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Original Research Article

Study of heterogeneity of sino-nasal lesions in urban population of north Kolkata and its fringes- a 5-year retrospective analysis: experience of a tertiary care centre

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ABSTRACT

Background: Lesions of the nasal cavity and paranasal sinuses form a single functional unit as both of these are affected by common pathological processes. Accurate diagnosis and early treatment can significantly reduce the morbidities associated with these lesions. This study aims at portraying the morphological diversions of sinonasal lesions that is commonly encountered in populations of north Kolkata and its fringes. The multitude of histopathological variations of the sinonasal masses intrigues us histopathologists not only from academic point of view but also guides clinicians regarding treatment and prognosis.
Methods: A retrospective study conducted in the Department of Pathology from May 2012 to April 2017.
Results: Total 429 cases were assessed during this period out of which maximum cases were found in the age group of 31- 40years. Most cases were diagnosed with nasal polyps. The rare histopathological types were ameloblastoma, paraganglioma, Schwanoma, neurofibroma, inflammatory myofibroblastic tumor, sinonasal hemangiopericytoma, adenoid cystic carcinoma, low grade mucoepidermoid tumor, malignant peripheral nerve sheath tumor.
Conclusions: Both neoplastic and non-neoplastic sino nasal lesions may present with indistinguishable features, leading to a delay in proper diagnosis and treatment. So, any tissue after surgical removal should be send for histopathological diagnosis without unnecessary delay to prevent further complications.

Keywords: Nasal polyps, Rare histological types, Sinonasal masses

INTRODUCTION

The nasal cavity and paranasal sinuses (PNS) form a single functional unit with common pathological process affecting both, most of which are inflammatory.[1] Sinonasal masses (SNM) is a common finding in the ENT department. It is found in almost all age groups of people. Thus, it is very important to keep in mind all the possibilities pertaining to differential diagnosis of SNM.

Sino nasal masses can be divided into two main categories: non-neoplastic and neoplastic, which in turn is further divided into benign and malignant.[2] Hippocrates gave a graphic description of nasal polypoidal masses as early as 460-370 BC, and thus can be considered the "Father of Rhinology".[3] The trend and tradition of a clinical entity changes with time.

The clinical symptoms of all sino nasal masses are similar that is, nasal obstruction, rhinorrhoea, blood stained nasal discharge, epistaxis, oral symptoms, facial swelling, orbital swelling, ear symptoms.[4] Advanced imaging techniques like computed tomography (CT) and magnetic resonance imaging (MRI) help us to reach at a

presumptive diagnosis. However, a careful histopathologic examination (HPE) is necessary to decide the nature of the specific lesion.[2] The HPE of the excised tissue provides the actual diagnosis of the varied condition labelled as a Sinonasal mass. The purpose of this retrospective study was to categorize various types of non-neoplastic and neoplastic lesions clinically designated as Sinonasal mass and also to see the spectrum of Sinonasal masses in a tertiary care center.

METHODS

This study was conducted in the Department of Pathology in collaboration with the Department of Otorhinolaryngology. Time of this study was from May 2012 to April 2017. The study was a retrospective observational study.

Our study population comprised of patients of all age groups who was operated for Sinonasal masses. History, clinical assessment and histopathological examination were done in all cases supplemented by radiological investigations like X-ray PNS, CT scan PNS (coronal and axial section) and MRI as per requirement. All patients underwent surgical excision of sinonasal mass and tissues were sent for HPE. The specimen was grossed as per standard protocol. After processing the tissue sections H and E stain was performed and special stains, immunohistochemistry were done as and when required.

RESULTS

In this study a total of 429 cases were assessed; male predominance was noted (64.80%) (Table 1). The M: F ratio is 1.85:1. Nasal polyps seem to occur more commonly in males.[5,6]

Table 1: Gender wise distribution of cases.

Gender	No	Percentage
Male	278	64.80
Female	151	35.19
Total	429	100

The age range in the present study was from 5 to 85years. Most of the cases was found in the age group of 31-40years. It was 90 in number (20.97%). The least number of cases was in the age group of <10years, 20 in number (Table 2). Bakari et al in 2010 had reported a peak incidence of 33years.[7] This seems to be accordance with our study.

The most common type of lesion found in the nose and paranasal sinuses seems to be non-neoplastic lesions. In our study 259 out of 429 total cases was found to be non-neoplastic (60.37%). Out of the remaining 170 cases, 96 cases were benign, 5 cases were borderline and rest 69 were malignant lesions (Table 3). Kale et al in 2001 studied 344 cases and observed 16 neoplastic lesions out of which 9 were benign and 7 malignant.[8]

Table 2: Age-wise distribution of cases.

Age	No	Percentage
<10	20	4.66
11- 20	78	18.18
21- 30	61	14.21
31- 40	90	20.97
41- 50	72	16.78
51- 60	57	13.28
>61	51	11.88
Total	429	100

Table 3: Distribution of sinonasal masses as per type of lesion.

Type of lesion	No	Percentage
Non neoplastic	259	60.37
Benign	96	22.37
Borderline	5	1.16
Malignant	69	16.08
Total	429	100

The most common SNM encountered in our study was nasal polyp which comprised of 212 cases (49.41%) including inflammatory and antrochoanal varieties. Among the benign neoplastic lesions Schneiderian papilloma was the most common type having 51 cases (11.88%) followed by haemangioma (8.15%). Squamous cell carcinoma of keratinizing type was the most common malignant lesion having a number of 40 cases (9.32%). Chavan et al found the most common SNM as the nasal polyp (72.1%) followed by angiofibroma (12.24%).[9] Schneiderian papilloma was the third most common (Table 4).

Table 4. Distribution of sinonasal masses as per histopathological type.

Histopathological type	No.	%
Nasal polyps	212	49.41
Rhinosporidiosis	40	9.32
Aspergillosis	7	1.63
Sinonasal papilloma	51	11.88
Lobular capillary hemangioma	20	4.66
Cavernous hemangioma	15	3.49
Vascular hamartoma	4	0.93
Schwanoma	1	0.23
Neurofibroma	1	0.23
Ameloblastoma	2	0.46
Paraganglioma	2	0.46
Inflammatory myofibroblastic tumor	3	0.69
Sinonasal hemangiopericytoma	2	0.46
Squamous cell carcinoma	40	9.32
Sinonasal undifferentiated carcinoma	13	3.03
Olfactory neuroblastoma	4	0.93
Adenocarcinoma	7	1.63
Adenoid cystic carcinoma	2	0.46
Mucoepidermoid carcinoma	2	0.46
Malignant peripheral nerve sheath tumor	1	0.23
Total	429	100

Fungal infections like aspergillosis was confirmed by per-iodic acid stain (PAS) (Figure 1) in 7 cases (1.63%). Immunohistochemistry for olfactory neuroblastoma was done with synaptophysin (Figure 2).

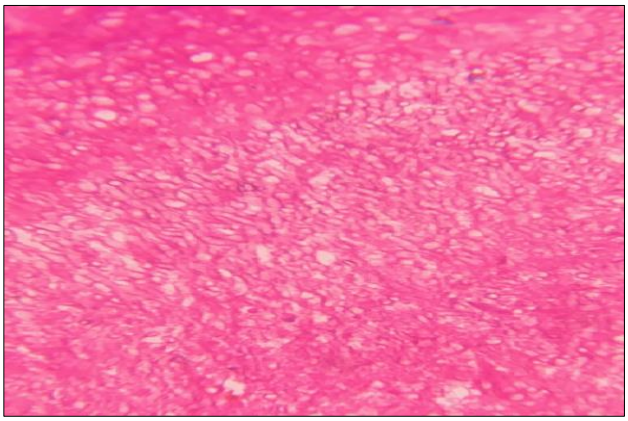

Figure 1: PAS stain showing fungal hyphae at 100x.

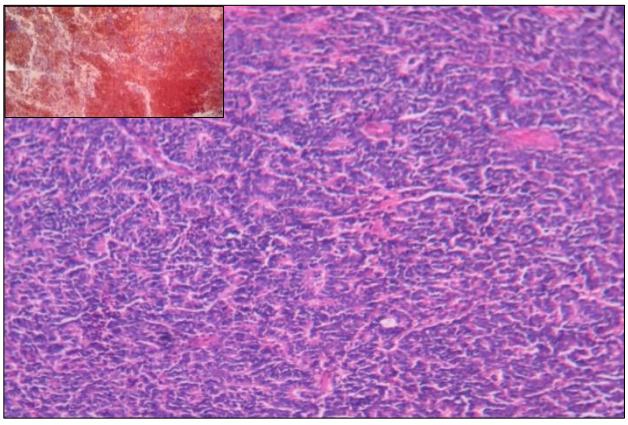

Figure 2: Olfactory neuroblastoma (H and E at 100x), inset showing synaptophysin cytoplasmic positivity (H and E at 100x).

Histopathological studies helped in determining the true nature of the lesion thus confirming the diagnosis. Radiological investigations like CT scan helped in assessing the extent of the lesion and thus helped in the management.

DISCUSSION

As the cases were collected for a time period of 5years, this study may have the credentials in reflecting certain facts regarding SNM.

The maximum number of patients presented during the fourth decade. It may be due to more exposure to infection due to outdoor activities.

The predominance of males were observed in this study which may be due to higher prevalence of such disorders in males or may be due to higher attendance of males in hospitals.

Nasal polyps have been recognised and treated since ancient times. Nasal polyps are not always of inflammatory origin. They are non-neoplastic stromal and epithelial proliferations of uncertain pathogenesis and can be of 3 distinct subtypes-inflammatory, antrochoanal, nasal polyps in cystic fibrosis.

A variety of neoplastic conditions can also present as polyps. Nevertheless, inflammatory polyps occurring as a consequence of chronic mucosal inflammation is the most common of all polypoidal lesions.

Rhinosporidiosis was also a common occurrence in this study with 9.32% of total cases. This may be due to the fact that the organism is endemic in tropical areas like India and Sri Lanka.

However, in our study the percentage of malignant cases were quite high this may be due to the fact that since management of sinonasal malignancy is destructive and is associated with obvious morbidity, usually these cases were referred from the periphery to tertiary centres for management.

Among the SNM, a few rare cases were observed

Ameloblastoma

They are very rare in the sinonasal tract (Figure 3).

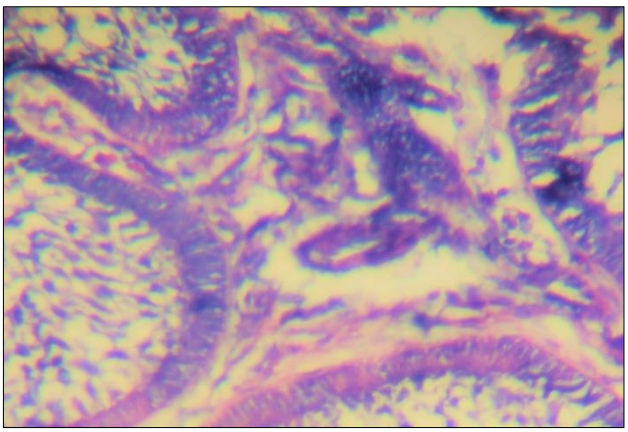

Figure 3: Ameloblastoma (H and E at 400x).

Paraganglioma

The paraganglia of vagus nerve give rise to paraganglioma in the fossa of Rosenmuller and can protrude as nasal mass.

They occur in nasal cavity rarely. They are often surrounded by S100 positive, Schwann- like cells10 (Figure 4).

Schwanoma

Less than 4% of tumors involve the nasal cavity and paranasal sinuses and occur in middle aged adults. The tumor arises from branches of trigeminal nerve (5th). It is diffusely positive for S100 and CD34.[11]

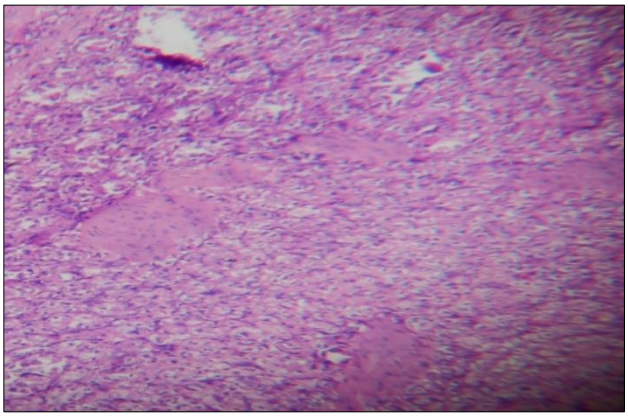

Figure 4: Paraganglioma (H and E at 100x).

Neurofibroma

They are extremely rare in the sinonasal tract. Sporadic variety can affect all ages whereas NF-1 related patients tend to be younger. NF-1 association in sinonasal neurofibromas is rare. The tumor is diffusely positive for S100.

Inflammatory myofibroblastic tumor

It uncommonly occurs in sinonasal tract (Figure 5).

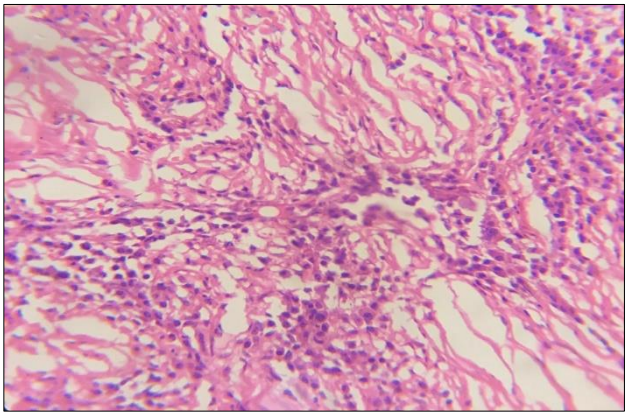

Figure 5: Inflammatory myofibroblastic tumor (H and E at 400x).

Sinonasal hemangiopericytoma

The cell of origin is perivascular glomus- like myoid cell and it is distinct from the soft tissue type. The vascular channels are large patulous having "staghorn" or "antler-like" configuration.

Extravasated erythrocytes, mast cells and eosinophils are present.

They are positive for actins, factor XII A and vimentin. There is a slight female preponderance and the peak is in 7th decade. The overall prognosis is excellent (Figure 6).

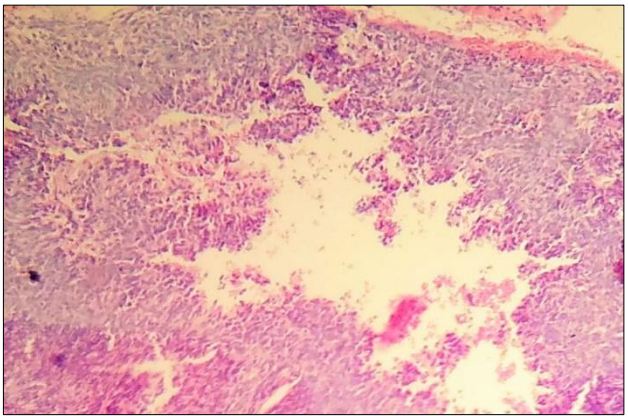

Figure 6: Sinonasal hemangiopericytoma (H and E at 100x).

Adenoid cystic carcinoma

It is the most frequent malignant salivary- gland type tumor of the sinonasal tract. The incidence is 17% of all sinonasal glandular tumor. Majority develop in the maxillary sinus and nasal cavity. Age of presentation ranges from 11 to 92 years. The long term prognosis is poor and 10- year survival rate is only 10%. The true extent of the tumor is often underestimated by imaging techniques. Most patients die due to local spread rather than metastasis 11 (Figure 7).

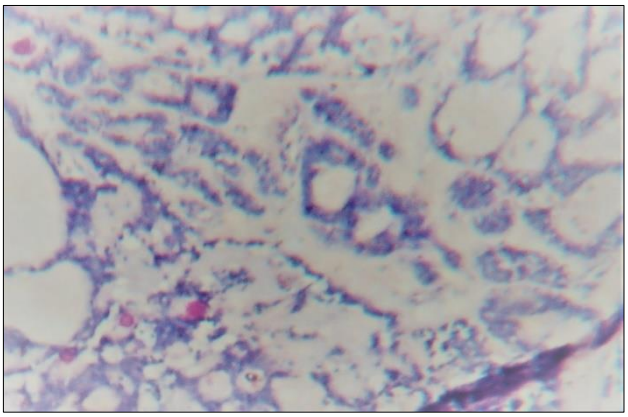

Figure 7: Adenoid cystic carcinoma (H and E at 400x).

Low grade mucoepidermoid carcinoma

These are rare at this site and should be distinguished from squamous cell carcinoma variants, especially adenosquamous carcinoma. The incidence is only 5% of all sinonasal glandular tumor 11 (Figure 8).

Malignant peripheral nerve sheath tumor

It comprises 2-4% of all head and neck sarcomas. It can arise de novo or can be associated with neurofibromatosis type 1 (NF1). Infiltration into surrounding bone and tissue is common. It can be either spindled (95%) or epithelioid (5%).

Alternating areas of dense cellularity and myxoid areas noted. Geographic necrosis and perivascular accentuation of tumor cells can be present. The spindle cell variant is focally positive for S100 and epithelioid variant is diffusely immunoreactive for S100.

De novo sinonasal MPNSTs have a 5-year survival rate of 90% which is superior to MPNSTs arising at other locations 11 (Figure 9).

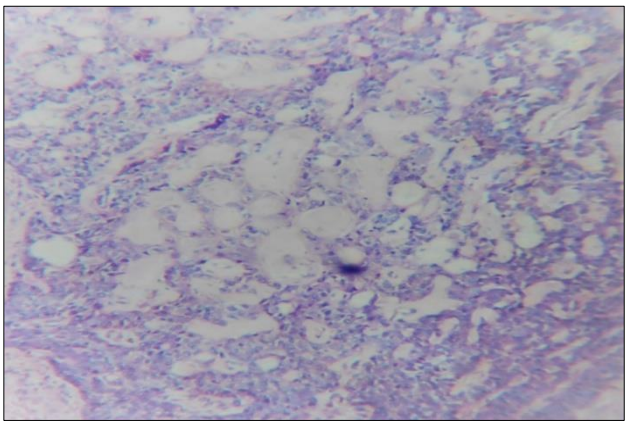

Figure 8: Mucoepidermoid carcinoma (H and E at 400x).

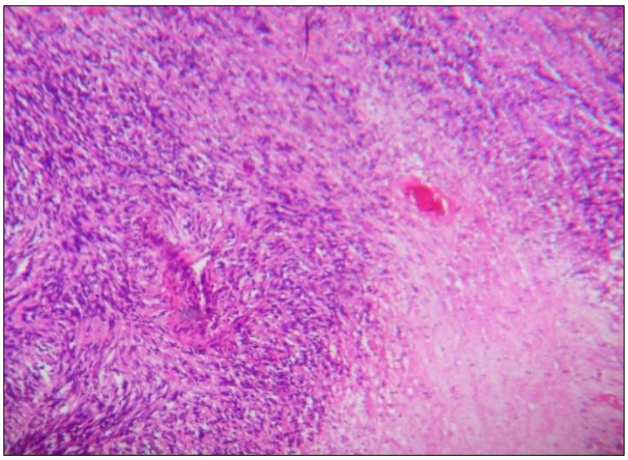

Figure 9: Malignant peripheral nerve sheath tumor (H and E at 400x).

Thus, we see that a detailed clinical, radiological assessment along with histopathological examination are necessary in order to confirm the pathology of SNM and treat accordingly.

CONCLUSION

Sinonasal masses have various differential diagnosis. The presenting features of neoplastic and non-neoplastic lesions may be indistinguishable from each other leading to a delay in proper diagnosis and treatment. The purpose of our study was to highlight the fact that accurate diagnosis is of utmost importance. Moreover, malignant cases should be distinguished from others. Polyps are the most common benign lesion and squamous cell carcinoma is the most common malignant tumor of sinonasal tract. Medical management has a limited role. Surgery is the treatment of choice for benign lesions and associated radiotherapy for malignant lesions. So, any tissue after surgical removal should be send for histopathological diagnosis without unnecessary delay to prevent further complications.

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REFERENCES

1. Gupta R, Moupachi S. S, Poorey V.K. Sinonasal Masses- a retrospective analysis. Ind J Otolaryngeal Head Neck Surg. 2013;65(11):52-6.
2. Bist SS, Varshney S, Kaur A. Clinico pathological profile of sino nasal masses: An experience in tertiary care hospital of Uttarakhand. N Journal Maxillofacial Surg. 2012;3(2):180-6.
3. Lathi A, Syed A MM, Krishna P S. Acta Otorhinolaryngologica Italica. 2011;31(6):372-7.
4. Somani S, Kemble P, Khadkear S. Mischievous presentation of nasal masses in rural areas. A J Ear Nose Throat. 2004;2:9-17.
5. Lund VJ. Diagnosis and treatment of nasal polyps. BMJ. 1995;311:1411-4.
6. Drake- Lee AB. Nasal polyps-Scott-Brown's Otolaryngology. In: Kerr AG, Mackay AS, Bull TR, eds. Rhinology. 7th ed. Butterworth-Heinneman, Oxford;2008.
7. Bakari A, Afolabi OA, Adoga AA, Kodiya AM, Ahmad BM. Clinico-pathological profile of sinonasal masses: an experience in national ear care center Kaduna, Nigeria. BMC Res N. 2010;3(1):186.
8. Kale SU, Mohite U, Rowlands D, Drake-Lee AB. Clinical and histopathological correlation of nasal polyps: are there any surprises?. Clinic Otolaryngol. 2001;26(4):321-3.
9. Chavan SS, Deshmukh S, Pawar V, Sarvade K, Kirpan V, Kumbhakarna NR, Sonavani M. Case study of clinicopathological correlation of benign

sinonasal masses. W Articles Ear Nose Throat. 2012;5(1).
10. Sternberg SS. Diagnostic Surgical Pathology. Mills ES, Carter D, Greenson KJ, Reuter EV, Stoler HM (eds). 5th ed. Wolters Kluwer, Lippincott, Williams and Wilkins; 2004.
11. El-Naggar AK, Chan JKC, Grandis JR, Takata T, Slootweg PJ. WHO Classification Head and Neck Tumours. IARC press; 2005.

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