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Clinico-pathological spectrum of sinonasal masses: a tertiary care hospital experience

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ABSTRACT

Background: Sinonasal masses (SNM) are a fairly common clinical entity that occurs amongst patients of all age groups. There symptoms and signs frequently overlap, hence a diagnostic dilemma exists. A correct diagnosis is prudent for instituting correct treatment and expecting recovery. The purpose of this retrospective analysis was to decipher and study the various pathologies that present as sinonasal masses.
Methods: A retrospective analysis done on 80 patients of SNM who presented to the Department of ENT, Subharti Medical College and Hospital, Meerut from May 2016 to April 2017. Their biodata, clinical profile and histolopathological diagnosis were analyzed.
Results: SNM were male predominant and were non-neoplastic in 53 cases (66.25%). Nasal obstruction was the most common presenting feature (71 cases, 88.75%). Nasal polyps are the most commonly encountered SNM. Non-neoplastic SNM were common in the age group of 11 to 40 years. Benign SNM were common during the 2nd to 4th decade of life, while malignant SNM were common from 5th decade onwards.
Conclusions: SNM constitute a very wide spectrum of differential diagnoses. They have a male predominance and majority are non-neoplastic. Nasal polyps are the most commonly encountered SNM, seen during 2nd to 4th decade of life, while squamous cell carcinoma is the most commonly encounterd malignancy, generally from 5th decade onwards. Surgery is the treatment of choice.

Keywords: Sinonasal masses, Polyp, Nasal obstruction, Squamous cell carcinoma

INTRODUCTION

Sinonasal masses (SNM) are a fairly common clinical entity that occurs amongst patients of all age groups and are encountered routinely in ENT outpatient departments. They encompass a very wide range of pathologies ranging from non-neoplastic to neoplastic in nature.[1] Their presenting features are diverse and depend upon the type, spread and extent of the primary disease. Accordingly, the patients may have nasal features (obstruction, discharge, nasal mass, epistaxis, smell abnormalities), features of oro-facial involvement (palatal or buccal swelling, loose teeth, facial pain and swelling), orbital features (epiphora, proptosis, diplopia), aural features (fullness, hearing impairement), and/or metastatic neck nodes.[2]

These masses can be congenital or acquired. Congenital masses such as dermoid cysts, glioma and encephaloceles are predominantly midline swellings, and may present either intranasally or extranasally.[3,4] Acquired sinonasal masses can be inflammatory including allergic, traumatic, granulomatous or neoplastic (benign and malignant) in nature.[5] Aquired pathologies presenting with sinonasal

masses include nasal polyps (antrochoanal and ethmoidal), rhinosporidiosis, fungal sinusitis, hemangiomas, inverted papilloma, angiofibroma, malignancies etc.

Owing to the overlapping clinical features of the various lesions, it is difficult to identify the exact nature of the disease. Hence there is a prudent role of thorough history, clinical examination, nasal endoscopy, radiological imaging and histopathology in reaching a definite diagnosis.[6] The purpose of this retrospective analysis was to decipher and study the various pathologies that present as sinonasal masses.

METHODS

The present study was a retrospective analysis done on 80 patients of SNM who presented to Department of ENT, Subharti Medical College and Hospital, Meerut (A tertiary care hospital in western Uttar Pradesh, India) from May 2016 to April 2017. All cases that had a newly confirmed SNM were included in the study, whereas previously treated/recurrence cases were excluded. A thorough workup was done for all cases that included detailed history, clinical assessment, diagnostic nasal endoscopy and histopathological examination (HPE). Radiological investigations like X-ray PNS (nose and paranasal sinuses), computed tomography (CT scan) PNS coronal, axial & sagittal sections and magnetic resonance imaging were performed as per requirement. The data obtained was compiled using a predesigned proforma for all cases. The tissue specimen for the histopathological evaluation was obtained by biopsy or by surgical excision of the SNM, as feasible. Microsoft office excel 2007 software was used for data analysis.

RESULTS

During the study period of one year, 80 patients with SNM presented to the ENT OPD. The socio-demographic profile of the study population is summarized in Table 1. Out of the 80 cases, the SNM were non-neoplastic in 53 cases (66.25%) and neoplastic in 27 cases (33.75%). The age incidence of the SNM is depicted in Table 2. The age range of the patients was from 7 to 76 years. Non-neoplastic SNM were common in the age group of 11 to 40 years. Benign neoplastic SNM were common during the 2nd to 4th decade of life, while malignant neoplastic SNM were common from 5th decade onwards.

Symptomatology of SNM is depicted in Table 3. Nasal obstruction was the most common presenting problem (71 cases, 88.75%) followed by nasal discharge (58 cases, 72.5%). The clinical presentation of the SNM is depicted in Table 4. The SNM were unilateral in 45 cases (56.25%) and bilateral in 35 cases (43.75%). There was a solitary SNM in 47 cases (58.75%) while they were multiple in 33 cases (41.25%). Histopathological evaluation of the SNM is depicted in Table 5. Surgery was the main mode of treatment in majority of the cases.

Table 1: Socio-demographic profile of study population.

Variable		Number of cases	Percentage (%)
Gender	Male	52	65
	Female	28	35
Education	Literate	57	71.25
	Illiterate	23	28.75
Dwelling	Rural	51	63.75
	Urban	29	36.25
Religion	Hindu	48	60
	Muslim	20	25
	Sikh	8	10
	Christian	4	5
Diet	Vegetarian	46	57.5
	Non vegetarian	34	42.5
Occupation	Farmers	31	38.75
	Labourers	23	28.75
	Business	4	5
	Service	5	6.25
	Student	13	16.25
	Others	4	5

Table 2: Age incidence of sinonasal masses.

Age (years)	Non-neoplastic mass	Neoplastic mass		Total
		Benign	Malignant	
< 10	7	1	0	8
11-20	16	2	0	18
21-30	12	3	0	15
31-40	13	1	0	14
41-50	2	1	6	9
51-60	1	2	4	7
61-70	2	0	3	5
>70	0	1	3	4
Total	53	11	16	80

Table 3: Symptomatology of sinonasal masses.

Symptom	Number of cases	Percentage (%)
Nasal obstruction	71	88.75
Nasal discharge	58	72.5
Sneezing	25	31.25
Intermittent epistaxis	31	38.75
Hyposmia/anosmia	43	53.75
headache	33	41.25
Facial swelling	12	15
Aural problems (fullness/impaired hearing)	7	8.75
Ocular problems (diplopia/epiphora/proptosis)	4	5

Table 4: Presentation of sinonasal masses in nasal cavity.

		Non-neoplastic mass	Neoplastic mass		Total
			Benign	Malignant	
Laterality	Unilateral	21	10	14	45
	Bilateral	32	1	2	35
	Total	53	11	16	80
Number	Single	21	11	15	47
	Multiple	32	0	1	33
	Total	53	11	16	80

Table 5: Histopathological Diagnosis of sinonasal masses.

Category		Diagnosis	Number of cases	Percentage (%)	Total (%)	
Non-neoplastic		Ethmoidal polyps	27	33.75	53 (66.25)	
		Antrochoanal polyp	14	17.5		
		Fungal mass	7	8.75		
		Rhinolith	2	2.5		
		Dermoid cyst	1	1.25		
		Rhiosporidiosis	1	1.25		
		Nasolabial cyst	1	1.25		
Neosplastic	Benign	Hemangioma	7	8.75	11 (13.75)	27 (33.75)
		Inverted papilloma	2	2.5%		
		Angiofibroma	1	1.25		
		Fibrous dysplasia	1	1.25		
	Malignant	Squamous cell carcinoma	11	13.75	16 (20%)	
		Adenocarcinoma	5	6.25		
Total			80	100	80	100

DISCUSSION

The nose is an important part of the face and is associated with an individual's dignity and pride. It carries a considerate aesthetic, functional, emotional and cultural value.[7] The nasal cavity and paranasal sinuses form a functional unit, which is lined by stratified squamous, respiratory-type pseudostratified columnar, and transitional (intermediate) epithelium.[8] The mucosa of nasal cavity and paranasal sinuses is referred to as the Schneiderian membrane.[9] Large number of pathological conditions, both non-neoplastic and neoplastic arise from the sinonasal tract and are frequently encountered in day to day clinical practice. A thorough history, presenting symptoms and signs in conjunction with information provided by advanced imaging techniques help to frame a presumptive diagnosis, but histopathological evaluation remains the gold standard for reaching a definitive diagnosis, which is prudent for timely intervention and recovery.

In the present study, SNM presented a male dominance (M:F=1.4:1). Male predominance has also been reported by Zafar et al and Lathi et al.[1,7] The male dominance may indicate the genetic predisposition for developing various diseases in males or it could be a reflection of the male dominated society where the male members are exposed to varied environmental stress factors in the process of earning a livelihood for the family, or it could be due to an overall higher male attendance at hospitals. However a study carried out by Bakari et al in Nigeria had reported a female dominance (M:F=1:1.2).[10] In the present study, maximum cases of SNM presented during the 2nd to 4th decade of life. Similar observations were also made by Zafar et al, Lathi et al and Bakari et al.[1,7,10] Malignancies were observed from 5th decade onwards.

The most common presenting symptoms in the present study were nasal obstruction (71 cases, 88.75%) and nasal discharge (58 cases, 72.5%). Studies carried out by Bist et al, Patel et al and Humayun et al have also depicted nasal obstruction as the commonest presentation.[6,11,12]

According to our study majority of the SNM were unilateral (45 cases, 56.25%). Similar finding have also been observed by Bist et al (74.55%) and Bakri et al (55.3%).[6,10] In contrast to our study a high incidence of bilateral SNM were reported by Lathi et al (51.8%).[7] This difference in involvement can be attributed to the differences in the geographical variation of the prevalent diseases. It was also observed that all the benign and malignant SNM were solitary in occurrence, except in one case of malignancy.

It was observed that out of the 80 cases of SNM, 53 were non-neoplastic (66.25%) and 27 cases (33.75%) were neoplastic in nature. Similar observations concerning a

high incidence of non-neoplastic SNM have been made by Thomas et al (67.2%), Mane et al (82%).[13,14] Amongst the non-neoplastic group, nasal polyps constituted majority of the SNM (51.25%), of which Ethmoidal polyps (27 cases, 33.75%) were more common than the Antrochoanal polyps (14 cases, 17.5%). Nasal polyps result from chronic inflammation of the nasal and sinus mucous membranes and are the most common tumours of the nasal cavity. Their exact pathogenesis is not known, however a strong association with allergy, infection, asthma and aspirin sensitivity has been implicated.[15] True nasal polyps are subdivided into allergic nasal polyps, showing abundant eosinophils in the stroma in addition to inflammatory cells, whereas in the other type viz. inflammatory nasal polyps, there is a paucity of eosinophils. Ethmoidal and antrochoanal polyps are generally allergic and inflammatory in nature, respectively.[7] A high incidence of nasal polyps amongst the SNM has also been reported by Lathi et al (70 cases, 62.5%) and Thomas et al (44 cases, 62.86%).[7,13]

Amongst the benign neoplastic SNM, haemangiomas were the most commonly encountered lesions (7 cases, 8.75%), of which 6 were capillary haemangioma's arising from the cartilaginous nasal septum, and only 1 case of cavernous haemangioma. Haemangioma is not regularly seen in the nasal cavity, though if it occurs, is predominantly capillary and is found attached to the nasal septum.[16] Cavernous haemangioma is rarely seen in the sinonasal tract.[17]

Occurrence of Malignancy in the sinonasal tract is a rare feature, the most common site of origin being maxillary sinus.[18,19] The most common histological type is squamous cell carcinoma. It is rarely encountered before the 4th decade of life.[20] In the present study, histopathological evaluation revealed 16 cases of malignancies (20%). Of these, 11 cases were of squamous cell carcinoma, while remaining 5 were adenocarcinoma cases. In a study from Nepal, Pradhananga et al reported 6.3% of their SNM to be malignant.[21] Squamous cell carcinoma has been reported to be the most commonly encountered malignancy of sinonasal tract in Denmark by Svane-Knudsen et al.[22] In a study from Rajasthan, India, Thomas et al observed that 10% of their pool of SNM comprised of squamous cell carcinoma cases.[13]

Diagnostic nasal endoscopy is an advanced diagnostic tool that helps in early detection of nasal pathologies. It helped us to detect early changes in the sinonasal tract, which were missed in anterior rhinoscopy. Histopathological examination is the gold standard for the diagnosis of SNM. Radiological investigations help in understanding the type and extent of the pathology. Classically, benign neoplasms expand and remodel bone and aggressive malignancies destroy and invade adjacent tissues, causing ill-defined margins. These rules, however, may be broken in sinonasal imaging. CT has superior bony definition whereas MRI distinguishes tumor versus retained secretions better.[6]

Majority of the non-neoplastic and benign neoplastic SNM require surgical excision, while malignant neoplastic SNM require wide surgical excision, radiotherapy or chemotherapy either alone or in combination. A regular follow-up is mandatory for early detection of recurrence or metastases.[23]

CONCLUSION

Sinonasal masses constitute a very wide spectrum of differential diagnoses. They have a male predominance and majority are non-neoplastic. Nasal polyps are the most commonly encountered SNM, seen during 2nd to 4th decade of life, while squamous cell carcinoma is the most commonly encounterd malignancy, generally from 5th decade onwards. Surgery is the treatment of choice for benign lesions, while malignant conditions usually require a combination of surgery and radiotherapy.

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