

ORIGINAL RESEARCH PAPER

CLINICAL STUDY OF SYMPTOMATOLOGY, MANAGEMENT AND OUTCOME IN PATIENTS WITH SINO- NASAL MASSES

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Abstract

Background: Presumptive diagnosis of sinonasal masses can be achieved with the aid of clinical presentation and imaging techniques but histopathological examination remains the mainstay of final definitive diagnosis. The present study was undertaken at a tertiary level hospital to analyse clinical presentations, management and histopathological patterns of Sinonasal masses.

Material and Methods: Present study was single-center, Prospective Non-Randomised study, conducted in patients of all age groups, attending the ENT OPD with masses in sinonasal cavity, diagnosed after complete clinical examination (including endoscopic evaluation), willing to participate.

Results: 40 cases presenting with Sino Nasal cavity masses at OPD were selected as per the inclusion criteria. In our study, most of the patients were in the age group of 31-40 years, with 25% of the study population, followed by patients in the second and third decade with 20% each. There were 24 (60%) males and 16 (40%) females in the study. Overall, non-neoplastic lesions were found to be commonest in occurrence with ethmoid polyp (32.5%) having the highest incidence, followed by antrochoanal polyps (20%), Rhinosporidiosis (2.5%) and Rhinoscleroma (2.5%). Among the benign masses, inverted papilloma was most common (12.5%) followed by hemangioma (10%), ossifying fibroma and osteoma (2.5% each). Carcinoma of the maxilla presented in 3 patients (7.5%) and was the most common malignancy followed by carcinoma of the nasal cavity (5%) and malignant melanoma (2.5%). For non-neoplastic lesions (n=23), majority of the masses were excised either by open surgery or endoscopically with base cauterization (n=21). One case of rhinoscleroma involved medical management along with surgical excision. Medical management was done with antibiotic ciprofloxacin for 6 weeks. Endoscopic surgery resulted in faster recovery and cosmesis.

Conclusion: Clinical diagnosis is often difficult and have to be relied on histopathological examination of biopsy specimen and may require repeated biopsies.

Keywords: Sinonasal mass, histopathological examination, biopsy, polyp

Introduction

The nasal cavity and paranasal sinuses-including the maxillary, ethmoid, sphenoid and frontal sinuses-are collectively referred to as the sinonasal tract. Disorders of nasal cavity and paranasal sinuses are among the most common afflictions of humans^[1]. The nasal cavity and paranasal sinuses are exposed to a variety of infections, chemically irritating, antigenically stimulating, mechanical and traumatic influences. As a consequence of these exposures, there are formation of tumour-like and truly neoplastic conditions^[2].

Most of the patients with sinonasal masses present with complaints of nasal obstruction^[3]. Other symptoms include nasal discharge, epistaxis, disturbances of smell. These sinonasal lesions can have various differential diagnosis that may be congenital, inflammatory, neoplastic or traumatic. Among these, Polyps including inflammatory and allergic are the most common sinonasal lesion. They are common cause of nasal obstruction and have prevalence of about 4% of general population^[4].

Other non-neoplastic lesions are bacterial and fungal infections. Benign tumours like papilloma, hemangioma, angiofibroma are relatively common, but malignant neoplasms are rare. Malignant tumours account for 0.2% to 0.8% of total malignancies and only 3% of all malignant tumours of upper aerodigestive tract^[5]. Presumptive diagnosis of these lesions can be achieved with the aid of clinical presentation and imaging techniques but histopathological examination remains the mainstay of final definitive diagnosis^[6]. The present study was undertaken at a tertiary level hospital to analyse clinical presentations, management and histopathological patterns of Sinonasal masses.

Material and Methods

Present study was single-center, Prospective Non-Randomised study, conducted in department of department of ENT & Head and Neck Surgery, Gandhi Medical College, Secunderabad, India. Study duration was of 2 years (November 2019 to October 2021). Study was approved by institutional ethical committee.

Inclusion criteria

- Patients of all age groups, attending the ENT OPD with masses in sinonasal cavity, diagnosed after complete clinical examination (including endoscopic evaluation), willing to participate.

Exclusion criteria

- Patients who had history of previous surgical and medical management.
- Recurrent sino-nasal masses.
- Patient who are not willing to take part in study.

Details regarding the proposed study were explained to the patients and their attenders and informed written consent was taken for inclusion in this study. A detailed history was taken & personal particulars like age, sex, duration of illness, presenting complaints, relevant history, past history, treatment history, clinical signs and symptoms followed by a thorough systemic examination, ENT & Endoscopic examination.

Routine Hematological Investigations & Pre-operative routine tests for surgical fitness-Chest X-ray, 2D ECHO were done in all cases. Imaging studies such as CT/MRI were done as per indication. Biopsy was taken wherever necessary and histopathological examination was done. Along with these, other relevant and necessary investigations including preoperative

tests for surgical fitness were carried out. Based on clinical signs and investigations, proper diagnosis was made and appropriate medical or surgical or both modalities of treatment were carried out. The patients were followed up for a period of 3-6 months.

The statistical software, namely SPSS 24.0 and Systat 13.0 were used for the analysis of the data and Microsoft Word 2018 and Excel 2018 have been used to digitalize the collected data and generate graphs, tables etc. The categorical variables have been described as proportions and percentages. P value < 0.05 was considered significant in the current study.

Results

40 cases presenting with Sino Nasal cavity masses at OPD were selected as per the inclusion criteria. In our study, most of the patients were in the age group of 31-40 years, with 25% of the study population, followed by patients in the second and third decade with 20% each. There were 24 (60%) males and 16 (40%) females in the study. Majority of the patients were male. Ratio of male: female was 3: 2.

Table 1: Age & gender distribution

Characteristics	Number of Patients	Percentage
Age (In Years)		
< 20	8	20
21-30	8	20
31-40	10	25
41-50	4	10
51-60	6	15
> 60	4	10
Gender		
Male	24	60
Female	16	40

Sex ratio is almost same for both benign and malignant lesions in the present study with 1.2 : 1 and 1 : 1 respectively. Slight male preponderance is noted in case of non-neoplastic lesions, with ratio at 1.88 : 1. Of the 40 patients included in this study, 23 patients (57.5%) were diagnosed with non-neoplastic lesions in the sino nasal cavity like polyps and rhinosporidiosis. 11 cases (27.5%) had benign masses, whereas a minority of 6 cases (15%) were found to be malignant on histopathological examination. Patients with malignancies usually were of advanced age, with mean at 54.7 years, whereas benign masses presented earlier, with mean at 31 years. Non-neoplastic lesions were seen in all age groups, with mean of 35.7 years.

Table 2: Distribution of Various Lesions

Type of lesion	Male	Female	M : F Ratio	Number of Patients	Percentage	Average age (in years)
Non-neoplastic	15	8	1.88 : 1	23	57.5	35.7
Benign	6	5	1.2 : 1	11	27.5	31
Malignant	3	3	1 : 1	6	15	54.7
Total	24	16	1.5 : 1	40	100	37.25

Overall, non-neoplastic lesions were found to be commonest in occurrence with ethmoid polyp (32.5%) having the highest incidence, followed by antrochoanal polyps (20%), Rhinosporidiosis (2.5%) and Rhinoscleroma (2.5%). Among the benign masses, inverted papilloma was most common (12.5%) followed by hemangioma (10%), ossifying fibroma and osteoma (2.5% each). Carcinoma of the maxilla presented in 3 patients (7.5%) and was

the most common malignancy followed by carcinoma of the nasal cavity (5 %) and malignant melanoma (2.5%).

Table 3: Distribution of Patients as per Histopathological Diagnosis

Type of Lesion	Number of Patients	Percentage
Non-Neoplastic		
1. Antrochoanal Polyp	8	20
2. Ethmoidal Polyp	13	32.5
3. Rhinosporidiosis	1	2.5
4. Rhinoscleroma	1	2.5
Benign		
1. Inverted Papilloma	5	12.5
2. Hemangioma	4	10
3. Ossifying Fibroma	1	2.5
4. Osteoma	1	2.5
Malignant		
1. CA Maxilla	3	7.5
2. CA Nasal Cavity	2	5
3. Malignant Melanoma	1	2.5
TOTAL	40	100

Of the 40 patients, a maximum of 29 patients (72.5%) presented with nasal obstruction, followed by nasal discharge (60%), epistaxis (57.5%), headache (50%), hyponasality (30 %), nasal or facial swelling (25%), epiphora (7.5%) and proptosis (7.5%).

Table 4: Frequency of Various Symptoms

Symptom	Number of Patients	Percentage
Nasal Obstruction	29	72.5
Epistaxis	23	57.5
Nasal Discharge	24	60
Headache	20	50
Hyponasality	12	30
Swelling	10	25
Epiphora	3	7.5
Proptosis	3	7.5
Other	1	2.5

For non-neoplastic lesions (n=23), majority of the masses were excised either by open surgery or endoscopically with base cauterization (n=21). One case of rhinoscleroma involved medical management along with surgical excision. Medical management was done with antibiotic ciprofloxacin for 6 weeks. Endoscopic surgery resulted in faster recovery and cosmesis. Of the 11 cases of benign lesions, all were subjected to surgical excision. No recurrences were found. Postoperative Histopathological examination of the specimen confirmed their benign status. All the 3 cases of Carcinoma of the Maxillary sinus were treated with surgery followed by postoperative Radiotherapy. 1 case was found to manifest with recurrence after 5 months. 1 case of Nasal cavity carcinoma presented as an early stage tumour. It was treated with radiotherapy only exclusively and remission was noted up to 1 year of follow up. Second case of Carcinoma Nasal cavity involved Surgery followed by Radiotherapy. Malignant melanoma is a rare tumour in the nasal cavity and was treated with a combination of surgery and radiotherapy.

Table 5: Various Modalities of Treatment

Type of Lesion	Non-Neoplastic (n=23)	Benign (n=23)	Malignant (n=23)
Medical	1	0	0
Medical + Surgery	1	0	0
Surgery	21	11	0
RT	0	0	1
Surgery + RT	0	0	5
Recurrence	0	0	1

Discussion

The proximity of organ of special senses, the proximity of the brain, make the treatment programme most debilitating, and bizarre pattern of symptoms make for late diagnosis of sinonasal masses.

The general difficulty in managing these cases has usually been attributed to three factors:

1. The advance stage of the disease at the time of diagnosis.
2. The complex anatomy of the region involved.
3. The reluctance of many surgeons to pursue aggressive treatment methods that are prone to result in mutilation, prolonged morbidity and dysfunction.

The goal of management of masses of the sinonasal cavity has evolved from en-masse removal of all pathological masses to relieving the obstruction for restoring maximum possible physiological function, as well as to avoid recurrence and increase the patient's quality of life.

In the present study, majority of the patients were noted to be in the 4th decade of life, while considerable number were from 2nd and 3rd decades also. In Rokade V *et al.*,^[7] majority were of the 31-40 years (26 %). In Agarwal *et al.*,^[8] study most affected age group was 41-50 years (29.4%).

Out of 40 cases, 24 (60%) were male and 16 (40%) were female in the present study. Majority of the patients were male. Ratio of male: female was 1.5 : 1. In most of the studies, males were affected more when compared with females and our findings are similar to other as Rokade V *et al.*,^[7] (1.59 : 1), Singh SG *et al.*,^[9] (1.14 : 1), Agarwal P *et al.*,^[8] (1.2 : 1) & Bist SS *et al.*,^[10] (1.8 : 1).

57.5% were diagnosed with non-neoplastic lesions. 11 cases (27.5%) had benign masses, whereas 6 cases (15%) were found to be malignant on histopathological examination. This is largely similar to studies by other researchers such as Garg D *et al.*,^[11] Agarwal P *et al.*,^[8] and S Bist *et al.*,^[10] Higher incidence of non-neoplastic lesions was noted in Rokade V *et al.*,^[7] and Boobalan S *et al.*,^[12].

Most common complaint in study by Singh SG *et al.*,^[9] was nasal obstruction, with unilateral nasal obstruction seen in 84 (56%) cases and bilateral nasal obstruction in 50 (33.3%) cases followed by nasal discharge was seen in 102 (68%) cases. In the study by Agarwal P *et al.*,^[8] Nasal obstruction was the most common presentation (81.6%), followed by nasal discharge (61.7%) and then epistaxis (38.2%). External nasal deformity (6.6%) was the least common mode of presentation, followed by headache (13.9%).

In this study 57.5% lesions were non-neoplastic, age of presentation of non-neoplastic lesions in these regions ranged from 2nd to 6th decade, with mean age of presentation was 35.7 years which is similar to other studies^[8, 9, 10]. Nasal polyposis is by far the most common lesion among non-neoplastic masses of the sino nasal cavity. Ethmoid polyps were found to outnumber antrochoanal polyps. Our results are in accordance with other studies, such as Boobalan *et al.*,^[12] Singh SG *et al.*,^[9] and Bist SS *et al.*,^[10]

Squamous cell carcinoma is the most common microscopic type of sinonasal neoplasm

affecting the nasal skin and nasal cavities. Adenocarcinomas of various types comprise 10% to 20% of all primary malignant neoplasms of the nasal cavity and paranasal sinuses. Adenoid cystic carcinoma usually occurs in the maxillary sinus and nasal cavity. NHLs of the sinonasal tract are heterogeneous diseases that can be clinically aggressive^[5].

In our study, inverted papillomas were the most common benign lesion diagnosed with 45.45% of all benign neoplastic masses, which was similar to the finding by Garg D.,^[11] but marginally higher than the findings in Boobalan S.,^[12] and Agarwal P.,^[8] Inverted papillomas are comparatively rare, but this morphological variant is the most commonly encountered lesion of all sinonasal papillomas. The other two morphological forms are exophytic (everted) squamous cell papilloma and cylindrical cell papilloma. All cases of inverted papilloma were excised by either conservative resection or by lateral rhinotomy approach. Conservative resection was done endoscopically for those cases where tumours are not very much extensive. In our study, it was opted for two patients. In rest of the 3 cases of inverted papilloma tumours were excised by lateral rhinotomy approach which in all cases was combined with medial maxillectomy.

Hemangioma is the second common benign neoplasm in our study with 36.4%. It is lesser than Agarwal P.,^[12] but higher than Rokade V *et al.*,^[7] (25%) and Boobalan S *et al.*,^[12] (23.07%).

In our study, there were total 6 cases of sinonasal malignancies. Out of six, three originate from nasal cavity in which two were squamous cell carcinoma while one was malignant melanoma. Rest three malignancies were squamous cell carcinoma arises from maxillary sinus. Squamous cell carcinoma was the most common malignant lesion, observed in 6th and 7th decades. Khan N *et al.*,^[13] had got a total fifteen cases (12.5%) of sinonasal squamous cell carcinoma and four cases of malignant melanoma (3.33%) into their study of 120 cases. These findings were almost identical to our findings where we got five cases (14.7%) of squamous cell carcinoma and one case (2.94%) of malignant melanoma from a total of 40 cases.

In a study by Garg D *et al.*,^[11] 13 malignant cases were included. Squamous cell carcinoma constituted majority of six cases (46.15%) followed by two cases (15.4%) of primitive neuroectodermal tumour and one case each of basal cell carcinoma (7.69%), hemangiopericytoma (7.69%), neuroblastoma (7.69%), round cell tumour (7.69%) and plasmacytoma (7.69%). Similarly, in Bist SS *et al.*,^[10] study, 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.

The final diagnosis was established by microscopic examination of specimen of tissue from the tumour in the nasal cavity and according to histopathology report two were well differentiated squamous cell carcinoma, one was malignant melanoma. One tumour was under stage II and was treated with radiotherapy alone. Another was under TNM stage III whereas another was under stage IVA. Surgery was offered to one patient in form of lateral rhinotomy + complete maxillectomy + ipsilateral radical neck dissection. Later postoperative radiotherapy was given to this patient and after 6 months there was no recurrence.

Timely diagnosis and early medical treatment will decrease the burden of morbidity and mortality in these patients. Sometimes, combined modalities of treatment should be used for effective treatment. Awareness regarding the disease process and health education should be provided to people regarding smoking, maintenance of hygienic condition, and utilization of health facilities^[14]. Limitations of the study were, relatively small sample size, single center and cross-sectional study design, which decreases the statistical significance of the data.

Conclusion

Clinical diagnosis is often difficult and have to be relied on histopathological examination of biopsy specimen and may require repeated biopsies. Management of these patients is challenging due to varied presentation and lack of a definite protocol. Emergence of newer surgical medical and radiological intervention have opened up a new chapter while dealing with these types of patients.

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