

A RETROSPECTIVE HISTOPATHOLOGICAL ANALYSIS OF NASOPHARYNGEAL LESIONS AT A TERTIARY LEVEL INDIAN HOSPITAL

¹Dr. Jagdish A Prajapati, ²Dr. Khyati Jayantkumar Patel, ³Dr. Jigneshkumar Mulachandbhai Dangi, ⁴Dr. Kalpesh Vaghela

¹Assistant Professor, Department of Pathology, GMERS Medical College, Godhra, Gujarat, India.

²Senior resident, Department of ENT, GMERS Medical Collage and Hospital, Valsad, Gujarat, India.

³Assistant Professor, Department of Pathology, Zydus medical College and Hospital, Dahod, Gujarat, India.

⁴Associate Professor, Department of Pathology, Zydus medical College and Hospital, Dahod, Gujarat, India.

Corresponding author

Dr. Kalpesh Vaghela
drvaghs007@gmail.com

ABSTRACT

Background: In the field of otolaryngology, a diverse array of inflammatory, non-neoplastic, and neoplastic growths affecting the nasal cavity, paranasal sinuses, and nasopharynx are frequently encountered across all age groups. This investigation was initiated to document the histopathological characteristics of nasal lesions, their categorization, and the proportional distribution of these lesions concerning age and gender within our clinical setting.

Materials and Methods: A retrospective analysis encompassing 78 cases was conducted at an Indian tertiary care level hospital. Patients ranging from 1 to 80 years of age were included in the study cohort. Histopathological analysis was performed on formalin-fixed, paraffin-embedded tissue sections stained with hematoxylin and eosin. The histopathological diagnoses were correlated with pertinent clinical observations and investigative findings.

Results: Of the total 78 cases examined, 57 were non-neoplastic, while 21 were neoplastic. Among non-neoplastic lesions, polyps were the most prevalent, followed by fungal infections. Within the neoplastic category, 15 lesions were benign, while six were malignant. Inflammatory polyps constituted the most frequent non-neoplastic lesion, inverted papilloma emerged as the predominant benign lesion, and sinonasal carcinoma was identified as the most prevalent malignant lesion.

Conclusion: Histopathological examination stands as a straightforward, dependable, and cost-effective diagnostic modality for identifying various lesions affecting the nasal cavity, paranasal sinuses, and nasopharynx.

Keywords: Nasopharynx, Histopathology, Polyp, Benign, Neoplasia

INTRODUCTION

In the ENT department, a spectrum of inflammatory, non-neoplastic, and neoplastic growths affecting the nasal cavity, paranasal sinuses, and nasopharynx is commonly observed across all age groups. Nasal obstruction stands out as the predominant symptom, accompanied by nasal discharge, epistaxis, and olfactory disturbances. Among these masses, nasal polyps are the most prevalent, with an incidence ranging from 1 to 4% of the population, and a prevalence rate of approximately 2%. Allergic factors predominantly contribute to nasal polyp formation, although instances linked to cystic fibrosis and other etiologies are rare [1-5].

Lesions within the nasal cavity encompass both neoplastic and non-neoplastic entities. Given the challenge in accurately discerning the underlying pathology of each nasal mass, histopathological assessment is imperative for achieving a definitive diagnosis. Histopathology remains the gold standard for diagnosing nasal masses [6]. Our study aimed to classify nasal cavity masses into neoplastic and non-neoplastic categories through histopathological examination, and to juxtapose our findings with those reported in other studies.

The aims of this study encompassed a comprehensive evaluation of various aspects related to nasal lesions. Firstly, the role of histopathology in diagnosing nasal lesions was scrutinized to assess its efficacy and reliability. Secondly, the investigation delved into determining the incidence of nasal lesions, alongside analyzing the age distribution and gender ratio among affected individuals, providing insights into demographic patterns. Lastly, the study aimed to compare its findings with those reported in other studies, thereby contributing to the broader understanding of nasal pathology and facilitating the identification of potential variations or consistencies across different populations and clinical settings.

MATERIALS AND METHODS

The study was conducted at an Indian tertiary care level Hospital over a duration of two years. Employing a retrospective study design, clinical data concerning sino-nasal lesions were retrieved from histopathology requisition forms and hospital records of patients.

The study included all specimens indicative of lesions affecting the nasal cavity, paranasal sinuses, and nasopharynx, received at the histopathology section of the pathology department. Cases involving previously treated sinonasal diseases with documented recurrence were excluded from the study cohort.

A comprehensive medical history was obtained, detailing age, sex, occupation, and residence, for each participant in the study. Additionally, routine biochemical and hematological evaluations were conducted as part of the diagnostic workup. Nasal endoscopy, along with CT scans of the nose and paranasal sinuses, encompassing both coronal and axial views, were performed to assess the extent and nature of the lesions. Furthermore, fine-needle aspiration cytology (FNAC) and biopsy procedures were conducted to obtain tissue samples for histopathological examination and definitive diagnosis.

All specimens, including biopsies and surgical samples, received at the histopathology department underwent a standardized processing protocol. Initial fixation was performed using 10% formalin, followed by embedding in paraffin. Subsequently, the specimens were sectioned at a thickness of 3-5 μ and stained with hematoxylin and eosin for histopathological analysis.

RESULTS

In our study comprising 78 patients, non-neoplastic nasal masses constituted the largest group, followed by neoplastic nasal masses. Non-neoplastic nasal masses were more prevalent in the fourth decade, while neoplastic masses predominated in the fifth decade. Among patients with non-allergic polyps, ages ranged from 11 to 70 years, with the highest incidence observed between the second and fourth decades of life (Table 1).

The study cohort comprised 45 males and 33 females, with a male-to-female ratio of 1.36:1 (Table 2). Among the 57 cases of non-neoplastic lesions, nasal polyps were the most common, followed by mucormycosis (Table 3). Among the 21 neoplastic lesions, 15 were benign, with inverted papilloma being the most frequent, while nasopharyngeal carcinoma emerged as the most common malignant lesion (Table 4, Figure 1).

Table 1: Age-wise distribution of masses

Age groups (in years)	Non-neoplastic lesions	Benign lesions	Malignant lesions	No. of patients	%
< 20	15	3	0	18	23.08
21-30	3	2	0	5	6.41
31-40	11	3	0	14	17.95
41-50	17	2	0	19	24.36
51-60	4	3	4	11	14.10
61-70	2	0	2	4	5.13
71-80	5	2	0	7	8.97
Total	57	15	6	78	100.00

Table 2: Gender-wise distribution of masses

Type of lesion	Male	Female	Total
Non-neoplastic	31	26	57
Benign	12	3	15
Malignant	2	4	6

Table 3: Gender-wise distribution of non-neoplastic lesions

Type of lesions	Male	Female	Total
Allergic polyps	12	9	21
Nonallergic polyps	11	5	16
Nonspecific polyps	3	5	8
Mucormycosis	5	1	6

Chronic non-specific inflammation	0	3	3
Rhinoscleroma	0	2	2
Rhinosporidiosis	0	1	1

Table 4: Gender-wise distribution of neoplastic lesions

Type of lesions	Male	Female	Total
Malignant			
Nasopharyngeal carcinoma	0	3	3
Transitional Cell Carcinoma	0	2	2
Sinonasal Squamous Cell Carcinoma	1	0	1
Benign			
Cavernous Hemangioma	2	0	2
Inverted nasal papilloma	8	3	11
Nasopharyngeal angiofibroma	2	0	2

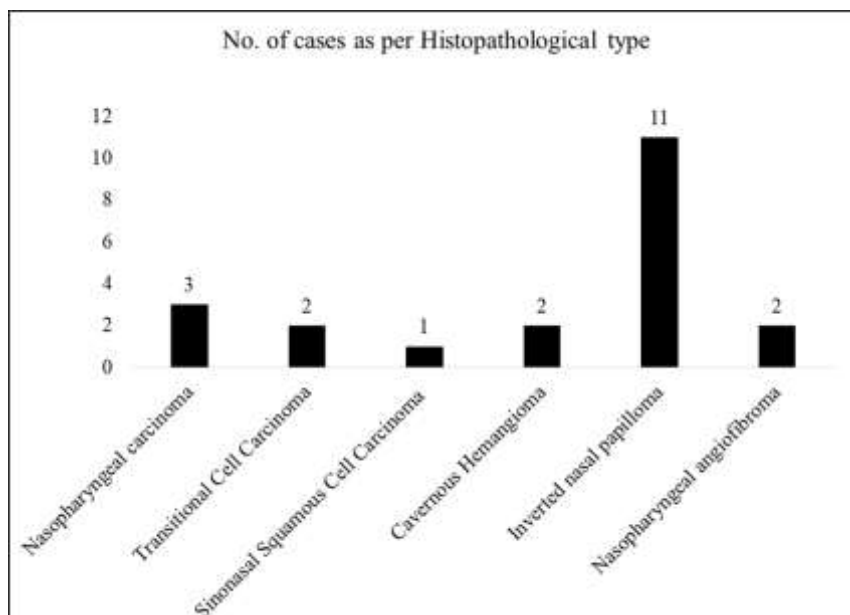


Figure 1: Distribution of masses according to Histopathological diagnosis

DISCUSSION

In our study, we observed a notable male predominance, with males outnumbering females in a ratio of 1.36:1, aligning closely with findings from previous research endeavors [7-10]. Delving deeper into the demographics of our study population, we found that the age spectrum ranged widely from infancy to advanced age, with a significant proportion of participants falling within the 41-50 and 0-20 age brackets. This distribution mirrors the age trends documented in earlier investigations [5,11].

Nasal polyps emerged as the most prevalent pathology in our study, consistent with reports from previous studies where their occurrence ranged from 70% to 57% [12-14]. Further analysis revealed that non-neoplastic lesions constituted the predominant pathological findings in our cohort. This trend mirrored observations from earlier studies, where non-neoplastic lesions consistently accounted

for a substantial portion of cases, ranging from 69.33% to 86.3%. Benign neoplasms and malignant neoplasms followed in frequency, with prevalence rates ranging from 11.1% to 22.67% and 2.6% to 11.61%, respectively [15-17]. These findings underscore the consistency and reliability of our study outcomes in the context of existing literature.

Limitations of this study include potential demographic biases due to its regional focus, retrospective design introducing selection and recall biases, and a relatively small sample size impacting statistical power. Additionally, reliance on medical records may introduce data quality issues, and the narrow scope of variables might overlook important factors. Lack of longitudinal follow-up, publication bias, and resource constraints further limit the study's generalizability and validity. These limitations highlight areas for improvement in future research to enhance the comprehensiveness and reliability of findings.

CONCLUSION

The present study reveals that non-neoplastic lesions are more prevalent in the nasopharynx and sinonasal tract compared to benign and malignant neoplasms. Benign polyps are identified as the most common lesions, followed by inverted papilloma. Malignant neoplastic lesions are predominantly found in individuals aged over 50, while younger age groups exhibit a higher proportion of benign lesions. Nasopharyngeal carcinoma emerges as the predominant malignant lesion within the nasal tract. Additionally, histopathological examination proves to be a simple and reliable diagnostic tool for detecting various lesions of the nasal cavity, paranasal sinuses, and nasopharynx.

Source of funding: None

Conflicts of interest: None

REFERENCES

1. Gupta C, Gupta P. A histopathological study of lesions of nasal cavity and paranasal sinuses. *Int J Med Health Res.* 2017;3(7):09-11.
2. Sharma R, *et al.* A clinicopathological study of masses of nasal cavity, paranasal sinuses, and nasopharynx. *Int J Otorhinolaryngol Head Neck Surg.* 2017;3(2):253-258.
3. Arya RC, *et al.* Clinicopathological study of non-neoplastic lesions in the sinonasal cavity of patients attending CIMS, Bilaspur (C.G): A retrospective study. *J Evid Based Med Healthc.* 2015;2(40):6746-6751.
4. Gupta R, Moupachi SS, Poorey VK. Sinonasal masses: A retrospective analysis. *Indian J Otolaryngol Head Neck Surg.* 2013;65(1):52-56.
5. Mysorekar VV, Dandekar C, Rao S. Polypoidal lesions in the nasal cavity. *Bahrain Med Bull.* 1997;19(3):67-9.
6. Settipane G. Nasal polyps: epidemiology, pathology, immunology, and treatment. *Am J Rhinol.* 1987;1:119-26.
7. Parmar NJ, *et al.* Histopathological study of nasal lesions: 2 years study. *Int J Res Med Sci.* 2018;6(4):1217-1223.

8. Kumar A, *et al.* Lesion of nasal cavity, paranasal sinus, and nasopharynx. *J Adv Med Dent Scie Res.* 2017;5(11):22.
9. Lathi A, SP L, Syed MMA, Kalakoti P, Qutub D Kishve. Clinicopathological profile of sinonasal masses: a study from a tertiary care hospital of India. *Acta Otorhinolaryngol Ital.* 2011;31(6):372-377.
10. Patel KU, Gor S, Kokani MJ. Histopathological study of sinonasal and nasopharyngeal lesions in a tertiary care hospital: A 5 year retrospective study. *European Journal of Molecular & Clinical Medicine.* 2022;9(8):120-125.
11. Surange D, Goswami HM. Histopathological Study of Sinonasal and Nasopharyngeal Lesions in a Tertiary Care Hospital over the Period of 2 Years. *International Journal of Contemporary Pathology.* 2020;6(1):11-16.
12. Nataraju G, Adil SAK. Histopathological Study of Sinonasal Lesions in Tertiary Care Hospital. *JMSCR.* 2017 Jan;05(01):17150-17152.
13. Shah SN, Goswamy Y. Study of Lesions of nasal cavity, nasopharynx and paranasal sinuses by histopathological examination. *Gujarat Medical Journal.* 2012;67(2):70-72.
14. Kulkarni AM, *et al.* Histopathological study of lesions of nose and paranasal sinuses. *Indian J Otolaryngology. Head Neck surgery.* 2012;64(3):275-279.
15. Deosthale N, Patil P. A Clinicopathological Profile of Sinonasal Masses at a Tertiary Care Hospital: A Descriptive Study. *Bengal Journal of Otolaryngology and Head Neck Surgery.* 2021;29(2):133-139.
16. Parajuli S, Taladhar A. Histopathological spectrum of masses of the nasal cavity, paranasal sinuses and nasopharynx. *Journal of Pathology of Nepal.* 2013;3:351-5.
17. Kulkarni AM, Mudholkar VG, Acharya AS, Ramteke RV. Histopathological study of lesions of nose and paranasal sinuses. *Indian J Otolaryngol Head Neck Surg.* 2012;64(3):275-9
- 18.