Bangladesh J Otorhinolaryngol 2010; 16(1): 15-22

Original Article

Clinicopathological study of sinonasal masses

Abu Hena Mohammad Parvez Humayun[1], AHM Zahurul Huq[2], SM Tarequddin Ahmed[3], Md. Shah Kamal[4], Kyaw Khin U[3], Nilakanta Bhattacharjee[5]

Abstract:

Objective: *To observe the incidence, clinical presentation and to perform comparative study of different sinonasal masses.* ***Study design:*** *Prospective study.* ***Setting:*** *Department of otolaryngology and Head-Neck Surgery & ENT OPD of Chittagong Medical College Hospital.* ***Patients & methods:*** *50 patients are included in this study (39 male & 11 female) between the ages of 3 years and 80 years who were treated between August 2006 to January 2007. Study based on history, clinical, radiological, laboratory and histopathological examination.* ***Results:*** *Mean age for male was 35.12 years and for female was 22.63 years. Male to female ratio was 3.5:1. Highest frequency was noted in second decade. Most of patient (78%) were from poor class. Frequency of inflammatory nasal masses were more in second decade, benign tumour in fourth and fifth decade, malignant tumour in second decade (OAN & NHL) and fifth and second decades (others). Rhinosporidiosis were most frequent inflammatory nasal masses. Nasal obstruction was the commonest and orbitus symptoms were less frequent symptoms. But orbital symptoms were more prevalent in malignant lesion.* ***Conclusion:*** *sinonasal masses are found in all age group. Rhinosporidiosis are appearing to be the commonest nasal masses. The prevalence of nasal polyp is also high. Among the malignant sinonasal masses the percentage of squamous cell carcinoma is high.*

1. OSD, DGHS, Deputed to Dept. of Otolaryngology & Head-Neck Surgery, BSMMU, Dhaka, Bangladesh
2. Assistant Professor, Dept. of Otolaryngology & Head-Neck Surgery, BSMMU, Dhaka, Bangladesh
3. Registrar, Chittagong Medical College Hospital (CMCH), Chittagong, Bangladesh
4. Junior Consultant (CC), ENT, UHC, Chatkhil, Noakhali, Bangladesh
5. Professor (Rtd.), Dept. of Otolaryngology & Head-Neck Surgery, CMCH, Chittagong, Bangladesh

Address of Correspondence: Dr. Abu Hena Mohammad Parvez Humayun, OSD, DGHS, Deputed to Dept. of Otolaryngology & Head-Neck Surgery, BSMMU, Dhaka, Bangladesh

Introduction:

Sinonasal mass is a common finding in the ENT Department. It is found in almost all age groups of people. These masses may be inflammatory including allergic, traumatic, granulomas or may be neoplastic[2]. The commonest nasal mass seen is polyp[3]. Rhinosporidiosis is also one of the most common nasal mass in our country[4]. Angiofibroma is a benign but biologically aggressive tumour in adolescent males.[8] Haemangioma may be found any where in the nasal cavity. But commonly found on the anterior part of the septum, where they are called bleeding polypus of the septum[7]. A wide variety of tumours of different histological types are found in the nasal cavity[6]. Benign tumours are not uncommon but malignant tumours are rare,

constituting less than I percent, of all malignancies (3% of head and neck tumours)[9]. Primary neurogenic tumour that involve the nose and paranasal sinuses are comparatively rare[10]. Tumours of schwan cell origin, neurofibroma and neurilemoma occurs in nasal fossa very rarely[10]. The neoplasm deserving most attention is the olfactory neuroblastoma[9]. The sinonasal malignancy may be found to be arising from the tissues & structures of the nasal cavity & paranasal sinuses[2]. Even pathologies, which are arising from cranial cavity, may also appear as mass in the nasal cavity or paranasal sinuses[8]. 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. The presence of nodal involvement drastically reduces the prognosis and 5 years survival rate come down from 27.2% to 6.8%[25]. Although there is marked limitation of scope and many shortcomings of this study, yet attempt has been made to find out the actual facts and figures related to the subject prevailing in our country.

Aims and Objectives:

- To observe the incidence of different sino-nasal masses on the basis of age, sex and socio-economic condition.
- To assess the clinical presentation of different sino-nasal masses.
- To perform a comparative study of their histological types for the purpose of early diagnosis and treatment.

Methods:

Sample : Patients with sino-nasal masses

Sample Size : 50 cases

Type of Study : Prospective

Study Period : August 2006 to Jan. 2007.

Place of study : Department of Otolaryngology and Head-Neck Surgery and ENT OPD of Chittagong Medical College Hospital.

Results:

Out of 50 patients included in this study the lowest and highest age at presentation was 3 years and 80 years respectively, with a mean of 32.38 years. The mean age for male was 35.12 years and that for female was 22.63 years. Male to female ratio was 3.5:1.

The age and sex distribution irrespective of disease is shown in Table-I.

Table-I

Age and sex of the cases (n-50)

Age group (years)	No. of patients Male	Female	Total	Percentage
0-10	2	2	4	8.0
11-20	9	5	14	28.0
21-30	10	2	12	24.0
31-40	4	0	4	8.0
41-50	3	2	5	10.0
51-60	6	0	6	12.0
61-70	4	0	4	8.0
71-80	1	0	1	2.0
81-90	0	0	0	0.0
Total	39	11	50	100.0

In this study, highest frequency was noted in second decade.

Table-II

Socio-economic condition

Socio-economic condition	No. of patients	Percentage
Poor	39	78
Non poor	11	22

Maximum numbers of patients were from poor class.

Financial categorization: (Poverty Alleviation and Empowerment Through Microfinance: Tow Decades of experience Bangladesh)[26].

Poor class: Working capital- Taka <3,338.00 per month per earner.

Non poor class: Working capital- Taka >3,338.00 per month per earner.

Table-III

Age incidence and relationship with nasal mass

Age incidence (years)	Ethmoidal Polyp	Inflammatory Antrochoanal Polyp	Rhinosporidiosis	Benign tumour	Malignant	Total
0-10	0	2	1	0	1	4
11-20	2	5	3	1	3	14
21-30	1	1	9	0	1	12
31-40	1	2	1	0	0	4
41-50	0	0	2	1	2	5
51-60	1	0	1	1	3	6
61-70	0	0	2	0	2	4
71-80	0	1	0	0	0	1
Total	5	11	19	3	12	50

From the above Table-III it can be observed that inflammatory nasal masses were more frequent in the second decade, benign tumours were more frequent in fourth and fifth decades. Malignant tumours were more frequent in second and fifth to seventh decades.

Table-IV

Sex incidence and its relationship with nasal mass (n-50)

Disease	Male	Female	Total
Inflammatory Nasal Polyp-			
Ethmoidal	5	0	5
Antrochoanal	8	3	11
Rhinosporidiosis	17	2	19
Benign tumours	2	1	3
Malignant tumours	8	4	12
Total	40	10	50

From the above Table-IV it is noted that males outnumbered the females with a ratio of 3.5:1.

Table- V

Inflammatory nasal mass with average age (n-35)

Disease	Number	Percentage	Average age (years)
Nasal Polyp			
Ethmoidal Polyp	5	14.29	31.2
Antrochoanal Polyp	11	31.43	23.45
Rhinosporidiosis	19	54.28	31.89
Total	35	100	28.84

Among the inflammatory nasal masses, rhinosporidiosis were most frequent.

Table-VI

Benign neoplasm with average age (n-3)

Disease	Number	Percentage	Average age (years)
Inverted Papilloma (Transitional cell Papilloma)	1	33.33	60
Meningioma	1	33.33	14
Haemangioma	1	33.33	43
Total	3	100.00	39

From Table-VI average age for benign nasal tumours was 39 years. From table, it was observed that meningioma occur in early age and inverted papilloma occurs in late age.

Here it reveals that among the malignant tumours of nasal cavity squamous cell carcinoma was most frequent (41.67%) with average age 51 years.

Table-VII

Malignant nasal tumours with average age (n-12)

Disease	Number	Percentage	Average age (years)
Squamous cell carcinoma	5	41.67	51
Lymphoma (Non-Hodgkin's lymphoma)	3	25	32.33
Adenoid cystic carcinoma	1	8.33	50
Embryonal rhabdomyosarcoma	1	8.33	03
olfactory neuroblastoma	1	8.33	17
Secondary metastatic carcinoma	1	8.33	60
Total	12	100.00	35.56

Table-VIII

Clinical symptoms and their number with average duration (n-50)

Symptoms	Average duration (months)	Number	Percentage
Nasal obstruction	6	47	94.0
Unilateral obstruction	4.5	42	84.0
Bilateral obstruction	6.0	7	14.0
Nasal discharge	2	22	44.0
Sneezing	6	15	30.0
Loss of smell	1.5	34	68.0
Epistaxis	1.0	25	50.0
Deformity of nasal pyramid	1.5	9	18.0
Mouth breathing	1.5	23	46.0
Sore throat	0.5	18	36.0
Headache	3.5	23	46.0
Watering from eye	1.5	8	16.0
Double vision	0.5	0	0.0
Pain in the ears	0.5	2	4.0

Majority of the patients presented with more than one symptom and nasal obstruction was the commonest symptom noted in 47 cases. Orbital symptoms were less frequent.

Table-IX

Clinical symptoms of inflammatory nasal mass with average duration (n-35)

Symptoms	Average duration (months)	Number	Percentage
Nasal obstruction	4.5	35	100
Unilateral obstruction	3.5	28	80
Bilateral obstruction	4.5	7	20
Nasal discharge	4.5	29	82.35
Sneezing	2.0	12	34.28
Loss of smell	1.0	23	65.71
Epistaxis	1.0	18	51.43
Deformity of nasal pyramid	1.5	2	5.71
Mouth breathing	1.5	12	34.28
Sore throat	1.5	8	22.86
Headache	3.5	10	28.57
Watering from eye	1.0	2	5.71

The prevalent symptoms in inflammatory nasal mass were nasal obstruction, nasal discharge and loss of smell etc.

Table-X

Clinical symptoms of benign & malignant nasal tumours with average duration (n-3)

Symptoms	Benign			Malignant		
	Average duration (months)	No.	%	Average duration (months)	No.	%
Nasal obstruction	4.0	2	66.66	2.5	12	100.00
Unilateral obstruction	4.5	2	66.66	2.5	10	83.33
Bilateral obstruction	0.0	0	0	1.0	2	16.67
Nasal discharge	2.0	1	33.33	0.5	7	58.33
Epistaxis	1.5	2	66.66	2.5	9	75.00
Loss of smell	0.5	2	66.66	0.5	8	66.66
Deformity of nasal pyramid	0.5	1	33.33	1.0	4	33.33
Mouth breathing	0.5	2	66.66	-	-	-
Headache	1.5	1	33.33	1.0	7	58.33
Watering from eye	0	0	0	0.5	4	33.33
Double vision	0	0	0	-	-	-
Ulceration in cheek	-	-	-	0.5	1	8.33
Proptosis	-	-	-	0.5	3	25.00

Unilateral nasal obstruction was the most frequent symptom in benign nasal tumour and orbital symptoms were more prevalent in malignant nasal tumours.

Discussion:

In discussion of clinicopathological study of sinonasal masses, firstly I would like to mention the limitation of this study. Actually this study was carried out over a limited period of time i.e. 6 months and comprising of small no. of cases i.e.50 cases. So this study could not represent the overall situation prevailing in our country with a vast population. Though the fact and figures mentioned here may vary in large series, but still then, as the cases were collected for period of 6 months from Chittagong Medical College Hospital, this study may have credentials in reflecting certain facts regarding sinonasal mass.

Fifty patients with different age, sex and socio-economic condition studied in this series. The maximum number of patients were presented during second decade. The increased number of patients in the second decade may be due to the increased incidence of inflammatory disease in that group.

In this study, among the patient the male and female ratio was 3.5:1.

This may be due to the increased prevalence of such disorder among the male or it may be simple reflection of overall higher male attendance in the hospital.

From socio-economic background most of the patient was poor (78%). This was probably rich patients not came to government hospital, rather they took their health service at private clinic or hospital. Otherwise the overall incidence of sinonasal diseases among rich was less.

In this study, the sinonasal diseases include inflammatory disease 35 cases (70%). Benign tumours 3 cases (6%) and malignant tumours 12 cases (24%). So it assumes that the overwhelming majority of the nasal lesion in this series were inflammatory.

From table IV and V, it can be observed that among the inflammatory sinonasal masses. The incidence of rhinosporidiosis is high i.e. 19 cases (54.28%) with average age of 31.89 years. Among them who were affected by rhinosporidiosis out of 19 patients, 17 cases (78.47%) were male patients and only 2 cases (10.53%) were female patient and at 3rd decade patient were more affected (Table-III). So we can say young male were mainly affected which was consistent with Satyanarayan C[5]. In this study majority of patient with rhinosporidiosis give the history of epistaxis, which was similar with previous study. Among the nasal polyp the incidence of antrochoanal polyp was 11 cases (31.43%) with average age 23.45 years and ethmoidal polyp was 5 cases (14.29%) with average age 31.2 years. According to sex, male patients were more affected (13 cases) and only 3 cases were female patient.

From Table-IX, it could be observed that regarding clinical presentation almost all inflammatory disease had common history of nasal obstruction (100%). This finding was consistent with Scott Brown's otolaryngology[11]. The second most frequent symptom was nasal discharge (82.85%) for long duration. This findings were well supported by Lumsden and Wilson[22].

Sinonasal tumours are rare, comprising less than 3% of all aerodigestive tract tumour. In this study benign sinonasal tumours were 3 cases (6%) of all sinonasal diseases. Among the benign tumours, one was inverted papilloma (33.33%) and one was meningioma (33.33%) and another one was haemangioma (33.33%). The main clinical presentation was nasal obstruction and epistaxis. The case haemangioma was presented with alarming epistaxis.

In this study prevalence of malignant tumour was 12 cases (24%) of all sinonasal masses. Though the percentage was very high for malignant tumour, we think the reason behind

this was, as the management of sinonasal malignancy was destructive with obvious morbidity, usually these cases was not managed at private clinic or hospital. So the almost all the sinonasal malignancy was attend to the government hospital (which was not happed in other sinonasal diseases). For that reason the percentage become high in this study.

This study also reveals that malignant tumour was more frequent in second (OAN & NHL) and fifth to seventh decade (others) (Table-III) which was consistent with reference books.

Among the 12 cases of malignant tumour, 5 cases (41.67%) were squamous cell carcinoma, 3 cases (25%) were lymphoma, 1 case was adenoid cystic carcinoma, 1 case was embryonal rhabdomyosarcoma 1 case was olfactory neuroblastoma and one case was secondary metastatic squamous cell carcinoma.

The average age for squamous cell carcinoma in sinonasal region was 51 years with male to female ratio was 1.5:1 (Table-VII). From Table X, it could be observed that the prevalent symptoms in malignant nasal tumours were nasal obstruction 100%, nasal discharge 58.33%. Epistaxis 75%, deformity of nasal pyramid 33.33%, anosmia or hyposmia 66.66%, cheek skin involvement 8.33%, headache 58.33%, proptosis 25%.

From clinical presentation it was found that embryonal rhabdomyosarcoma, olfactory neuroblastoma were more aggressive than the other sinonasal malignancy. In this study, it was also observed that neck node metastasis was rare or it occurs in very advanced disease.

References:

1. Bradley PJ, Singh SD. Congenital nasal masses: diagnosis and management clinc Otolaryngology 1982; 7: 87-97.
2. Kristensen S. et al. Nasal schneiderian Papillomas. Clinc otolaryngology 1985; 10: 125-134.
3. Drake-Lee AB. Nasal Polyps. In: Mackay IS. Bull TR, editors, Rhinology: Scott Brown's otolaryngology, London: Butter worth,. 1987: 142-153.
4. Bellenger JJ editor. In: Disease of Nose, Throat, Ear, Head and Neck, 13 Th ed. Philadelphia: Lea and Febiger, 1985: 5.
5. Satyanarayana C. Rhinosporidiosis. In: Ellis M, editor, Clinical Surgery: Ear, Nose and Throat, chap. 13, London: 143.
6. Cheesman AD. Tumours of the nose and sinus. In Mackay IS, Bull TR, editors, Rhinology: Scott-Brown's otolaryngology 5th ed. London: Butterworths 1987: 239.
7. Os born DA. Haemangiomas of the nose. J laryngol Otol. 73: 174-179.
8. Richard T. Juvenile nasopharyngeal angiofibroma. Ann otol. 1981; 90: 20-423.
9. Segal K et al. Inverting Papilloma of the nose and paranasal sinuses. Laryngoscope 1986; 96: 394-398.
10. Haque and Islam. A review of the Pathology of nasal mass. Bangladesh Med. J. 1972; 2: 217-24.
11. Scott- Brown's Otolaryngology Sixth edition volume 5; 5/23/23.
12. Levine PA. Sinonasal undifferentiated carcinoma. Laryngoscope 1987; 97: 905-909.
13. Hartsough AB et al. Epithelial carcinoma of the nasal fossa. Laryngoscope 1987; 97: 717-723.
14. Frazell EL. Lewis JS. Cancer of the nasal cavity and accessory sinuses. Cancer 2005; 16: 1293-1313.

15. Hamilton WJ Massman HW, editors. Human Embriology, 4th ed. Baltimore: William and Wilkins, 1972: 300.

16. Warbrick J.G. The early development of the nasal cavity and upper lip in the human embryo. J. Anat. 1970; 94: 350.

17. Walter, J.B. Israel, M.S; General pathology 6th edn, 1987, Churchill Livingstone, P. 349-351 & 354.

18. Foo. G.C. Well differentiated fibrosarcoma of the maxilla, Singapore Medical Journal 1984; 25(4): 274-277.

19. Khan et al. Rhinosporidiosis. J Laryngol Otol 83: 461-473.

20. Gupta, S.C. Wring's Sarcoma of the upper Jaw, Ear, Nose and Throat Journal, 1987; 66: 176.

21. Watkinson. J.C., Gaze. M.N., Wilson, J.A., Stell and Maran's. Head and Neck Surgery, 2002; 41th edition. P-377-396.

22. Lumsden A, Wilson JA. Unusual polypoidal tumours of the nasal cavity. Clin. Otolaryngology 1986; 11: 31-36.

23. Kissane, editor. Anderson's pathology 8th ed. Toronto.

24. Busuttil. A. Adenoid cystic carcinoma of the minor salivary glands, The Journal of laryngology and otology, 1977, Vol-XCI(1), P. 41-53.

25. Perzin, K.H., and pushparaj, N; Non-epithelial tumours of the nasal cavity, paranasal sinuses and Nasopharynx, cancer 1984; 54: 1860-1869.

26. Poverty Alleviation and Empowerment Through Microfinance: Tow Decades of experience Bangladesh. Rushidan Islam Rahman; Bangladesh Institute of Development Studies (BIDS), P-57.