 2(66.6%), Malignant fibrous histocytoma 1(3.33%), transitional cell carcinoma 1(3.33%), olfactory neuroblastoma 1(3.33%). About grading, out of 21 cases of squamous cell carcinoma, maximum was grade III 10(50.00%), followed by grade IV 5(27.77%), grade I 3(16.66%), and grade II 3(16.66%).

Conclusion:

Most of the patients of sinonasal malignancy presented late with multiple symptoms. The initial symptoms reported by the patients at presentation were diverse. The possibility of early diagnosis of sinonasal malignancy on the basis of clinical presentation in early stage remains a problem, because at this stage there may be a few or no symptoms and require a high index of suspicion for diagnosis due to the overlapping presentation of these neoplasm with more commonly encountered infections disease states. The rarity of these lesions in combinations with the multiple histologies that are encountered have limited large scale studies. Once a paranasal sinus neoplasm is diagnosed, aggressive multimodality therapy is often necessary.

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