

Histopathological study on the spectrum of various sinonasal lesions

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ABSTRACT

Background: A variety of neoplastic and non-neoplastic conditions involve the nasal cavity and paranasal sinuses, amongst which the prevalence of non-neoplastic sinonasal lesions in the general population is 1-4%. It can give rise to a very diverse assay of neoplasms i.e., about 1% of all malignancies.

Methods: The study was conducted in the Department of Pathology Mahadevappa Rampure Medical College over a period of two years (2019-2021). A total of 30 cases of sinonasal tract lesions were identified and their histopathological examination was carried out and special staining was done wherever necessary.

Results: Out of 30 sinonasal cases, 16 lesions were inflammatory, seven lesions were benign neoplastic lesions and the other seven were malignant. Nasal polyps were the most common inflammatory lesions, mostly in females. Out of seven malignant lesions, squamous cell carcinoma was found in three lesions, and in benign lesions, sinonasal papillomas were found in five lesions.

Conclusion: Various lesions of the sinonasal tract including non-neoplastic, benign, and malignant can occur in any age group and both sexes.

KEYWORDS: SINONASAL LESIONS, paranasal sinuses, histopathological examination, Malignant, inflammatory

INTRODUCTION

The sinonasal tract comprising the nasal cavity and paranasal sinuses can show a wide variety of lesions. [1, 2] Nasal obstruction, rhinorrhea, blood-stained nasal discharge, and epistaxis are the most typical presenting symptoms. Non-neoplastic and neoplastic, which are further split into benign and malignant, are the two basic classifications of sinonasal masses. The inflammatory lesions are of various types including nasal polyps. Rhinoscleroma, rhinosporidiosis etc. [2]

The sinonasal tract is home to nonneoplastic exophytic growths called sinonasal inflammatory polyps (SNPs), characterized by inflammation and submucosal edema. They

frequently appear in adulthood and are unusual in young kids. [3] Sinonasal polyps can appear unilaterally or bilaterally, singly, or in groups. The lateral nasal wall is where they most frequently start. Frequently myxoid, supple, and fleshy. [3]

Rhinoscleroma (RS) is a chronic granulomatous condition of the nose and upper respiratory tract. Rhinoscleroma is caused by the bacterium *Klebsiella rhinoscleromatis*. [4] RS is a slowly developing condition that affects the nasal cavity in 95 to 100% of cases with or without involvement of the pharynx, larynx, nasopharynx, nasal sinuses, trachea, and bronchi. [5, 6]

Rhinosporidiosis is an infectious disease, endemic in parts of Asia, such as India and Ceylon. It is caused by the aetiological agent *Rhinosporidium seeberi* consisting of large, thick-walled spherical structures (called sporangia) containing smaller "daughter cells" (called "sporangiospores") [7]. Mucormycosis is a fatal condition caused by the fungus belonging to the class zygomycetes, and the order of Mucorales. affecting immunocompromised patients. Sites of infection include the lung, central nervous system, paranasal sinuses, gastrointestinal system, and skin. [8] Aspergillosis of the nose and paranasal sinuses is becoming more widely recognized, and it has been shown that there are four different variants of the infection viz Allergic Aspergillus sinusitis, aspergilloma, invasive aspergillosis, and fulminant aspergillosis. [9]

Nonneoplastic lymphoproliferative disease of unknown etiology and pathogenesis is known as Rosai-Dorfman disease. The majority of patients have painless bilateral cervical lymphadenopathy, which is frequently accompanied by fever, leukocytosis, an elevated sedimentation rate, and hypergammaglobulinemia. Along with lymphadenopathy, extranodal involvement is found in 43% of the patients. The disease's clinical spectrum varies, ranging from spontaneous remission to involvement of important organs that might be fatal. [10]

Among neoplastic lesions Schneiderian papillomas, sometimes referred to as sinonasal papillomas, are benign epithelial tumors that develop from sinonasal mucosa. They are commonly seen in older age groups and slight male

predilection is seen. Three subtypes of sinonasal papillomas are included as follows: exophytic, inverted, and oncocytic. Only 3% of all head and neck malignant tumors are of the sinonasal tract. They constitute 0.2% of all invasive carcinomas. [11, 12]

Understanding the various types of sinonasal lesions is important for the diagnosis and management of the disease. So, this study was planned with the objective of identifying different histopathological lesions of the sinonasal tract.

MATERIALS AND METHODS

The study was conducted in the Department of Pathology, MR medical college, Kalaburagi over a period of 2 years from 2019-2020. As no patients were involved, informed consent taking was waived off by the Institutional Ethics Committee, MR medical college. A total of 30 specimens were studied as follows:

The specimens received from the surgical departments were fixed in formalin and they were sectioned routinely and processed thin sections were given and slides were prepared. The slides were stained routinely with hematoxylin and eosin stains and special stains like PAS and GMS were done to rule out fungal elements. Later on, Immunohistochemistry staining was done to confirm the diagnosis of malignant lesions.

Special stains were done wherever it was necessary to demonstrate hyphae in case of fungal diseases. The special stains used were the Periodic Acid Schiff test and Gomori's Methenamine silver stain both of which demonstrated the broad, aseptate hyphae of the mucormycosis.

RESULTS

Out of 30 cases included in this study, the majority of them (18) were females. Age of these patients ranged from 10- 60 years.

Types of lesions: 16 were non-neoplastic/ inflammatory lesions, seven were benign neoplastic lesions and the other seven were malignant. Non-neoplastic/ inflammatory lesions diagnosed were summarized in Table 1. Nasal polyps were the most common inflammatory lesions, mostly in females. The majority of the patients were diagnosed with nasal polyps, with an overall percentage of 33%, and were commonly encountered in the age group between 25-60 years

Out of seven malignant lesions, squamous cell carcinoma was found in three lesions, and in benign lesions, sinonasal papillomas were found in five lesions as summarized in Table 2.

DISCUSSION

Nasal masses, paanasal sinus masses, and nasopharyngeal masses collectively comprise a collection of lesions with

| Inflammatory Lesions | No. of Cases | Male | Female |
|-----------------------|--------------|------|--------|
| Nasal Polyps | 10 | 2 | 8 |
| Rhinoscleroma | 2 | 1 | 1 |
| Rhinospodosis | 1 | 1 | 0 |
| Mucormycosis | 1 | 1 | 0 |
| Aspergillosis | 1 | 1 | 0 |
| Rosai-Dorfman disease | 1 | 1 | 0 |

Table 1: Distribution of inflammatory lesions of the sinonasal tract

| Histopathologic Diagnosis | No. of Cases | Male | Female |
|---------------------------|--------------|------|--------|
| Malignant Lesions | | | |
| Squamous Cell Carcinoma | 3 | 1 | 2 |
| Adenoid cystic carcinoma | 1 | 0 | 1 |
| Olfactory Neuroblastoma | 1 | 0 | 1 |
| Burkitts Lymphoma | 1 | 1 | 0 |
| Nasopharyngeal Carcinoma | 1 | 0 | 1 |
| Benign Lesions | | | |
| Sinonasal Papillomas | 5 | 2 | 3 |
| Hemangioma | 2 | 1 | 1 |

Table 2: Distribution of Malignant and Benign lesions of the sinonasal tract.

a wide range of histological characteristics. Numerous of these benign and malignant tumors cannot be distinguished clinically and are frequently identified as straight forward polyps. [13]

These lesions are neglected to have an allergy or infectious cause. When benign and malignant illnesses are not distinguished at the time of initial presentation, the diagnosis and treatment processes are delayed. [14]

In our study, we found that the age of presentation of sinonasal tumors ranged from 10 to 65 years with the mean

age being 35.5 years which is concordance with various other studies such as by Bist et al. [2] with the mean age being 39.4 years.

Maximum cases were seen in the age group of 30- 40 years which is in concordance with the study conducted by Jyothi A Raj et al. [13] Female to-male ratio calculated in this study is 1.5:1, showing female preponderance but the studies conducted by Sharma et al. [15] and Bist et al. [2] showed male predilection.

Nasal obstruction was the commonest presenting symptom in almost all cases which is in concordance with various other studies conducted by Sharma et al. [15] and Bist et al. [2]

In this study, all the tissues obtained from sinonasal lesions were examined under a microscope, and the following observations were made based on the microscopic findings. For better interpretation, all the lesions were classified into the following three classes inflammatory, benign, and malignant lesions based on the microscopic observations made.

Inflammatory lesions accounted for about 53% of overall lesions followed by malignant and neoplastic lesions. In our study, we found a maximum number of cases diagnosed were non-neoplastic i.e., 76% cases whereas other studies conducted by Soujanya et al. [14] with 92% of cases and Sharma et al. [15] with 92% of cases found a higher number of non-neoplastic cases.

Among the non-neoplastic lesions, the nasal polyp was the commonest lesion constituting about 33% (8 out of 10 in females) of total cases seen which is in concordance with various other studies conducted Devi CP et al. [12] Sharma et al. [15] One case of Rhinoscleroma was diagnosed which was in concordance with various other studies conducted by Raj et al [13] with 1 similar case in their research Malignant neoplasms were 23% of the total cases which in concordance with studies conducted by Sharma et al. [15] and Bist et al. [2]

Squamous cell carcinoma was the most common malignancy in the sinonasal tract which was in concordance with various other studies conducted by Raj et al. [13] and Sharma et al. [16].

Adenoid cystic carcinoma was the most common salivary gland tumor encountered in the sinonasal tract with one case reported in this study which is in concordance with the study conducted by Raj et al [13] and Sharma R et al. [16].

Among the benign neoplasms, sinonasal papillomas were the most common tumors which are in concordance with various other studies conducted by Raj et al. [13] and Sharma et al. [16]

Hemangioma is the second most common benign neoplasm in the present study which is in concordance with various other studies conducted by Raj et al. [13] and Sharma et al. [16]

CONCLUSION

The conclusion withdrawn from this study is a broad spectrum of lesions can occur in the sinonasal tract which includes inflammatory lesions, and benign and malignant lesions. Maximum cases diagnosed were the inflammatory and benign neoplastic lesions encountered most commonly in 3rd decade of life. The most common site of occurrence of the lesions was the nasal cavity with nasal polyps being the most common type of sinonasal lesion accounting for about 33% of total cases followed by sinonasal polyps.

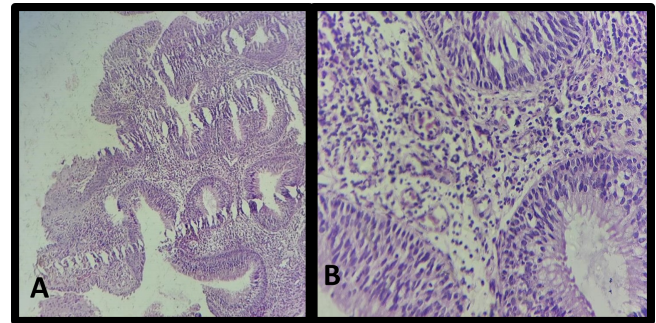


Figure 1: Inflammatory polyp: A. low power: Pseudostratified columnar epithelium. B. High power: Stroma shows infiltration of neutrophils, lymphocytes, and plasma cells.

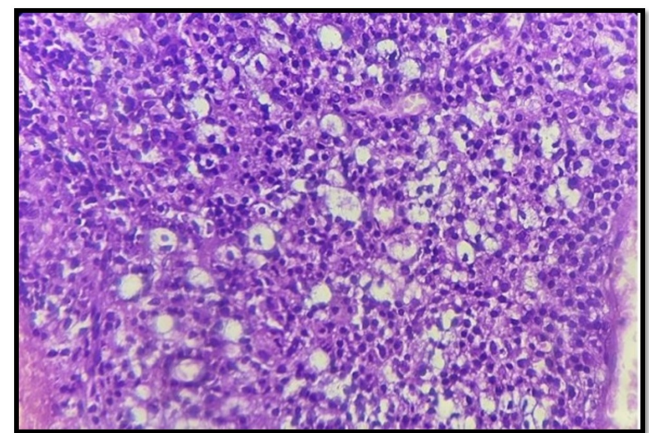


Figure 2: Rhinoscleroma: high power, sheets of inflammatory infiltrate plasma cells with Russel bodies and mikulicz cells.

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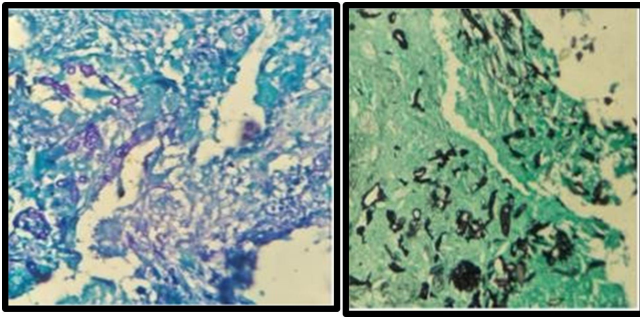


Figure 3: Mucormycosis: PAS-positive and GMS positive

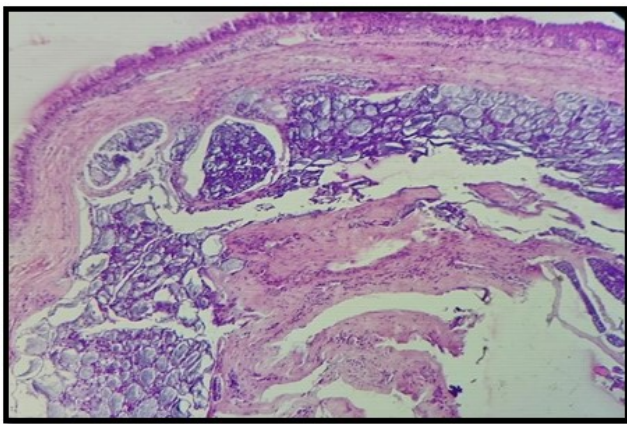


Figure 4: Adenoid cystic carcinoma: lowpower, typical cribriform pattern with cells forming nests.

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