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# Histopathological patterns of nasal masses: A seven year study

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**Abstract**

Background: The various types of nasal masses are due to many of the specialized tissues, each with its own aberrations that exist in the region. They may be present as inflammatory polyp or neoplastic tumors and neoplastic tumors further divided in benign or malignant types.

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

Material and Methods: It was a seven year retrospective study of nasal mass specimens received at histopathology section of Department of Pathology, Agartala Government Medical College and Govind Ballabh Pant Hospital (AGMC & GBP Hospital), Agartala.

Results: Total 149 cases presented as nasal mass. Overall male to female ratio was 1.8:1. In our study non-neoplastic, benign and malignant nasal lesions were commonly encountered in 11-20 year, 31-40 and 51-60 year age group respectively. Ninety three (93) non-neoplastic lesions, forty two (42) benign lesions and fourteen (14) malignant tumors were diagnosed. Inflammatory polyp was the commonest non-neoplastic lesion, capillary hemangioma was the commonest benign lesion and Olfactory neuroblastoma was the most common malignancy.

Conclusion: Amongst the non-neoplastic lesions, inflammatory polyp was the commonest type. Amongst the benign lesions capillary hemangioma was most commonly encountered and olfactory neuroblastoma was found to be commonest malignant nasal lesion.

Key words: Nasal mass, non-neoplastic and neoplastic, capillary hemangioma, olfactory neuroblastoma.

## Introduction

A variety of non-neoplastic and neoplastic conditions involve the nasal cavity and these are very common lesions encountered in clinical practice. Diseases affecting this structure are associated with many of the specialized tissues present at this site, each with its own aberrations that exist in the region (1). The presenting features and symptomatology and advanced imaging technique help to reach a presumptive diagnosis; but histopathological examination remains the mainstay of definitive diagnosis. Inflammatory and benign lesions are more commonly found than the malignant ones. Primary nasal malignancies consist of 0.2% - 0.8% of all malignant tumors and 3.6% of the malignant upper airway tumors (2).

Tondon et al. (3) and Dasgupta et al. (4) devoted considerable effort in the study of sinonasal masses in the Indian population. But studies of nasal masses are lacking in this North Eastern part of the country. The goal of this study was to evaluate hiatopathological patterns of masses of nasal cavity in a tertiary teaching hospital of Tripura, India.

**Material and Methods**

The present study was a seven year (2010-2016) retrospective study of nasal mass specimens received at histopathology section of Department of Pathology, Agartala Government Medical College and Govind Ballabh Pant Hospital (AGMC & GBP Hospital). Tissues inadequate for definitive opinion were excluded. Formalin fixed paraffin embedded sections were routinely stained with hematoxylin and eosin (H & E). Special stain like PAS stain was employed whenever required. Slides were reviewed by both the authors. Clinical data (age and sex) were gathered from the information provided on the histopathology request forms. Descriptive statistical measures were utilized to present the data.

**Results**

A total of 149 cases presented as nasal mass/polypoidal lesions. An overall male predominance was noted with M:F= 1.8:1. Male preponderance was more marked in malignant lesions and the male to female ratio was 6:1 (Table 1). Nasal lesions were commonest in the 11-20 year and 41-50 year age group comprising 30 cases each. Maximum number of non-neoplastic masses were seen in 11-20 year group (23 cases) followed by 21-30 year age group (19 cases). Highest number of benign lesions were found in 31-40 year age (10 cases) followed by 41-50 year group (9 cases). Malignant tumors were most commonly encountered in 51-60 year age and five cases presented in this age group (Table 2).

Ninety three (93) non-neoplastic lesions, forty two (42) benign lesions and fourteen (14) malignant tumors were diagnosed. Inflammatory polyp (including allergic) was the most common non-neoplastic lesion with 87 cases (93.55%). Five cases of rhinosporodiosis (Figure 1) and one case of wegener's granulomatosis were reported. Among the benign lesions capillary hemangioma was most commonly encountered with 24 cases (57.14%). Seven cases of inverted papilloma, six cases of angiofibroma, two cases of sino-nasal papilloma and one case each of glomus tumor (Figure 2), neurofibroma and chondroid syringoma were diagnosed. Among the malignancies olfactory neuroblastoma was most common comprising four cases (28.57%), followed by two cases each of squamous cell carcinoma, basosquamous cell carcinoma and low grade transitional cell carcinoma (Figure 3)). One case each of verrucous carcinoma, papillary adenocarcinoma, adenoid cystic carcinoma (Figure 4) and basal cell carcinoma were encountered during the seven years period (Table 3).

Table 1: Distribution of nasal masses according to gender.

| Type of mass | Male | Female | M:F | Total |
|---|---|---|---|---|
| Non-neoplastic | 57 | 36 | 1.6:1 | 93 (62.42%) |
| Neoplastic | | | | |
| Benign | 26 | 16 | 1.6:1 | 42 (28.19%) |
| Malignant | 12 | 2 | 6:1 | 14 (9.39%) |
| Total | 95 | 54 | 1.8:1 | 149 |



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Table 2: Distribution of nasal masses according to age.

| Age (years) | Non-neoplastic | Neoplastic | | Total |
|---|---|---|---|---|
| | | Benign | Malignant | |
| < 10 | 5 | 1 | 0 | 6 |
| 11-20 | 23 | 7 | 0 | 30 |
| 21-30 | 19 | 5 | 1 | 25 |
| 31-40 | 15 | 10 | 3 | 28 |
| 41-50 | 18 | 9 | 3 | 30 |
| 51-60 | 5 | 3 | 5 | 13 |
| 61-70 | 6 | 4 | 2 | 12 |
| >70 | 2 | 3 | 0 | 5 |
| Total | 93 | 42 | 14 | 149 |

Table 3: Histopathological findings of nasal masses.

| Histopathological diagnosis | No of cases (%) |
|---|---|
| **Non-neoplastic** | |
| Inflammatory (including allergic) | 87 (93.55) |
| Rhinosporodiosis | 5 (5.38) |
| Wegener's granulomatosis | 1 (1.07) |
| **Total** | **93 (100)** |
| Benign | |
| Capillary hemangioma | 24 (57.14) |
| Inverted papilloma | 7 (16.67) |
| Angiofibroma | 6 (14.29) |
| Sino-nasal papilloma | 2 (4.76) |
| Glomus tumor | 1 (2.38) |
| Neurofibroma | 1 (2.38) |
| Chondroid syringoma | 1 (2.38) |
| **Total** | **42 (100)** |
| Malignant | |
| Olfactory neuroblastoma | 4 (28.57) |
| Squamous cell carcinoma | 2 (14.29) |
| Basosquamous carcinoma | 2 (14.29) |
| Low grade transitional cell carcinoma | 2 (14.29) |
| Verrucous carcinoma | 1 (7.14) |



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| | |
|---|---|
| Adenoid cystic carcinoma | 1 (7.14) |
| Papillary adenocarcinoma | 1 (7.14) |
| Basal cell carcinoma | 1 (7.14) |
| **Total** | **14 (100)** |

**Discussion**

In the present study nasal masses/polyps had a predilection for males, demonstrating an overall male to female ratio of 1.8:1. The male preponderance was more marked in malignancies (M:F= 6:1). Similar findings were also observed in India by Zafar et al. (5), Panchonia et al. (6) and in a British review by Hedman et al. (7) and while a study from Nigeria (8) showed opposite ratio with female predominance (M:F= 1:1.2).

Second to fifth decade of life was found to be most vulnerable period for development of nasal masses, which is comparable to the finding of Lathi et al. (9). Whereas in the neighboring state Manipur most of the patients were in 51-60 year age group (10). In our study non-neoplastic, benign and malignant nasal lesions were commonly encountered in 11-20 year, 31-40 and 51-60 year age group respectively. Ngairangbam et al. (10) reported that cases of non-neoplastic, benign and malignant tumors are common in 51-60, 11-30 & 41-60 and 61-70 year age group. Lathi et al. (9) concluded that malignant nasal masses are rarely encountered before fourth decade of life.

In our study inflammatory polyps (including allergic) were the most common nasal non-neoplastic masses. This observation was similar to several other studies (4,5,9,10). Rhinosporodiosis is a rare disease in the western world but an endemic disease in India, Sri Lanka and a few African nations (11). We observed 5 such cases, while two cases of rhinosporodiosis were observed by Lathi et al. (9) and Pradhananga et al. (12) had encountered only one case during their two year study period. We reported one case of Wegener's granulomatosis (WG) and there was associated raised level of serum cytoplasmic antineutrophilic cytoplasmic antibody (C-ANCA). It is currently characterized as one of the ANCA associated small vessel vasculitides. The upper airway disease is the most common presenting features of WG, sinusitis is the most frequent initial presentation in about half to two thirds of patients with WG (13).

Among the benign lesions capillary hemangioma (57.14%) was most common lesion in our study. All cases were found to be arising from cartilaginous part of nasal septum. Iwata et al. (14) conducted a study on hemangioma in Japan and reported an usual origin of capillary type from the nasal septum and of the cavernous variety from the lateral nasal wall. We reported seven cases of inverted papilloma (a morphological variant of sino-nasal papilloma) and two cases of sino-nasal papilloma. Whereas no case of inverted papilloma was reported in the study in Manipur (10). Inverted papillomas are comparatively rare, but this morphological variant is the most commonly encountered lesion of all sinonasal papillomas (15). Though it is a benign lesion, the rate of malignant transformation may be as high as 11% (16). In the present study angiofibroma was evident in 6 cases, while Khan et al. (17) reported 24 cases of angiofibroma over a period of five years. We diagnosed one case each of glomus tumor, neurofibroma and chondroid syringoma. Bijjaragi et



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al. (18) also reported one case each of neurofibroma and skin adenexal tumor presenting as nasal mass.

In our study olfactory neuroblastoma was the most common malignancy with 4 cases (28.57%) followed by 2 cases each of squamous cell carcinoma, basosquamous carcinoma and low grade transitional cell carcinoma. Whereas squamous cell carcinoma was the commonest malignant lesion in most of the studies (9, 17, 18). In the neighboring state Manipur undifferentiated carcinoma was found to be most common malignant nasal lesion (10). Shah et al. (19) also found 2 cases to transitional cell carcinoma in their study. We reported one case each of verrucous carcinoma, adenoid cystic carcinoma and papillary carcinoma which is comparable to the observation of Bijjaragi et al. (18). We found one case of basal cell carcinoma presenting as nasal mass.

**Conclusion**

The presenting feature of non-neoplastic and neoplastic nasal msses may be indistinguishable from each other leading to delay in proper diagnosis and treatment. Histopathological examination remains the mainstay of definitive diagnosis. Maximum numbers of non-neoplastic masses were seen in 11-20 year group (23 cases) and inflammatory polyp being the commonest non-neoplastic lesion. Highest numbers of benign lesions were found in 31-40 year age (10 cases) and capillary hemangioma was the most common benign tumor. Malignant nasal lesions were commonly encountered in 51-60 year age group and olfactory neuroblastoma was found to be commonest malignancy in our study. Most of non-neoplastic and benign nasal masses require surgical excision, while malignant nasal masses require wide surgical excision, radiotherapy or chemotherapy either alone or in combination.

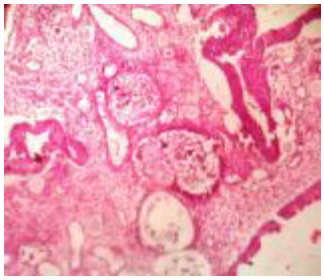

Figure 1: Sporangium containing spores in rhinosporodiosis (H & E stain, x 100)

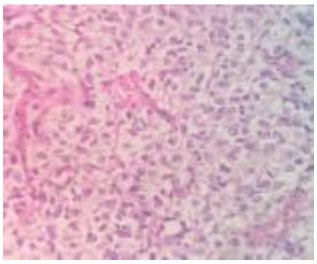

Figure 2: Solid sheets of glomus cells with punched out nucleus, abundant granular cytoplasm and well-defined cell border in a case of glomus tumor (H & E stain, x 400).



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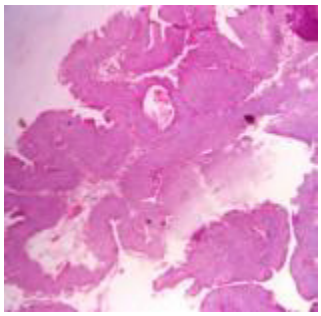

Figure 3: Cylindrical cells of transitional cell carcinoma have a tendency to form palisade arrangements perpendicular to the underlying basement membrane ( H & E stain, x 40).

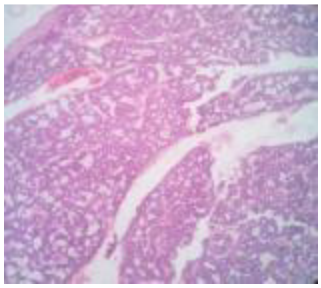

Figure 4: Cribriform pattern cellular arrangement in adenoid cystic carcinoma (H & E stain, x 100).

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