

A Clinicopathological Study of Nasal, Paranasal Sinus, and Nasopharyngeal Lesions

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Abstract

Background: The nasal cavity, paranasal sinuses, and nasopharynx are affected by a number of neoplastic and nonneoplastic disorders. Determining whether the lesion is neoplastic or nonneoplastic is challenging. Therefore, histopathological analysis is crucial for both the pathologists and surgeons.

Objective: The purpose of this study was to assess the histopathological analysis of disorders of the paranasal sinuses, nasal cavity, and nasopharynx according to their frequency, age, sex, and distribution by site.

Methods: The current study with cross-sectional design was carried out in the pathology department of Shahid Ghazi Al-Harery Teaching Surgical Hospital in Baghdad Medical City over a three-year period from December 2021 to December 2024.

Results: Among 299 patients: 203 were males and 96 were females. The most affected age group in our study was from the 2nd decade to the 4th decade. Among 299 cases; 169 non-neoplastic lesion cases and 130 neoplastic lesion cases of which 60 were benign and 70 were malignant. Out of 169 cases of non-neoplastic lesions; inflammatory nasal polyp (81 cases) was the commonest lesion. Out of 60 benign neoplastic cases; sinonasal papilloma (24 cases) was the commonest benign neoplastic lesion. Out of 70 malignant cases; nasopharyngeal carcinoma was the predominant histological type constituting 35 cases.

Conclusion: the majority of nasal cavity, paranasal sinus, and nasopharyngeal lesions can appear as polyp-like lesions; a histopathological analysis of these lesions can assist surgeons in diagnosing a condition and choosing the best course of therapy for the patient.

Key-words: Histopathological; Nasal cavity; Neoplastic; Non-neoplastic; Paranasal sinuses.

Introduction:

A complex system of the upper respiratory tract is formed by the nasal cavity, paranasal sinuses, and nasopharynx; this area is endowed with a variety of elements such as epithelial, glandular, lymphoid, cartilage, and bone, and it is susceptible to several diseases, including infections and tumors.^[1]

Common presenting symptoms of nasal, paranasal sinuses and nasopharyngeal lesions are masses, nasal obstruction, and epistaxis. Many foreign materials, including allergens, viruses, physical and chemical irritants, and other environmental factors, can affect the upper airway tract.⁽²⁾ The nasal, nasopharyngeal, and paranasal sinus regions experience various clinical disorders due to this multifactorial exposure. These ailments include benign and malignant neoplastic lesions and non-neoplastic lesions such as infection, inflammation, and polyps.^[2]

A presumptive diagnosis is made possible by the presenting characteristics, symptomatology, and sophisticated imaging methods, such as computed tomography and magnetic resonance imaging. However, a thorough histopathological analysis is necessary for an accurate diagnosis and prompt action.^[3]

The purpose of this study was to assess the histopathological analysis of disorders of the paranasal sinuses, nasal cavity, and nasopharynx according to their frequency, age, sex, and distribution by site and to contrast the outcomes with the accessible information.

Patients and Methods:

The current Observational study with cross-sectional design was carried out in the pathology department of Shahid Ghazi Al-Harery Teaching Surgical Hospital in Baghdad Medical City over a three-year period from December 2021 to December 2024. The inclusion criteria for selection of cases were cases which were not amenable for medical treatment. All tissues were fixed in 10% buffered formalin, processed, and then stained with hematoxylin and eosin.

This research was designed with the approval of the scientific committee of AlKindy College of Medicine, University of Baghdad, Iraq. (No: 7840 on 3/12/2024).

Results:

The current study examined 299 cases of the nasal cavity, paranasal sinuses, and nasopharyngeal lesions in total over three years from December 2021 to December 2024 comprising 169 non-neoplastic lesion cases and 130 neoplastic lesion cases (60 benign cases and 70 malignant cases) as shown in table 1.

Table 1: The distribution of non-neoplastic and neoplastic lesions of the nose, paranasal sinuses, and nasopharynx studied

The type of lesion	number of cases	percentage
1.Non neoplastic	169	56.52
2.Neoplastic	130	43.47
Benign	60	20.06
Malignant	70	23.41
Total	299	100%

Table 2 shows that out of 169 cases of non-neoplastic lesions; inflammatory nasal polyp (81 cases) was the commonest lesion followed by fungal infections (43 cases).

Table 2: The distribution of non-neoplastic lesions of nasal, paranasal sinuses, and nasopharynx

Type of lesion	Number of lesion	percentage
Inflammatory /allergic polyp	81	47.92%
Fungal infection	43	25.44%
Reactive Lymphoid Hyperplasia	29	17.15%
Antrochoanal polyp	6	3.55%
Nasolabial cyst	3	1.77%
Chronic granulomatous lesion	3	1.77%
Wegner granulomatous	1	0.59%
Chronic osteomyelitis	1	0.59%
sialadenitis	1	0.59%
mucocele	1	0.59%
total	169	100%

The age of patients ranged from 4 to 83 years with the mean age of presentation being 36.5 years and the male-to-female ratio was 2:1 revealing male predominance (Table 3). The most common site was the nasal cavity followed by the nasopharynx and paranasal sinuses.

Table 3: The distribution of neoplastic and non-neoplastic lesions of the nasal cavity, paranasal sinus, and nasopharynx according to age groups.

Age group	Non-neoplastic cases	Benign cases	Malignant cases
0-10 y	9	8	10
11-20y	34	10	9
21-30y	33	9	10
31-40y	38	6	10
41-50y	29	9	10
51-60y	14	8	12
61-70y	10	5	8
71-80y	1	5	1
81-90y	1	0	0
90-100y	0	0	1
Total cases	169	60	70

Out of 60 benign neoplastic cases; sinonasal papilloma (24 cases) was the commonest benign neoplastic lesion followed by angiofibroma (10 cases) and cavernous hemangioma (8 cases). Out of 70 malignant cases; nasopharyngeal carcinoma was the predominant histological type constituting 35 cases followed by squamous cell carcinoma (15 cases) and Basal cell carcinoma of nasal skin (6 cases).(Table 4 & 5).

Table 4: The distribution of benign lesions of the nose, paranasal sinus, and nasopharynx

The type of lesion	Number of cases	percentage
The type of lesion	Number of cases	percentage
Sinonasal papilloma	24	40%
Angiofibroma	10	16.66%
hemangioma	8	13.33%
Ameloblastoma	6	10%
Fibrous dysplasia	2	3.33%
Cementifying fibroma	1	1.66%
schwannoma	2	3.33%
Osteoma	1	1.66%
glomus tumor	1	1.66%
Solitary fibrous tumor	1	1.66%
lipoma	1	1.66%
Langerhans cell histiocytosis	1	1.66%
meningioma	1	1.66%
seborrheic keratosis	1	1.66%
Total	60	100%

Table 5: The distribution of malignant lesions of the nose, paranasal sinus, and nasopharynx

Type of lesion	Number of cases	percentage
Nasopharyngeal carcinoma	22	31.42%
squamous cell carcinoma	15	21.42%
Basal cell carcinoma	6	8.57%
lymphoma	7	10%
Embryonal rhabdomyosarcoma	4	5.71%
Olfactory neuroblastoma	3	
Sinonasal papilloma with malignant transformation	3	4.28%
Malignant ameloblastoma	2	2.85%
osteosarcoma	1	1.42%
Adenoid cystic carcinoma	1	1.42%
Soft tissue sarcoma	1	1.42%
Sinonasal adenocarcinoma non intestinal type	1	1.42%
Metastatic Papillary thyroid carcinoma	1	1.42%
Nasal chondrosarcoma	1	1.42%
Ewing sarcoma	1	1.42%
plasmacytoma	1	1.42%
Total	70	100%

Discussion:

Numerous tumors can be seen in the nose, paranasal sinuses, and nasopharynx. Clinically, it can be challenging to determine whether a lesion is neoplastic or nonneoplastic because these tumors are frequently misdiagnosed as chronic inflammatory diseases. Histopathological investigation results in a conclusive diagnosis, however imaging studies and present features aid in making a probable diagnosis.

In our study, we encountered 299 cases of lesions of the nose, nasopharynx, and paranasal sinuses over a period of 3 years. Most patients with sinonasal and nasopharyngeal lesions were male with 203 cases (67%) while 96 were

female (33%). This study shows a male-to-female ratio of 2:1. The results of this study are comparable to the study by Surange et al where most of the patients were males. ^[4] According to our research, men were more likely than women to have neoplastic lesions which are comparable with the study of Garg and Mathur. ^[5] According to the age groups, the most affected age group in our study was from the 2nd decade to the 4th decade. The incidence of non-neoplastic lesions was maximum in 31-49 years while benign lesions were maximum (35%) in 11-20 years. The malignant lesions were maximum in 51-60years. ^[6]

Out of 299 nasal, paranasal, and nasopharyngeal cases; 169 (56.52%) were non-neoplastic lesions and 130 (43.47%) were neoplastic lesions in this study. In non-neoplastic cases, inflammatory polyps were the most common lesions which is comparable with the study done by Sarumathy et al. in which 73 patients with non-neoplastic lesions had inflammatory polyps.^[7] In neoplastic cases; 60 (20.06%) cases were benign and 70 (23.41%) cases were malignant which is comparable with the study conducted by Shikha Ngairangbam et al.^[8]

Inverted sinonasal papilloma was the most common among benign neoplasms with 24 cases (40%) followed by angiofibroma with 10 cases (16.66%) and hemangioma with 8 cases (13.33%). These findings contrast with those of a study conducted by Mohapatra et al. (2020); where out of 21 patients with benign neoplasm; hemangioma was found in the highest number

with 6 cases (28.57%) followed by inverted papilloma with 4 cases (19.04%).^[9]

Nasopharyngeal carcinoma was the most common among malignant cases with 22 cases (31.24%) followed by squamous cell carcinoma with 15 cases (21.44%). This finding was similar to the study done by Begum MS, et. al which confirmed nasopharyngeal carcinoma as the most common malignant lesion comprising 18.18% of the cases.^[10]

Conclusion

The majority of nasal cavity, paranasal sinus, and nasopharyngeal lesions can appear as polyp-like lesions; a histopathological analysis of these lesions can assist surgeons in diagnosing a condition and choosing the best course of therapy for the patient.

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