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A Study On Histopathological Spectrum Of Nasal Cavity And Nasopharyngeal Lesions In A Tertiary Care Center.

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ABSTRACT

Nasal cavity and nasopharynx contain different types of epithelia and mesenchymal tissues. Different types of space occupying lesions can arise from nasal cavity and nasopharynx. Our aim is to study the histopathological spectrum of lesions in nasal cavity and nasopharynx over a period of one year from May 2023 to May 2024 in a tertiary care center. In a period of one year, 28 cases of nasal cavity and nasopharynx lesions were received in our department. Biopsies were processed and stained with hematoxylin and eosin. Immunohistochemical panel was used for further diagnosis. Retrospective analysis of the biopsies was made for the study. In our study, the most common age group was 45 – 60 years of age. 21 cases were males and 7 cases were females. 11 cases were non-neoplastic, 5 cases were reported as benign and 12 cases were reported as malignant. Immunohistochemical markers like CD56, NSE were used to diagnose Olfactory Neuroblastoma. CD15 and CD30 markers were used to diagnose Hodgkins's lymphoma. Nasopharyngeal lesions are a heterogenous group of lesions with a broad spectrum of histopathological features. This study emphasizes the need of careful histological workup along with immunohistochemistry for correct diagnosis and prompt treatment.

Keywords: Nasal cavity, Nasopharynx, Olfactory neuroblastoma, Polyp, Hodgkins's lymphoma, Squamous cell carcinoma.

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INTRODUCTION

Nasal cavity and nasopharynx contain different types of epithelia (squamous, neural, olfactory) and mesenchymal (vascular, cartilage, bone) tissues. Different types of space occupying lesions can arise from nasal cavity and nasopharynx. Common presenting symptoms of these lesions range from nasal blockades, facial swellings, pain, nasal discharge, and epistaxis to orbital and ear symptoms.

Masses in the nasal cavity and nasopharynx can be neoplastic or non-neoplastic. Neoplastic lesions can be benign or malignant. Primary nasal malignancies consist of 0.2 to 0.8% of all malignant tumors and 3.6% of malignant upper airway tumors. The most common malignancy of nasopharynx is nasopharyngeal carcinoma that can be keratinizing or non-keratinizing Squamous cell carcinoma. Exposure to substances like industrial fumes, wood dust, infections like Human Papilloma Virus (HPV), Epstein Barr Virus (EBV), alcohol consumption, Nitrosamine containing food agents have been implicated in the carcinogenesis of certain types of sinonasal malignant tumors.

Diagnosis of these lesions can be difficult as most of these lesions present as polypoidal masses. Presumptive diagnosis can be based on symptoms, clinical findings, and advanced radiological techniques but histopathological examination (HPE) remains the gold standard for diagnosis. Accurate HPE diagnosis is necessary for proper management and follow-up of the patients.

MATERIALS AND METHODS

This is a retrospective study conducted in Department of Pathology in a tertiary care center over a period of one year. Ethical committee approval was obtained. Biopsy samples of patients clinically diagnosed as nasal and paranasal lesions were taken for the study. In a period of one year, about 28 cases of nasal cavity and nasopharyngeal lesions were received. All the specimens were fixed with 10% neutral buffered formalin. After adequate fixation, specimens were submitted for routine processing, followed by paraffin embedding and stained with hematoxylin and eosin. Histopathological findings were correlated with clinical presentations and investigations. Immunohistochemical panel was used in required cases for further diagnosis. The results were tabulated and statistically analyzed.

RESULTS

In a period of one year, 28 cases of nasal cavity and nasopharyngeal lesions were received. The most common age group was 45 – 60 years of age (Figure 1). The malignant neoplasms were commonly reported in 6^{th} to 7^{th} decade of life.

Out of 28 cases, 21 cases were males and 7 cases were females. The male to female ratio was 3:1 (Figure 2). In our study, the most common symptom was nasal obstruction followed by nasal mass, nasal discharge, hyponasality, head ache or local pain, epistaxis and ear complaints.

Of these cases, 11 cases were non-neoplastic accounting for 39% (Figure 3). The most common non-neoplastic case reported was inflammatory polyp (Table 1). Five cases were benign including inverted papilloma, angiomatous polyp and juvenile nasopharyngeal angiofibroma, accounting for 17.8% (Table 2). Twelve cases were malignant, accounting for 42.8%. The most common malignant neoplasm reported was Squamous cell carcinoma (Table 3). One case of Olfactory Neuroblastoma and a case of Lymphoproliferative disorder, Hodgkins's lymphoma were reported.

Table 1: Distribution of non-neoplastic lesions

S.No	Non-neoplastic lesions	No. of Cases	Percentage
1.	Inflammatory Polyp	9	32%
2.	Rhinosporidiosis	2	7.1%

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Table 2: Distribution of benign neoplasms

S.No	Benign neoplasm	No. of Cases	Percentage
1.	Inverted Papilloma	2	7.1%
2.	Angiomatous Polyp	1	3.6%
3.	Nasopharyngeal Angiofibroma	2	7.1%

Table 3: Distribution of malignant neoplasms

S.No	Malignant neoplasm	No. of Cases	Percentage
1.	Squamous cell carcinoma	10	35.7%
2.	Olfactory Neuroblastoma	1	3.6%
3.	Hodgkins Lymphoma	1	3.6%

Figure 1: Age distribution

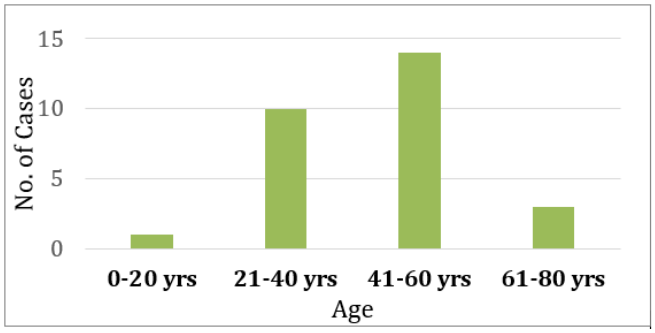

Figure 2: Sex distribution

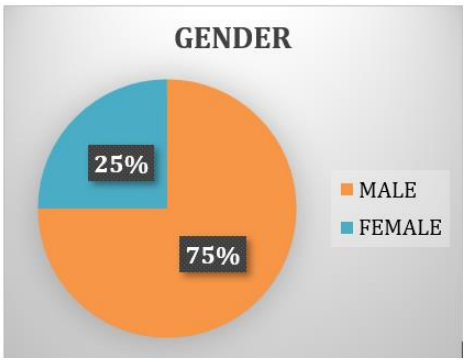

Figure 3: Histopathological spectrum of lesions

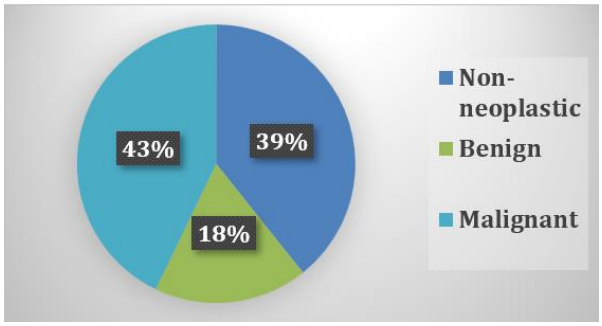

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Figure 4: Photomicrograph showing a case of Inverted Papilloma with endophytic growth pattern at 100x magnification (Low power view)

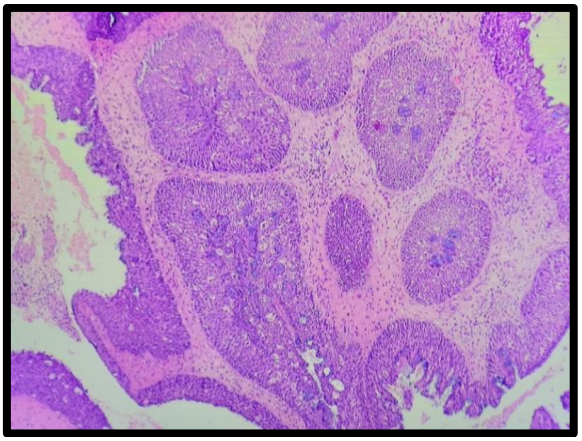

Figure 5: Photomicrograph showing Rhinosporidiosis with multiple sporangia in varying stages of maturation at 400x magnification (High power view)

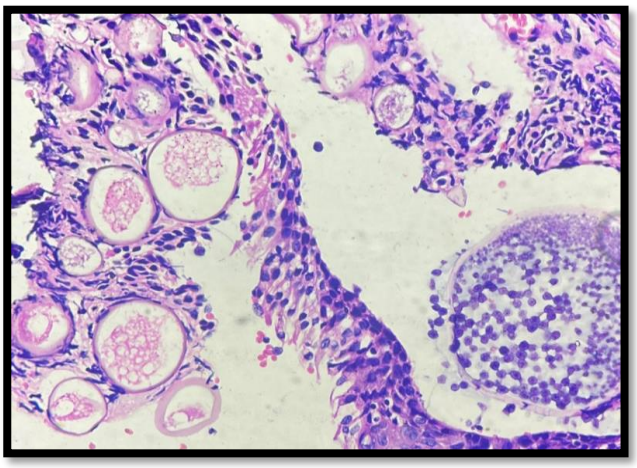

Figure 6: Photomicrograph showing a case of Nasopharyngeal angiofibroma with vessels of varying caliber in densely packed fibrous stroma at 100x magnification (Low power view)

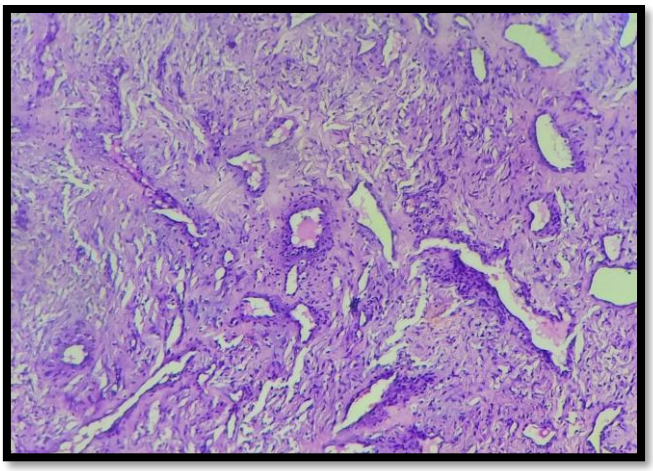

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Figure 7: Photomicrograph showing a case of Olfactory Neuroblastoma with sheets of monotonous neoplastic cells and rosette formation at 400x magnification (High power view)

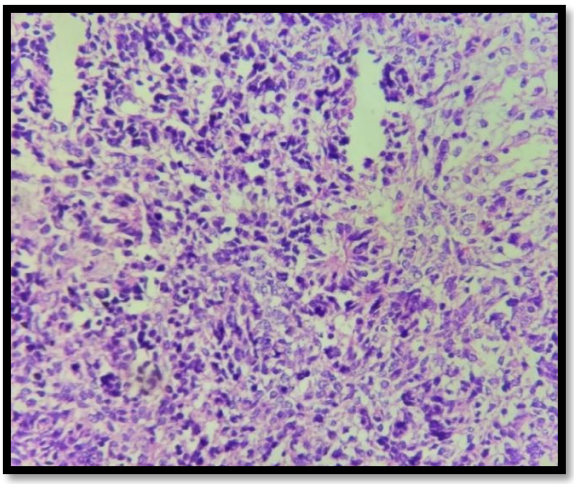

Figure 8: Photomicrograph showing CD56 with membranous positivity in tumor cells at 100x magnification (Low power view)

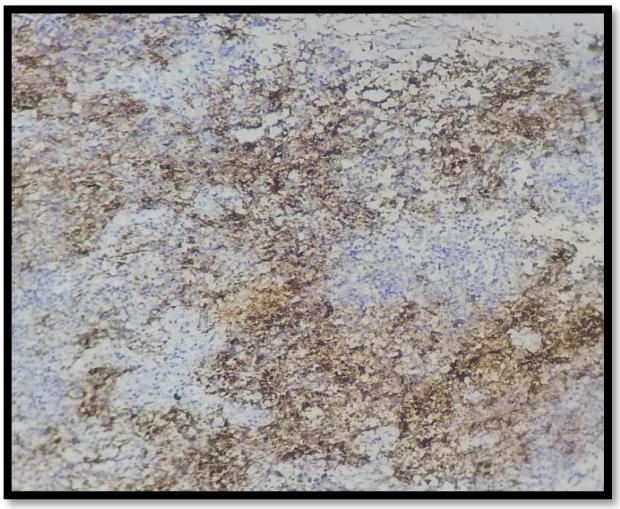

Figure 9: Photomicrograph showing NSE with cytoplasmic positivity in tumor cells at 100x magnification (Low power view)

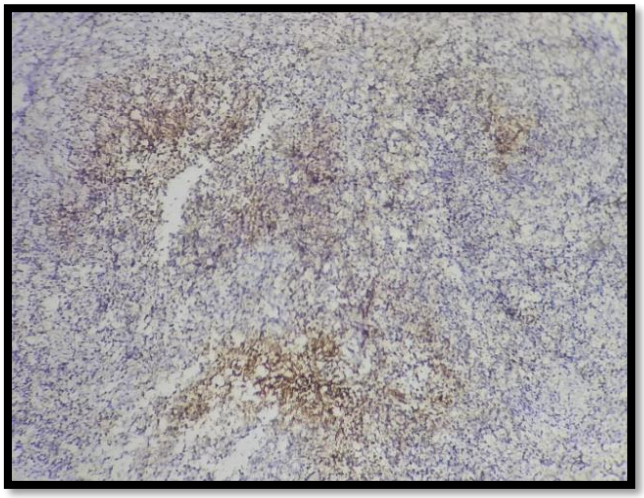

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Figure 10: Photomicrograph showing a case of Hodgkins Lymphoma with scattered Reed Stenberg cells in a background of lymphocytes

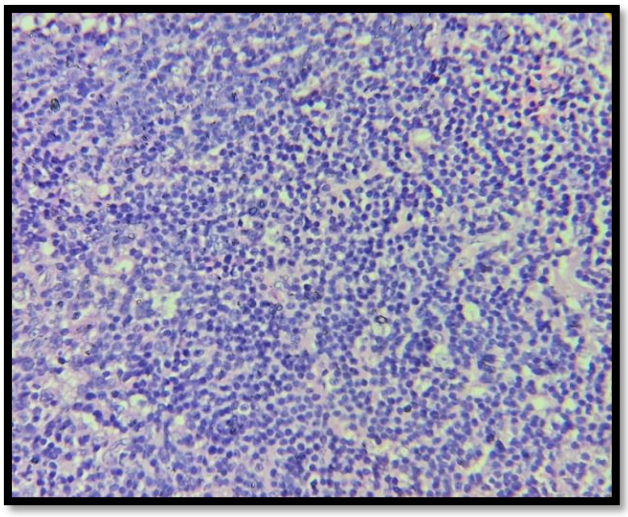
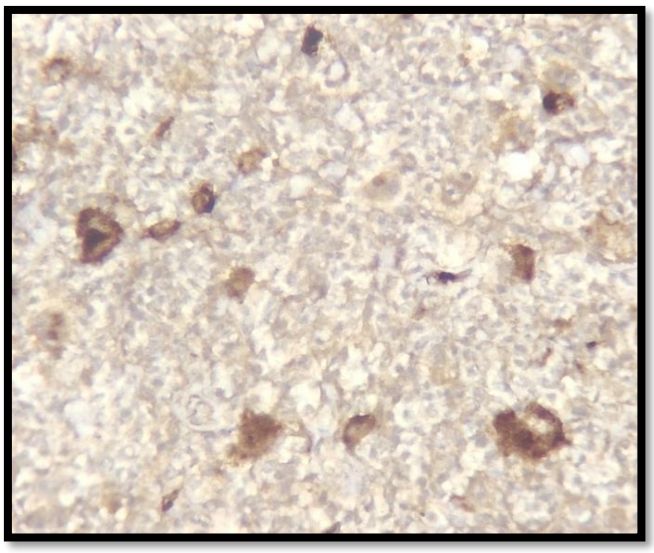


Figure 11: Photomicrograph showing CD30 with membranous positivity at 400x magnification (High power view)



DISCUSSION

A variety of inflammatory, non-neoplastic and neoplastic masses are encountered in nasal cavity, paranasal sinuses, and nasopharynx.

In our study, the age group of the patients ranged from 15 to 80 years. The most affected age group was 41–60 years (50%), and the least number of cases was seen in 0–20 years (3.6%) which was similar to study by Agarwal et al [1]. Benign neoplasms were usually more common in younger age from 11 to 20 years and non-neoplastic nasal masses were the commonest in the 2nd to 4th decade of life which were similar to study by Patel et al [2]. Malignant neoplasms were common in older age group ranging from 60 to 80 years similar to study by Agarwal et al [1].

Out of 28 cases, 21 cases were male patients and 7 cases were female patients. The observed male to female ratio was 3:1 in our study, as compared to 1.6:1 in study by Kumari et al [3], 1.7:1 in a study by Zafar et al [4] and 3:2 in a study by Khan et al [5]. Thus, in most of the studies, males were commonly affected than females.

In our study the most common symptom was nasal obstruction seen in 25 patients (89.2%). The second most common presentation was nasal mass seen in 21 patients (75%) followed by nasal discharge seen in 15 patients (53.5%), hyponasality seen in 12 patients (42.8%), headache or local pain seen in 10 patients (35.7%), epistaxis seen in 6 patients (21.4%), ear complaints were seen in 3 patients (10.7%). In a similar study conducted by Patel et al [2], the most common presentation was nasal obstruction which was also observed in a study by Agarwal et al [1].

Histopathological diagnosis was analyzed for all cases. Eleven patients (39.1%) had non-neoplastic lesions, five patients (17.9%) had benign neoplasm and 12(42.8%) patients had malignant neoplasm. The most common non-neoplastic lesion reported was inflammatory polyp which was similar to study by Kumari et al [3]. Totally nine cases (32%) of inflammatory polyp were reported. Two cases (7.1%) of Rhinosporidiosis (Figure 5) were reported similar to a study by Kumar et al [6].

Among benign cases, two cases (7.1%) of inverted papilloma were seen (Figure 4). Inverted papilloma has a high tendency to transform into squamous cell carcinoma, hence adequate sampling should be done to know the exact conversion rate. Two cases (7.1%) of angiofibroma were reported. (Figure 6). There was one case of angiomatous polyp comprising of 3.6 %. This observation was similar to a study by Agarwal et al in which the most common benign neoplasm was inverted papilloma followed by angiofibroma [1].

Squamous cell carcinoma was the most common malignant neoplasm reported in our study that is differentiated into keratinizing and non-keratinizing squamous cell carcinoma [7]. 10 cases of squamous cell carcinoma were reported accounting for about 35.7%. Squamous cell carcinoma was also the most common malignant neoplasm reported in other studies comprising of 31.5% in a study by Patel et al [2] and 60% by Kumar et al [6]. Immunohistochemical markers such as PanCK, p63, p40 were used in the diagnosis of Squamous cell carcinoma [7].

The most common sites for Olfactory neuroblastoma are the upper part of nasal cavity and the middle turbinate. Its occurrence in the nasopharynx is very rare [8]. The most common reported subtype of Hodgkins lymphoma is the mixed cellularity, and it has a favorable prognosis [9]. A study by Kumari et al had 7 cases of Olfactory neuroblastoma and 5 cases of lymphoma [3]. In our study, one case of Olfactory neuroblastoma was reported accounting for 3.6%. (Figure 7,8,9). Immunohistochemical markers such as CD56, Neuron Specific Enolase (NSE) and CD99 were positive while PanCK, CD45, WT1, Desmin, SMA were done to rule out other small round blue cell tumors and were negative. One case of mixed cellularity subtype of Hodgkins Lymphoma was reported with the help of immunohistochemical markers, CD15 and CD30 (Figure 10,11).

CONCLUSION

Nasal cavity and Nasopharyngeal lesions are a heterogenous group of lesions with a broad spectrum of histopathological features. Clinical diagnosis can be challenging in nasal cavity and nasopharyngeal lesions due to similar presentations. Hence histopathological examination is an important differentiating modality in patients who present with similar clinical complaints but varied underlying pathology. We also conclude that the use of Immunohistochemistry is very important in cases with overlapping morphology.

This study emphasizes the need of careful histological workup along with immunohistochemistry for correct diagnosis and prompt treatment of patients.

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