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Original Article

Histomorphological Spectrum of Masses of Nasal Cavity in a Tertiary Care Hospital

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ABSTRACT

Introduction: Polypoidal lesions are most common in the nasal cavity. These masses may be congenital, traumatic, inflammatory and neoplastic(benign and malignant) in origin. These nasal masses have a broad histopathological spectrum. Histopathological examination is the only means of determining the nature and patterns of these masses, so that timely intervention can be done. **Aims and objectives**: To study the histomorphological patterns of polypoidal lesions in a nasal cavity. To categorize the benign and malignant lesions and study the prevalence in relation to age and gender of the patients. **Materials and Methods**: 100 specimens of polypoidal lesions of sinonasal cavity received over a period of two years in the department of pathology were included in the study. The tissues were subjected to paraffin processing and stained with hematoxylin and eosin. **Results**: This study included 100 cases, out of which 68 cases were non-neoplastic lesions and 32 cases were neoplastic lesions. Among the 32 neoplastic lesions, 17were benign and 15were malignant in nature. **Conclusion**: A complete clinical, radiological and histopathological correlation helps to categorize the sinonasal lesions into various non-neoplastic and neoplastic types.

Key Words: *Histopathology, Nasal cavity, Nasal mass, Polypoidal lesions*

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INTRODUCTION:

Lesions of the paranasal sinuses, nasal cavity and nasopharynx are commonly encountered in the clinical practice[1]. These nasal masses have a broad histopathological spectrum. Clinically, patients presents with anosmia, epistaxis, sneezing, history of allergy and nasal obstruction. Nasal cavity is the site of significantly large varieties of tumors of upper respiratory tract. These masses may be congenital, traumatic, inflammatory and neoplastic(benign and malignant) in origin. Majority of these masses include polypoidal lesions[2]. Histopathological examination is the only means of determining the nature and patterns of these masses, so that timely intervention can be done.

The aim of our study was to show the histomorphological patterns of polypoidal lesions of the nasal cavity (categorise them into benign and malignant lesions) andto study the prevalence in relation to age and gender.

Materials and Methods:

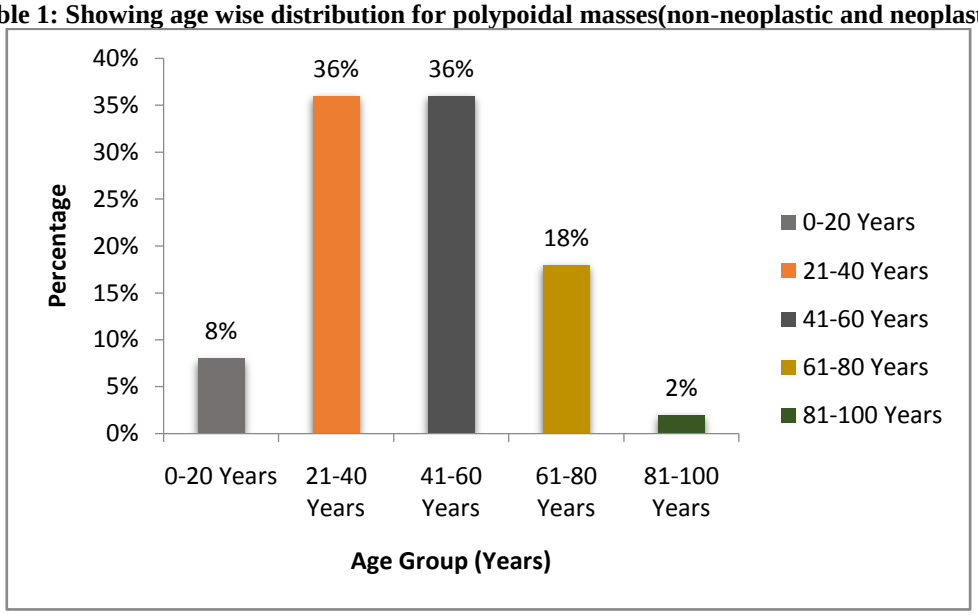
This was a cross sectional study conducted on 100 cases from September 2020 to August 2022 at a tertiary care hospital in Ambala, Haryana. Approval from the institutional ethical committee and informed consent from the patients was taken. All biopsies of polypoidal lesions of nasal cavity received in the histopathology department were submitted for examination. The tissues were subjected to paraffin embedding and stained with Hematoxylin and Eosin.

Results:

A total of 100 cases clinically diagnosed as nasal polypoidal masses were sent for histopathological examination, out of which 68 cases were non-neoplastic lesions and 32 cases were neoplastic lesions. Among the 32 neoplastic lesions, 17(17%) were benign and 15(15%) were malignant in nature.

Demographic details of the study population is shown in **Table 1** .

Table 1: Showing age wise distribution for polypoidal masses(non-neoplastic and neoplastic)



Majority of them i.e 36% belong to age group of 21-60 yrs, 18% belong to 61-80 yrs, 8% belong to 0-20 yrs and only 2 % belong to 81-100 years. Mean age was calculated and was found to be 44.67 years.

Table 2: Graphical representation of Gender distribution

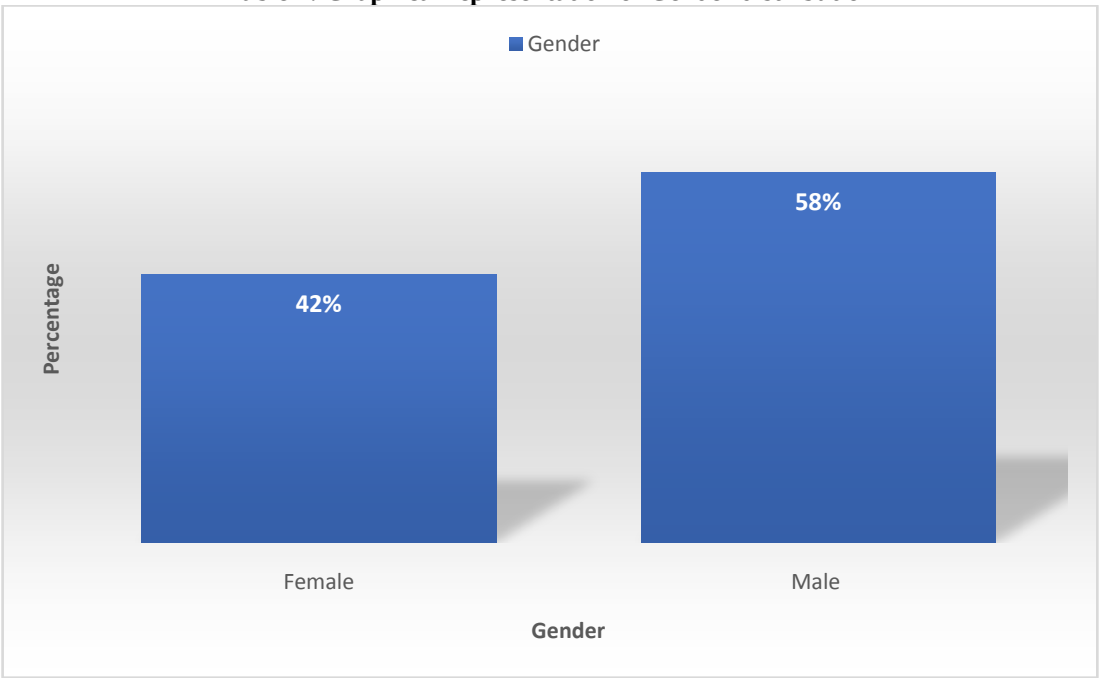


Table 2 shows that majority of the cases were males (58%) with Male to female ratio of 1.4:1.
1.4:1.

Table 3: Histopathological spectrum of various Non-Neoplastic and Neoplastic sinonasal lesions

Histopathological Spectrum	Patients	Percentage
Non-Neoplastic	68	68%
Benign (Neoplastic)	17	17%
Malignant(Neoplastic)	15	15%
Total	100	100%

Table 3 shows out of 100 cases 68% belongs to non-neoplastic lesions,17% belongs to benign neoplastic lesions and 15% belongs to malignant lesions.

Table 4: Histopathological spectrum of non-neoplastic polypoidal sinonasal lesions

Non-Neoplastic	Patients (N=68)	Percentage
Inflammatory Polyp	15	22.06%
Allergic Sinonasal Polyp	13	19.12%
Mucormycosis	22	32.35%
Allergic Aspergillosis	3	4.41%
PseudoepitheliomatousHyperplasia	1	1.47%
AngioinvasiveMucormycosis	2	2.94%
Inflammatory Polyp with Mucormycosis	4	5.88%
Fibroepithelial Polyp	1	1.47%
Mucormycosis + Aspergillosis	1	1.47%
Candidiasis	1	1.47%
Mucormycosis + Aspergillosis + Candidiasis	2	2.94%
Chronic Sinusitus with Hyperplasia	1	1.47%
Sinus Tract	1	1.47%
Angiomatous Polyp	1	1.47%

Table 4 shows out of 68 cases of non-neoplastic lesions 22 cases(32.35%) belong to mucormycosis followed by 15 cases (22.06%) belong to Inflammatory polypand 13 cases (19.12%) to Allergic sinonasal polyp. (Figure 1,2,3)

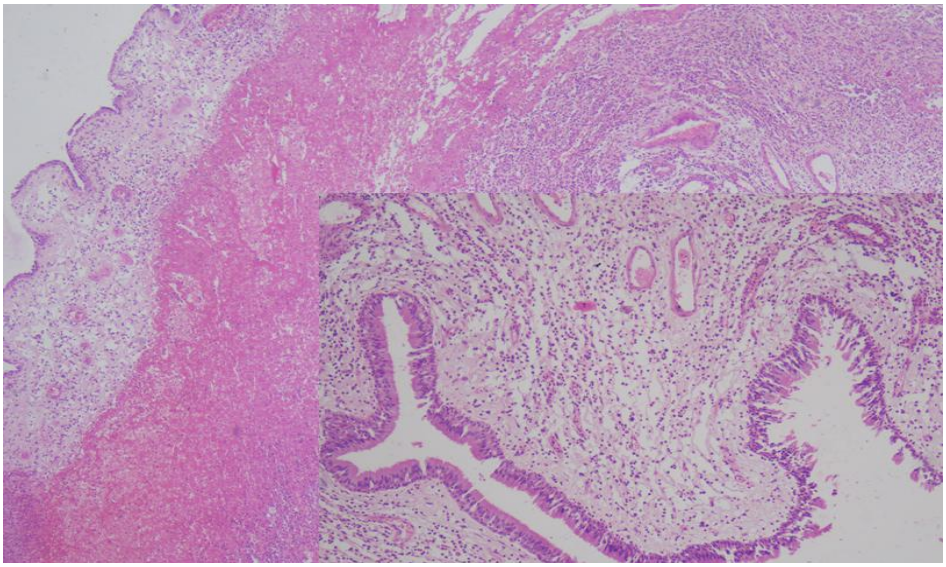


FIG-1 Inflammatory polyp-Polypoidal mass with lining respiratoryepithelium and subepithelium inflammation (H&E 4x,10x)

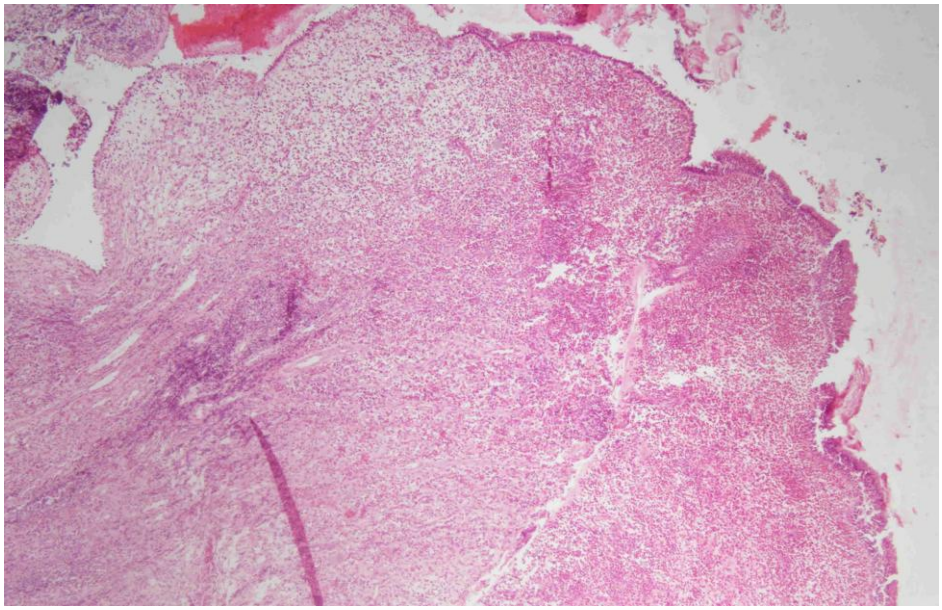


Fig 2 (A)-Allergic sinonsal polyp, (H&E 4X)

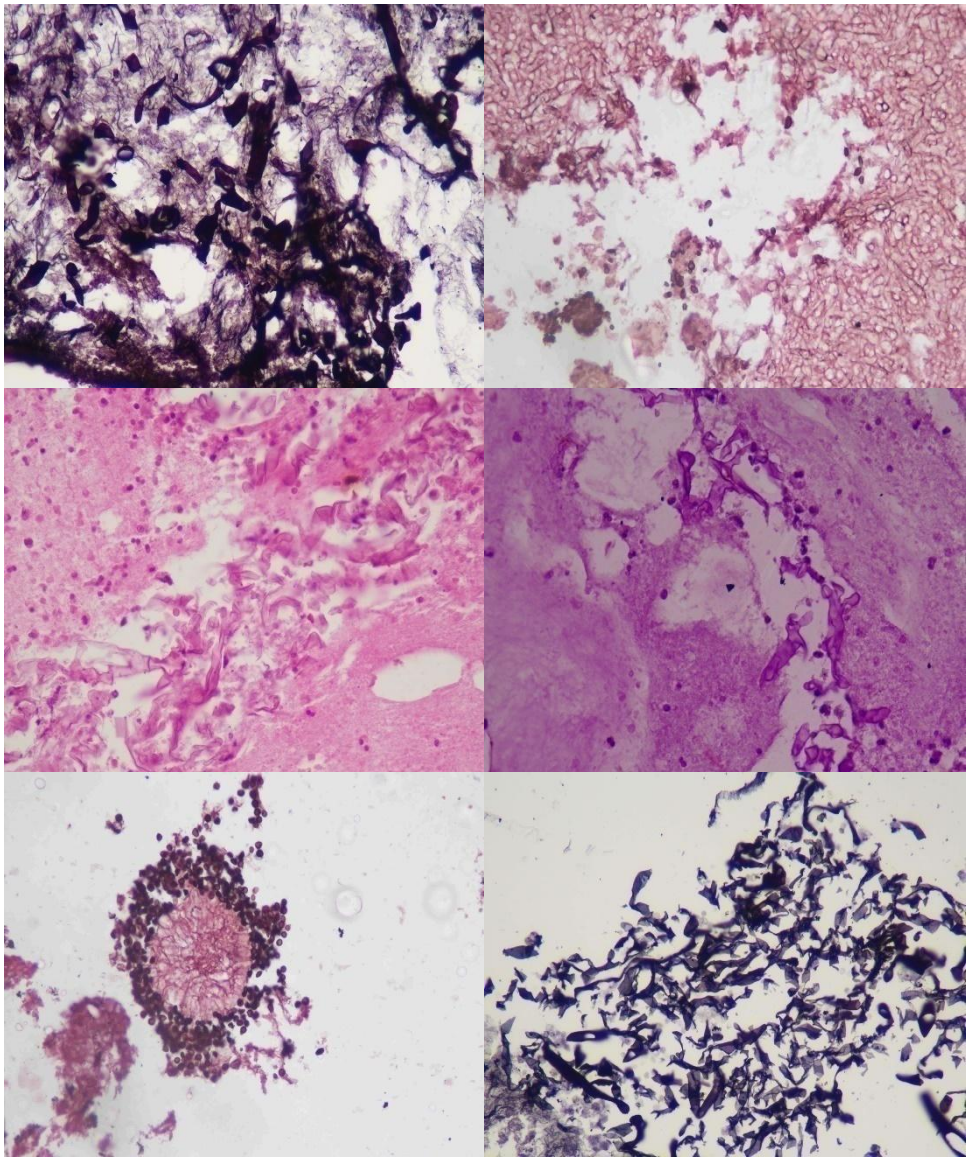


Fig 3- Showing D PAS and GMS stain showing mucormycosis, candida and aspergillus (H&E) 40x,

Table 5: Histopathological spectrum of benign neoplastic sinonasal lesions

Benign (Neoplastic)	Patients (N=17)	Percentage
Inverted SinonasalSchnedrian Papilloma	10	58.82%
Ancient Schwannoma	1	5.88%
Capillary Hemangioma	2	11.76%
Hemangioma	1	5.88%
Cavernous Hemangioma	1	5.88%
Aneurysmal bone cyst with Benign Fibrous Lesion	1	5.88%
Nasal Angiofibroma	1	5.88%

Table 5 shows out of 17 cases of benign neoplastic lesions, maximum cases belong to Inverted sinonasal papilloma i.e. 10 cases(58.82%) (Figure 4) followed by capillary hemangioma, 2cases(11.76%).

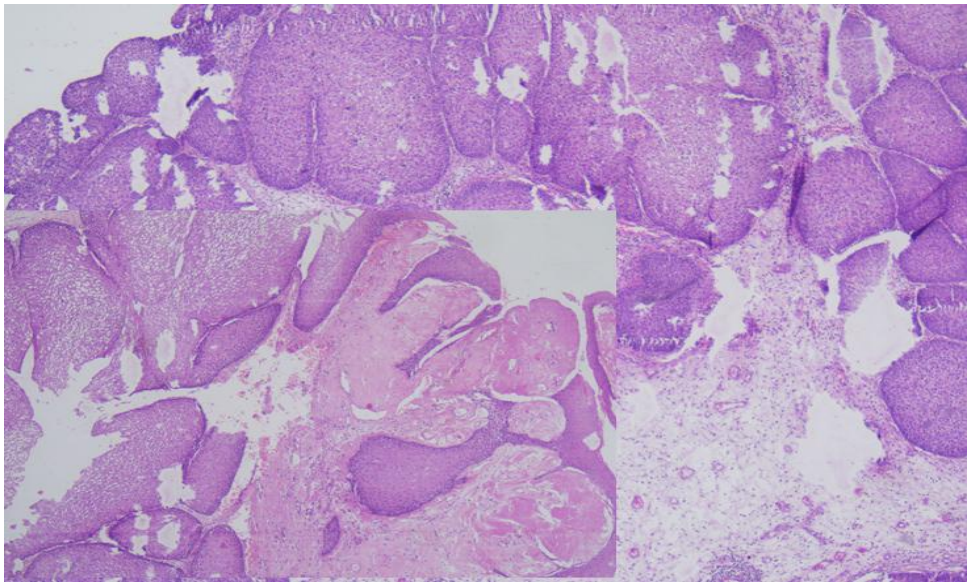
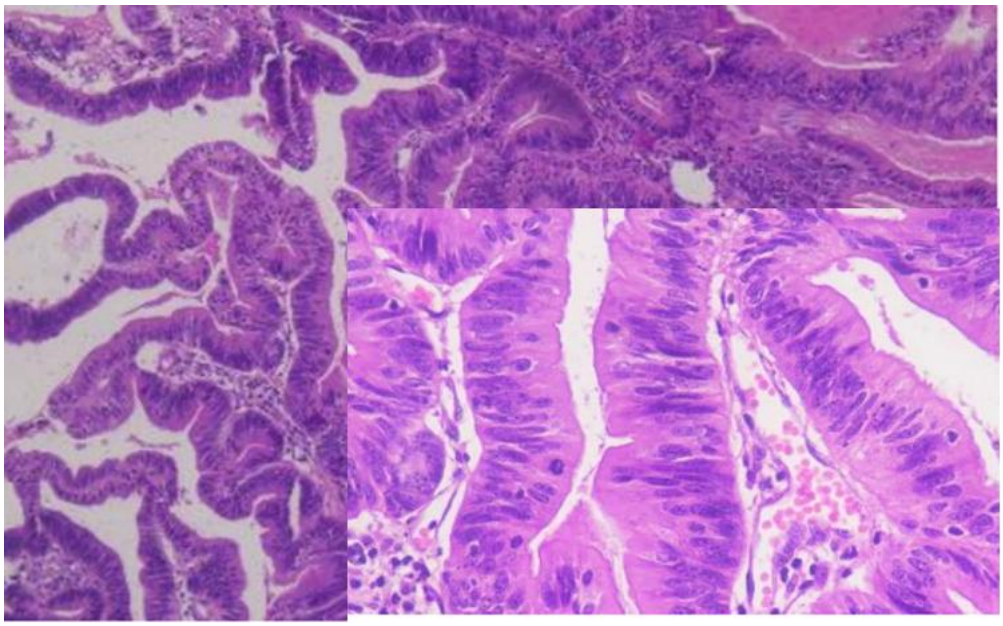


Fig4- Inverted Papilloma-Papillomatous lesion exhibiting downward endophytic growth and stroma shows inflammatory infilterate, (H&E 4x,10x)

Table 6: Histopathological spectrum of Malignant sinonasal lesions

Malignant (Neoplastic)	Patients (N=15)	Percentage
Chordoma	1	6.67%
Low Grade Lymphoma	1	6.67%
Neuroendocrine Carcinoma Large Cell Type	1	6.67%
Non Hodgkin Lymphoma,NK-T Cell	1	6.67%
Poorly Differentiated Carcinoma	2	13.33%
SCC Moderately Differentiated Carcinoma	2	13.33%
Sinonasal Intestinal Adenocarcinoma	3	20%
Small Round Blue Cell Tumour	1	6.67%
Spindle Cell Lesion	1	6.67%
Undifferentiated Nasopharyngeal Carcinoma	2	13.33%

Table 6 shows out of 15 malignant sinonasal lesions 3 cases belong to Sinonasal Intestinal Adenocarcinoma (Figure-5) followed by 2 cases of each i.e 13.33% belongs to Poorly differentiated carcinoma, Well differentiated Squamous cell carcinoma and Undifferentiated Nasopharyngeal carcinoma.



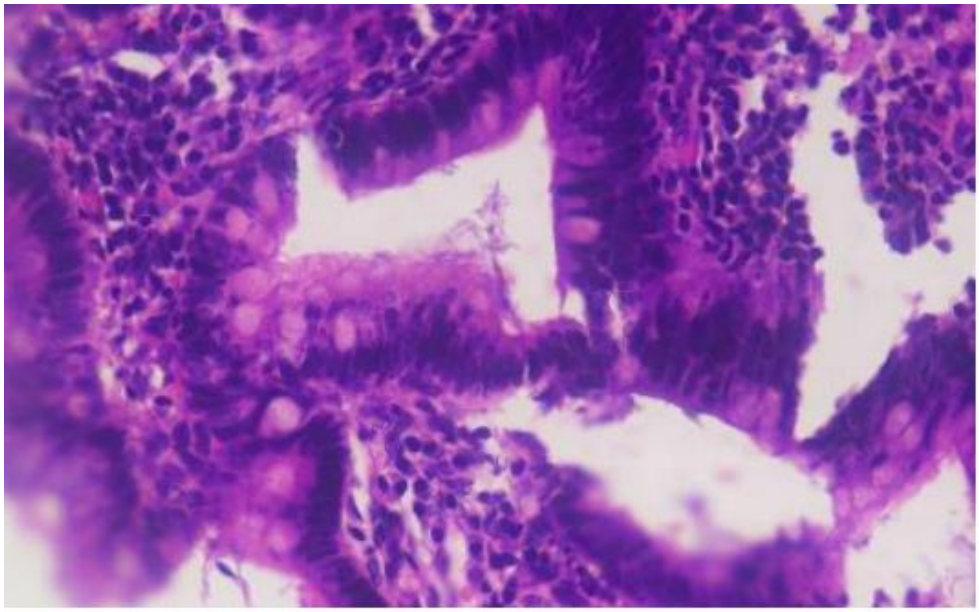


FIG 5 (A,B)- Intestinal adenocarcinoma- Tumor cells arranged in tubulopapillary pattern and nuclear pleomorphism and showing intestinal metaplasia and high grade dysplasia (H&E) 4x,10x,40x

DISCUSSION

Polypoidal lesions of nasal cavity are common finding in the Otorhinolaryngology department. Its incidence increases with age and reaches a peak in older groups. They form a complex group of lesions with a wide spectrum of histopathological features. Polypoidal nasalmasses are disquieting lesions which badly affect the quality of life[3].

In the present study mean age was 41.44 year of life, which was similar to the study done by Guleria TC et al[4]. In this study, non-neoplastic lesions were most common (68%) which is comparable with other studies done by Guleria TC et al[4], Lathi A et al[5], Singh SG et al[6], Tondon PL et al[7] and ParajuliS et al[8]. This study showed 32% neoplastic lesions which were concordant with Kulkarni AM et al[9] and Parajuli S et al[8] study.

Table 7: Comparison of number of cases in different studies

Study	Non-Neoplastic	Neoplastic lesions
Dasgupta A et al	50.7%	49.3%
Kalpana Kumari MK et al	66.0%	34.0%
Singh SG et al	76.0%	24.0%
Sudeep Regmi et al	66.08%	33.92%
Present study	68%	32%

In the present study, sinonasal masses had male predilection with M:F ratio of 1.4:1 which was in concordance with the study done by Singh SG et al[6], Guleria TC et al[4], Nanda MS et al[10] and Lathi A et al[5]. However, a study conducted by Parajuli S et al[8] revealed higher female predilection with M:F ratio of 1:1.3.

Difficulty in breathing was the most commonest clinical manifestation observed(47%) in our study. Similar results were seen by Singh SG et al[6], Nanda MS et al[10] and Lathi A et al[5].

Majority of the sinonasal polypoidal lesions had bilateral growth pattern. Our results were comparable with the studies done by Lathi A et al[5] and Nanda MS et al[10].

Most common lesion observed in the present study was inflammatory polyps(22.06%), followed by allergic polyp(19.12%). These findings were similar with the studies done by Guleria TC et al[4] and Kalpana Kumari et al[11]. However, Dasgupta A et al[12], Lathi et al[5] observed allergic polyp as the most common lesion followed by inflammatory polyp in their study.

In the present study the most common benign neoplasm encountered was inverted papilloma (58.82%) followed by hemangioma (11.77%) and the results were found to be similar with the studies done by Tandon PL et al[7], Parajuli et al[8] and Guleria et al[4].

However studies done by Kulkarni AM et al[9] and, Lathi et al[5] showed hemangioma as the most common benign lesion. In the present study, we had 2 cases of Squamous cell carcinoma,1 case of Chordoma, 2 cases of Undifferentiated carcinoma,3 cases of Intestinal adeno carcinoma,1 case of Small round blue cell tumor, 1 case of low grade lymphoma, 1

case of spindle cell lesion and 1 case of Neuroendocrine carcinoma. Study done by A lathi et al[5] had 3 cases of Undifferentiated carcinoma, which was discordant with our study and 2 cases of Squamous cell carcinoma which was found similar with our study.

Due to asthma or some immune disorders nasal polyps may occur from chronic inflammatory conditions. Knud Larsen[13] conducted a study and found that polyps were formed in the patients with a history of asthma in 7-15% which was almost similar with the present study(9%).

Present study was done during post covid time, socases of mucormycosis were also included. Present study showed 31 cases of fungal infections out of which 22 cases were mucormycosis, 3 cases of allergic aspergillosis, 2 cases of each angioinvasive mucormycosis and mucormycosis, aspergillosis and candidiasis,,1 case of each candididiasis, and mucormycosis and aspergillosis. A study was conducted by Dafale SR et al[14] and observed 2 cases and Parmar NJ[15] et al observed only 3 cases of mucormycosis which was discordant with our study.

CONCLUSION

Sinonasal and nasopharyngeal lesions have various differential diagnosis. A complete clinical, radiological and histopathological correlation helps to categorize these sinonasal lesions into various non-neoplastic and neoplastic types. In this study inflammatory polyp inflammatory polyp was the most common non neoplastic lesion with mean of 22.06% followed by allergic polyp with mean of19.12%.Among neoplastic lesion Inverted papilloma was most common benign neoplastic with mean of 58.82% followed by Sinonasal intestinal adenocarcinoma with mean of 20%. Definite diagnosis is essential for further management and to determine the prognosis of the patient.

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