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Original Research Article

Histopathological study of nasal masses, a one year retrospective study in a tertiary care centre of Assam

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ABSTRACT

Background: Prolapsed lining of the nasal sinuses are defined as nasal polyp. Diseases of the nasal cavity include viral, bacterial and fungal infections, nasal cavity tumors (benign and malignant) as well as inflammations of the nasal mucosa. This study was undertaken to note the various histopathological patterns of nasal masses, their classification and relative distribution of various lesions with regard to age and sex in our setting.
Methods: The study is done for a period of 1 year (July 2018 to June 2019). In this study, 30 patients are selected who presented in our hospital with nasal masses and having multiple types of clinical presentations.
Results: Total 30 cases presented as nasal mass. Overall male to female ratio was 2.3:1. Nonneoplastic nasal masses formed the largest group of lesions; 24 cases (80%), followed by 6 cases (20%) of neoplastic nasal masses. Inflammatory polyp was the commonest non neoplastic lesion constituting 22 cases followed by rhinosporidiosis with 2 cases. Out of the 6 neoplastic nasal masses, 5 were benign and 1 was malignant. Out of the benign neoplastic masses, inverted papilloma constituted 3 cases and nasopharyngeal angiofibroma constituted 2 cases. Malignant neoplastic mass was embryonal rhabdomyosarcoma.
Conclusions: Nasal obstruction and rhinorrhea are the most common symptoms of presentation. Simple inflammatory nasal polyps are the most common histological pattern seen in our environment, and surgery is the best modality of treatment.

Keywords: Nasal mass, Histopathology, Nasal polyps

INTRODUCTION

The nasal cavity, nasopharynx and paranasal sinuses form functional unit of nose. It is principally involved in filtering, humidifying and adjusting the temperature of inspired air.[1] The nose occupies a prominent anatomical position on the face. Thus early diagnosis and treatment of any scarring or ulcerative lesion is vital.

Nasal polyps are defined as prolapsed lining of the nasal sinuses.[2] They are often bilateral and multiple which lead to visible broadening of nose. Simple nasal polyps are round, smooth, soft, translucent, yellow or pale glistening structures attached to the nasal or sinus mucosa by a relatively narrow stalk or pedicle. The most common site of origin is in the ethmoidal labyrinths, particularly from the mucosa of the middle turbinate.

Nasal masses are a common finding in the ear, nose and throat department. Nasal obstruction is the most common symptom. Other symptoms include nasal discharge, epistaxis and disturbances of smell.[3] Lesions of nasal cavity are quite common.[4]

Tumors of nose are usually uncommon. Malignant tumors account for 0.2% to 0.8% of total malignancies and only 3% of all malignant tumors of upper aerodigestive tract.[5] The lack of differentiation between neoplastic and non-

neoplastic, benign or malignant makes it neglected by the clinicians, as a result causing a delay in diagnosis and treatment.[6] The presenting symptoms of all tumors are similar and using advanced imaging and computed tomography (CT) and/or magnetic resonance imaging (MRI), presumptive diagnosis are often made.

However, a careful histopathological examination is necessary to decide the nature of any particular lesion including malignancy.[7]

This study was undertaken to note the various histopathological patterns of nasal masses, their classification and relative distribution of various lesions with regard to age and sex in our setting.

METHODS

The study done was for a period of 1 year (July 2018 to June 2019) and it was a cross sectional study done in the Department of Pathology, Silchar Medical College and Hospital. The study comprises of 30 patients- 21 males and 9 females.

Inclusion criteria

Patients attending outpatient department (OPD) with complaint of mass in nose, nasal blockage, and/or nasal discharge will be included in the study.

Exclusion criteria

Patients not willing to give consent for biopsy were excluded from the study.

Permission from Institutional Ethical Committee is not required for this study. The purpose and objective of the study were clearly explained to the patients in the local language. The cases were taken after obtaining their written informed consent.

The patients were selected at random irrespective of age, sex and socioeconomic status. Thorough history and clinical examination was done. Relevant investigations were sent. Incision or excision biopsies were performed and tissues were submitted for histopathological examination. All the tissues were fixed in 10% neutral buffered formalin and processed as routine paraffin embedded sections. 4-5 µm thick sections were cut and stained with hematoxylin and eosin (H and E) stain.

Samples were collected using stratified random sampling technique.

All the datas were analyzed using Microsoft excel 2010.

RESULTS

In our study, a total of 30 patients are studied, and nonneoplastic nasal masses formed the largest group of lesions 24 cases (80%), followed by 6 cases (20%) of neoplastic nasal masses. Nonneoplastic nasal masses were more common in the age group of 4th and 5th decades, while neoplastic masses were more in 5th and 6th decades.

Table 1 shows age wise distribution of the patients in the study population, Table 2 shows gender wise distribution of the study population and Table 3 shows clinical presentation of various nasal masses.

Table 1: Age wise distribution of the patients in the study population (n=30).

Age (years)	Inflammatory polyp	Rhinosporidiosis	Benign		Malignant
			Inverted papilloma	Nasopharyngeal angiofibroma	Embryonal rhabdomyosarcoma
0-10	0	0	0	0	1
11-20	5	0	0	1	0
21-30	4	2	0	1	0
31-40	5	0	0	0	0
41-50	6	0	2	0	0
51-60	2	0	1	0	0
61-70	0	0	0	0	0
Total	22	2	3	2	1

Table 2: Gender wise distribution of the study population (n=30).

Type of lesions	No. of cases (%)	Male	Female
Inflammatory polyp	22 (73.3)	15	7
Rhinosporidiosis	2 (6.7)	2	0
Inverted papilloma	3 (10)	1	2
Nasopharyngeal angiofibroma	2 (6.7)	2	0
Embryonal rhabdomyosarcoma	1 (3.3)	1	0
Total	30 (100)	21	9

Table 3: Clinical presentation of various nasal masses.

Lesions	Presentations
Inflammatory polyp	Nasal congestion, sinusitis, loss of smell
Rhinosporidiosis	Leafy, polypoidal pink to purple coloured mass with complain of discharge
Inverted papilloma	Nasal obstruction, usually one-sided, rhinorrhea (runny nose), sinusitis.
Nasopharyngeal angiofibroma	Progressive nasal obstruction with recurrent epistaxis
Embryonal rhabdomyosarcoma	Nasal obstruction

DISCUSSION

Overall male to female ratio was 2.3:1.Similar findings were also observed in India by Zafar et al, Panchonia et al, Maru et al and Bandil et al and in a British review by Hedman et al and while a study from Nigeria showed opposite ratio with female predominance (M:F=1:1.2).[2,8-10] Non-neoplastic nasal masses (80%) and neoplastic nasal masses (20%) were comparable with study of Maru et al and Bandil et al.[2,10] Non-neoplastic nasal masses were more common in the age group of 4th and 5th decades, while neoplastic masses were more in 5th and 6th decades. Main presenting symptoms were nasal blockage. Parmar et al compared various histopathological lesions of nasal mass in relation to age, sex and site distribution.[11] A histopathological study of total 100 cases of nasal lesions was done. Out of 100 cases, 59 were males and 41 were females. Male to female ratio was 1.44:1. Maximum numbers of nasal lesions were detected in age group of 11-20 years with 24(24%) cases. Out of these 100 cases, 80 (80%) were non neoplastic and 20 (20%) were of neoplastic origin. In neoplastic lesions, 12 (12%) were benign, 1 (1%) was borderline and 7 (7%) were malignant nasal lesions. Non neoplastic lesions were composed of the majority of cases followed by benign neoplastic lesions.

Clinically nasal masses appear as soft exophytic masses that extend laterally from the mucosa into the anterior part of the middle meatus. Microscopically, the epithelial lining of nasal masses is of the respiratory type unless squamous metaplasia has occurred. Majority of inflammatory nasal masses presents as pale gray to pink, soft shiny masses and usually bilateral and multiple. Allergic masses are associated with increased numbers of eosinophils, whereas non-allergic masses contain more plasma cells, lymphocytes, and neutrophils. Basement membrane is thickened, sometimes greatly, especially in the case of allergic polyps. Stroma is edematous with an admixture of acute and chronic inflammatory cells and few fibroblasts and small vessels are present. Vascularity is variable, and blood vessels often contain smooth muscle.[12]

Rhinosporidiosis is endemic in Asian countries.[13] Causative organism is *Rhinosporidium seeberi*. Tondon et al reported the incidence of rhinosporidiosis as 24% in his study whereas in our study, it was 6.7%.[14] It is characterized by hyperplastic polypoid lesions of the nasal cavity and rarely of other mucous membranes. The diagnosis is readily made by the identification of numerous globular cysts measuring up to 200 nm in diameter. Each of these cysts represents a thick-walled sporangium containing numerous spores (Figure 2).[2] We found 2 cases of rhinosporidiosis in our study.

Sinonasal papillomas are benign neoplasms of the respiratory mucosa most commonly presenting with nasal stuffiness, nasal obstruction, or epistaxis. Most cases are seen in adult men, but they can also occur in children.[15] Many adjectives have been attached to them, such as inverted, cylindrical cell, everted, squamous, and schneiderian. The papillomas arising in the nasal septum are usually exophytic and mushroom shaped ("fungiform" or "everted"), with a thin central core of connective tissue. Those located in the lateral wall (middle meatus or middle or inferior turbinate) are of the inverted type, with inward growth of the epithelium into the stroma. Microscopically, sinonasal papillomas are composed of proliferating columnar and/or squamous epithelial cells, with an admixture of mucin-containing cells and numerous microcysts. Some tumors are partially or entirely composed of swollen, granular, eosinophilic cells with features of oncocytes.[16] We found 3 cases of inverted papilloma in our study (Figure 3).

Nasopharyngeal angiofibroma - rare tumor, usually adolescent males (10-25 years), rarely in older patients or women. 75% have androgen receptors but not estrogen or progesterone receptors. Arises from erectile-like fibrovascular stroma in posterolateral wall of roof of nose. May grow into nasopharynx, orbit or cranial cavity. Nasopharyngeal angiofibroma are well circumscribed but unencapsulated polypoid fibrous mass, bleeds severely on manipulation and biopsy, may occlude nare.[17] Microscopic (histologic) description--Intricate mixture of stellate and staghorn blood vessels with variable vessel wall thickness ranging from single layer of endothelium to variable smooth muscle coat. Irregular fibrous stroma (loose, edematous to dense, acellular). Stromal cells are stellate fibroblasts with small pyknotic to large vesicular nuclei. Larger vessels at base of lesion, smaller vessels with plump endothelial cells at growing edge of tumor. Chandler et al have proposed several staging systems for juvenile nasopharyngeal angiofibroma.[18] We found 2 cases of nasopharyngeal angiofibroma in our study (Figure 4).

Rhabdomyosarcoma (RMS) is a skeletal muscle sarcoma commonly found in the head and neck region, and nasopharynx is second most common site next to orbit. Tumor cells are small and spindle shaped. Some have a deeply acidophilic cytoplasm. There is the presence of highly cellular areas usually surrounding blood vessels,

alternating with paucicellular regions that have abundant myxoid intercellular material.[19]

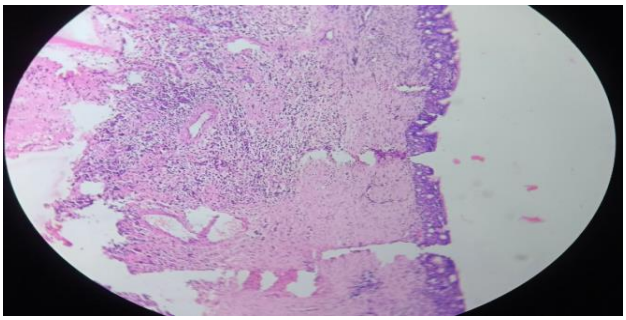

Figure 1: Inflammatory polyp (mixture of acute and chronic inflammatory cells, fibroblasts and few vessels, H and E stain, 40X).

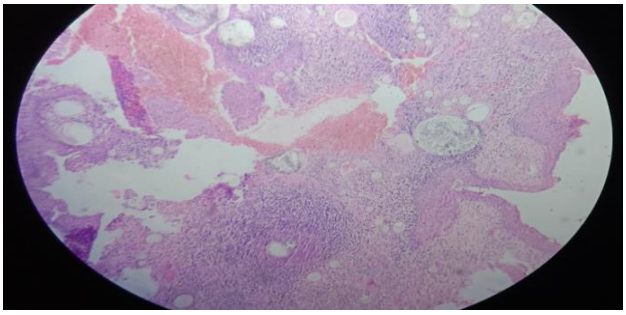

Figure 2: Rhinosporidiosis (numerous sporangium containing spores, H and E stain, 40X).

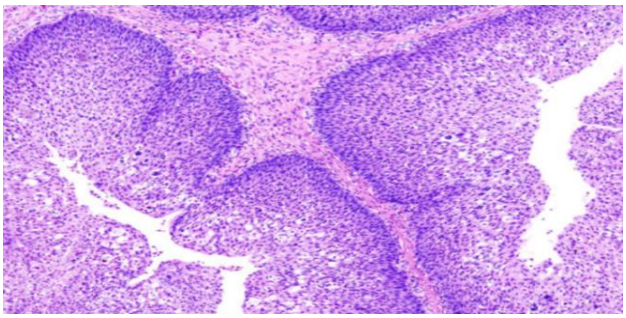

Figure 3: Inverted papilloma (lining epithelium projecting inward, H and E stain, 40X).

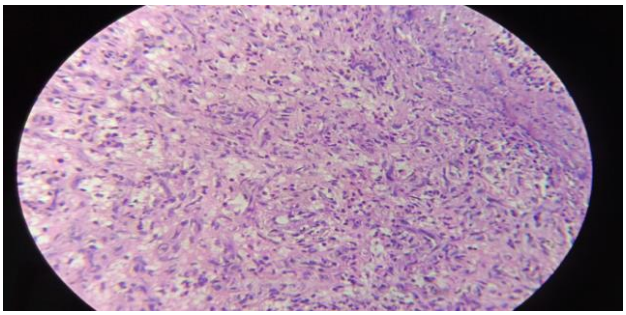

Figure 4: Nasopharyngeal angiofibroma (irregular fibrous stroma, fibroblasts are spindle or stellate shaped, H and E stain, 40X).

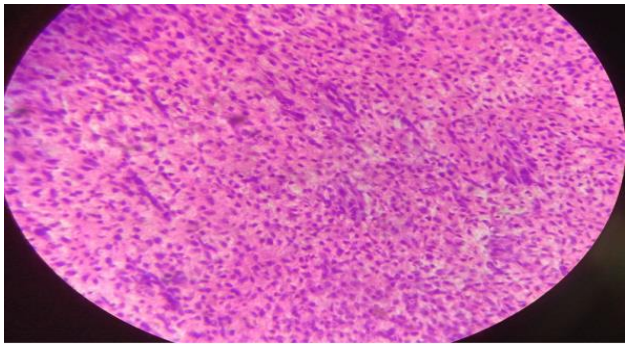

Figure 5: Embryonal rhabdomyosarcoma (hypercellular areas with alternating paucicellular areas, cells are small and spindle shaped, H and E stain, 40X).

Limitations

The limitation of this study is that it was a hospital based study with small sample size. To validate our findings, further research with bigger sample size is needed.

CONCLUSION

From the above study it has been seen that the majority of nasal masses sent for histopathology are inflammatory, secondary to infection or allergy, a variety of benign and malignant lesions of the nose may present as nasal masses. Hence all nasal masses must need thorough histopathological examination.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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