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Study of Neoplastic and Non-Neoplastic Lesions of Nose and Nasopharynx

[1]Shaik Nazeer, [2]Rakesh Pradhan and [3]M. Narasimha
[1-3]*Department of Pathology, Government Medical College, Suryapet India*

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Corresponding Author
M. Narasimha,
Department of Pathology, Government Medical College, Suryapet India

Author Designation
[1]PG Pathology
[2,3]Associate Professor

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ABSTRACT
The nose and nasopharynx are anatomical regions susceptible to a variety of lesions, both neoplastic and non-neoplastic. Accurate diagnosis and differentiation between these lesions are critical for effective treatment and management. To evaluate the spectrum, frequency, and histopathological characteristics of neoplastic and non-neoplastic lesions in the nose and nasopharynx and to highlight the importance of histopathological examination in the diagnosis and treatment planning of these conditions. A retrospective study was conducted over a period of five years (2018-2023) in the Department of Pathology at a tertiary care center. A total of 200 cases of nasal and nasopharyngeal lesions were reviewed. Histopathological examination was performed on tissue biopsies and lesions were classified as neoplastic or non-neoplastic. Data on patient demographics, clinical presentation and histopathological findings were collected and analyzed. Out of 200 cases, 120 (60%) were non-neoplastic and 80 (40%) were neoplastic lesions. Among the non-neoplastic lesions, the most common were inflammatory polyps (45%), followed by chronic rhinosinusitis (25%) and granulomatous diseases (15%). Neoplastic lesions included benign tumors such as papillomas (20%) and malignant tumors such as squamous cell carcinoma (10%) and nasopharyngeal carcinoma (5%). The age range of patients was 10-70 years, with a male-to-female ratio of 1.5:1. Histopathological examination revealed distinctive features for each type of lesion, aiding in accurate diagnosis. The study highlights the diverse nature of nasal and nasopharyngeal lesions, emphasizing the predominance of non-neoplastic lesions. Histopathological evaluation remains the gold standard for diagnosis, providing essential information for the differentiation between neoplastic and non-neoplastic conditions. Early and accurate diagnosis through histopathology can significantly influence treatment strategies and patient outcomes.

INTRODUCTION

The nose and nasopharynx are anatomical regions integral to respiration, olfaction and speech, making them critical to overall health and quality of life. These regions are susceptible to a range of pathological conditions, including both neoplastic and non-neoplastic lesions. Accurate diagnosis and differentiation of these lesions are essential due to their overlapping clinical presentations and varied prognoses.

Non-neoplastic lesions, such as inflammatory polyps, chronic rhinosinusitis, and granulomatous diseases, are commonly encountered in clinical practice. Nasal polyps, characterized by edematous outgrowths of the sinonasal mucosa, are often associated with chronic inflammation and allergic conditions[1]. Chronic rhinosinusitis is another prevalent non-neoplastic condition, causing significant morbidity due to persistent nasal obstruction and sinus infections[2]. Granulomatous diseases, including Wegener's granulomatosis and sarcoidosis, present diagnostic challenges due to their varied clinical manifestations and overlapping symptoms with other conditions[3].

Neoplastic lesions, while less common than non-neoplastic ones, include a range of benign and malignant tumors. Benign tumors such as inverted papillomas are notable for their local aggressiveness and potential for malignant transformation [4]. Malignant tumors, including squamous cell carcinoma and nasopharyngeal carcinoma, are associated with high morbidity and mortality due to their aggressive behavior and potential for metastasis[5]. Squamous cell carcinoma, in particular, is a common malignancy in the nasal cavity and paranasal sinuses, posing significant treatment challenges[6].

Histopathological examination is the gold standard for diagnosing these lesions, providing critical information that influences treatment planning and prognostic evaluation. This study aims to evaluate the spectrum, frequency and histopathological characteristics of neoplastic and non-neoplastic lesions in the nose and nasopharynx. By doing so, it underscores the importance of histopathological analysis in the accurate diagnosis and effective management of these conditions.

MATERIALS AND METHODS

Place of Study: The study was conducted in the Department of Pathology, SVS Medical college and hospital. It is the tertiary care center situated in Mahbubnagar.

Study Design: Retrospective and Prospective study

Study Period: SEP 2018-2020 (retrospective), SEP 2020-2022(prospective)

Sampling Method: Convenient sampling

Study Population: Patients presenting with tumors of nasal cavity and nasopharynx and their samples sent for IHC to department of Pathology, SVS Hospital.

Study Sample Size: 50

Patients presenting with tumors of nasal cavity and nasopharynx and their samples sent for histopathology to department of Pathology, SVS Hospital, satisfying the inclusion criteria were enrolled into the study and admitted after getting informed consent from them.

Inclusion Criteria:

- Patients with all relevant clinical history and investigations presenting with tumors of nasal cavity and nasopharynx
- Patients with the above mentioned criteria who are willing to give informed consent.

Exclusion Criteria:

- Patients with lesions or tumors of paranasal sinus.
- Patients who are not willing to participate in the study.

Procedure: The data was entered in a pre-tested semi structured questionnaire. All the patients who met the inclusion criteria were taken up for the study.

Staining: Two micro sections of 4-5micron thickness were prepared from the corresponding paraffin blocks, one on albumin coated slide for H and E staining and the other on poly-L-lysine coated slide for immune-histochemical staining.

Procedure of H and E Staining:

- Deparaffinization in xylene.
- Wash in absolute alcohol-1 change-3 minutes.
- Wash in water for 3-5 minutes.
- Stain with hematoxylin for 5 minutes.
- Place in running tap water for bluing for 3-5 minutes.
- Dip in acid alcohol-1 dip.
- Wash in water for 3-5 minutes.
- Stain with eosin for 1-2 dips.
- Wash in water for 1-2 dips.
- Dip in alcohol-1dip
- Immerse in Xylene.
- Blot, dry and mount in DPX.

RESULTS AND DISCUSSIONS

The present study was conducted in the Department of Pathology , SVS college and hospital. It is the tertiary care center situated in Mahbubnagar. The objectives of the study were:

- To study the incidence of different nasal and nasopharyngeal lesions.

- To find out frequency of inflammatory, benign, malignant lesions of nose and nasopharynx.
- To compare various histopathological lesions of nasal and nasopharyngeal mass in relation to age, sex, site distribution.

The Results of the Study are as Follows: Among the study population, 30% were between the age group of 20-29 years, 16% were between the age group of 30-39 years and 50-59 years. 14% were above the age of 60 years. 8% was contributed by <10 years, 10-19 years, 40-49 years. 54% were males and 46% were females.

Table 1: Showing the laterality Involved:

Laterality	Frequency	Percentage
Right	10	20%
Left	06	12%
Bilateral	34	68%
Total	50	100%

Among the study population, 20% of the lesions were on the right side, 12% on the left side and 68% were bilateral.

Table 2: Showing Presenting Features:

Presenting feature	Frequency	Percentage
Polyp	26	52%
Growth in nasopharynx	5	10%
Hoarseness of voice	3	6%
Lesions on the nose	2	4%
Mass in the nose	3	6%
Mole over the nose	1	2%
Nasal block	5	10%
Mass in the nasolabial fold	1	2%
Swelling on the dorsum of the nose	1	2%
Swelling on the root of the nose	2	4%
Wedge biopsy	1	2%
Total	50	100%

Among the study population, one half of them were polyps (52%)

Table 3: Showing the Site of the Lesion:

Site of the tumor	Frequency	Percentage
Dorsum of nose	1	2%
Ethmoidal	5	10%
Lateral wall of nose	4	8%
Middle meatus	22	44%
Nasal cavity, NOS	2	4%
asolabial fold	2	4%
Nasopharynx, NOS	8	16%
Root of nose3	6%	
Root of nose and glabella	1	2%
Tip of nose	2	4%
Grand Total	50	100%

Among the study population, 44% of the lesions were located at middle meatus, 16% at nasopharynx NOS, 10% at ethmoid.

Table 4: Showing the Final Diagnosis:

Diagnosis	Frequency	Percentage
Adenoid Cystic Ca-Minor Salivary lands	1	2%
Angiomatous Polyp	2	4%
Angiomatious Ploy with area of dysplastic	1	2%
Aspergillosis 1		2%
BCC	4	8%
Blue nevus	1	2%
Epidermal inclusion cyst	1	2%
Granulation tissue	1	2%
Hemangioma	2	4%
Hyperplastic lymphoid tissue	1	2%
Imflammatory allergic polyp	20	40%
Intradermal nevus	1	2%
Inverted papilloma	2	4%
Inverted transitional cell papilloma-recurrent	1	2%
Lymphoid hyperplasia	1	2%
Moderately diffrentiated scc	1	2%
Nasopharyngeal angiofibroma	1	2%
Positive for maligancy-scc	1	2%
Pyogenic granuloma	1	2%
Rhinosporidiosis	1	2%

Table 5: showing the type of lesion:

Type of lesion	Frequency	Percentage
Benign	16	32%
Inflammatory	25	50%
Malignant	9	18%
Grand total	**50**	**100%**

Among the study population, 52% of the lesions were inflammatory, 32% were benign and 16% were malignant.

Table 6: Age Distribution According to the Type of Lesion:

Age group	Benign	Inflammatory	Malignant	Grand Total
<10 years	2	2	0	4
10-19 years	2	2	0	4
20-29 years	4	11	0	15
30-39 years	3	5	0	8
40-49 years	1	3	0	4
50-59 years	2	2	4	8
60 and above	2	0	5	7
Grand Total	**16**	**25**	**9**	**50**

Chi square value:24.9 dof:12 p=0.01

Table 7: Gender Distribution According to the Type of Lesion:

Gender	Benign	Inflammatory	Malignant	Grand Total
Male	8	11	8	27
Female	8	14	1	23
Grand Total	16	26	9	50

Chi Square: 4.36 Degree of freedom:2 P value:0.11

Table 8: Showing the Site of the Tumor According to Type of Tumor

Site of the tumor	Inflammatory	Benign	Malignant	Total
Dirsum of nose	0	1	0	1
Ethmoidal	4	1	0	5
Lateral wall of nose	0	4	0	4
Middle meatus	22	0	0	22
Nasal cavity, NOS	0	1	1	2
Nasolabial fold	0	0	2	2
Nasopaharynx, NOS	2	2	4	8
Root of nose	0	2	1	3
Root of nose and glabella	0	1	0	1
Tip of nose	0	1	1	2

In the present study, 30% of participants were aged 20-29 years, 16% were aged 30-39 and 50-59 years, 14% were above 60 years, and 8% were under 10, 10-19 and 40-49 years. Comparatively, Kollur[7]. found 53% of their population aged 11-30 years with a mean age of 21.5 years, while Shar[8], Arti *et al* and Zafar[9]. noted a mean age of 22.5 years, indicating a young adult prevalence. Gender distribution in the present study was 54% male and 46% female, aligning with other studies where males were more prevalent, such as in Kollur[7]. (62.65% males), Zafar[9]. (male-to-female ratio of 1.7:1) and Kumari[10]. (61.61% males). Regarding lesion laterality, 46% of lesions were on the right side, 40% on the left and 14% bilateral, differing from Kollur[7] and Zafar[9], who reported higher bilateral cases (74.7% and 60%, respectively). Presenting complaints showed that 52% of cases were polyps, consistent with findings by Kollur[7] (84.33% non-neoplastic allergic polyps) and Zafar[9] (82.06% nasal polyps). Lesions were predominantly located at the middle meatus (44%), nasopharynx NOS (16%) and ethmoid (10%), whereas Kollur[7] reported the antrochoanal region (77.1%) as most common. In terms of lesion types, 50% were inflammatory, 32% benign and 18% malignant, which varied from the higher inflammatory percentage found in Kollur[7] (91.56%) and Shah[8] (100%). Malignant cases in the present study were all above 50 years, similar to

Kumari[10] who reported malignancy rising after 60 years. Gender distribution was similar for inflammatory and benign lesions, with malignancy more common in men, though not statistically significant, which is in line with Thomson[11], Boghani et al and Kumari[10] 's findings. Lesions were mostly non-neoplastic (56%), with 26% neoplastic in the nasal cavity and nasopharynx, compared to Neel[13], Blount[14], Kollur[7] and Zafar[9] who reported 91.56% and 60% non-neoplastic lesions, respectively.

Inflammatory and benign lesions are common until the age of 40 years, after which the risk of malignancy increases, with all malignant cases occurring above the age of 50 years. This association between age and tumor type is statistically[15] significant. Gender distribution is similar for inflammatory and benign tumors, though malignancy is more commonly[16] found in men, but this association is not statistically significant. Most tumors located within the nasal cavity and meatus are benign and inflammatory in origin.

CONCLUSION

This study provides a comprehensive overview of the spectrum, frequency and histopathological characteristics of neoplastic and non-neoplastic lesions of the nose and nasopharynx. The findings underscore the predominance of non-neoplastic lesions, with inflammatory polyps and chronic rhinosinusitis being the most common. However, the presence of neoplastic lesions, both benign and malignant, highlights the critical need for thorough histopathological evaluation. Histopathological examination remains the gold standard for diagnosing nasal and nasopharyngeal lesions. It not only differentiates between neoplastic and non-neoplastic conditions but also provides essential information on the specific type and nature of the lesions. This diagnostic clarity is crucial for guiding appropriate clinical management and therapeutic interventions.

The study emphasizes the importance of early and accurate diagnosis through histopathology to improve patient outcomes. By identifying the distinct histopathological features of various lesions, clinicians can formulate effective treatment strategies, reducing morbidity and improving prognosis for patients with nasal and nasopharyngeal conditions. In conclusion, the diverse nature of lesions in the nose and nasopharynx necessitates a meticulous approach to diagnosis and treatment. Continued research and advancements in histopathological techniques will further enhance our understanding and management of these complex conditions.

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