

## HISTOPATHOLOGICAL STUDY OF SINONASAL LESIONS IN PEDIATRIC AGE GROUP PATIENTS IN A TERTIARY CARE HOSPITAL

### Pathology

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### ABSTRACT

**Background :** A variety of nonneoplastic and neoplastic conditions involve the sinonasal tract. Majority of the sinonasal lesions are polypoidal. Clinically, sometimes it becomes difficult to comment upon the nature of these lesions. Histopathological examination then is essential for both otorhinolaryngologist and pathologist. So, the present study aimed at histopathological study of sinonasal lesions in pediatric age group patients.

**Method :** The present study was done in the Department of Pathology, Gauhati Medical College and Hospital for a period of 1 year from march 2019 to February 2020. Histopathological study of total 24 cases of sinonasal lesions was done after tissue processing following standard protocol.

**Results :** Out of 24 cases, 11 were male and 13 were female. Male to female ratio was 0.87:1. Maximum number of lesions were detected in age group of 13-18 years with 13 cases. Out of these 24 cases, 17 (70.83%) were nonneoplastic and 7 (29.17%) were neoplastic in nature. All 17 nonneoplastic lesions were diagnosed as polyp. Capillary haemangioma was the most common neoplastic lesion with 4 (16.67%) cases. No malignant lesion was detected in the present study.

**Conclusion:** Nonneoplastic lesions were the commonest pathology in pediatric age group patients. Malignant lesions were infrequent in this age group.

### KEYWORDS

sinonasal lesion, pediatric age group, histopathology, polyp.

### INTRODUCTION

The nasal passage and paranasal sinuses collectively termed sinonasal area serves as host to a variety of diseased conditions known as sinonasal lesions that are commonly seen in Otorhinolaryngology department. Sinonasal tract is principally involved in filtering, humidifying and adjusting temperature of inspired air.<sup>(1)</sup> Sinonasal area is exposed to various infective agents, chemicals, antigens, mechanical and many other influences. These deleterious exposures along with some other factors lead to formation of nasal polyps, granulomatous lesions and malignant lesions and can present in any age group.<sup>(2)</sup> Pediatric sinonasal tumors have distinct epidemiologic, clinicopathologic, and prognostic differences compared to adult sinonasal tumors. Sinonasal tumors in pediatric patients are rare and can be benign or malignant in nature.<sup>(3)</sup> Polyps including inflammatory and allergic are the most common sinonasal lesions.<sup>(1)</sup> Benign tumours are relatively common but malignant neoplasms though rare, may also be seen.<sup>(4)</sup> Most of these patients present with complaints of nasal obstruction, other symptoms include nasal discharge, epistaxis and disturbance of smell.<sup>(1)</sup>

A wide range of lesions develop in the nose, nasal cavity, and nasopharynx in children. These lesions may arise from the nasal ala or other structures of the nose, including the mucosa covering any surface of the nasal cavity, the cartilaginous or osseous portion of the nasal septum, the nasal turbinates, and the nasal bones. Lesions may also arise from the nasopharynx or adjacent structures and involve the nose by way of direct extension. The causes of nasal masses in children include congenital and developmental disorders such as congenital nasolacrimal duct mucocele, dermoid cyst, cephalocele, and nasal neuroglial heterotopia; inflammatory and infectious processes such as mucocele, polyp, and pyogenic granuloma; benign neoplasms such as infantile hemangioma and juvenile nasopharyngeal angiofibroma; malignant lesions such as rhabdomyosarcoma and nasopharyngeal carcinoma; and masses related to trauma such as septal hematoma.<sup>(5)</sup>

### MATERIALS AND METHOD

#### Study sample:

Specimens and biopsies of sinonasal lesions retrieved from incident cases for routine histopathological examination from the Department of Otorhinolaryngology and Head and Neck surgery, Gauhati Medical College and Hospital, Guwahati, India from March 2019 to February 2020 formed the source of the study.

#### Study design

Cross sectional study.

**Sample size:** 24

**Study period:**

One year.

### INCLUSION CRITERIA:

- 1) Cases of pediatric age group population.
- 2) Both nonneoplastic and neoplastic sinonasal lesions.

### EXCLUSION CRITERIA:

- 1) Congenital and primarily intracranial sinonasal lesions.
- 2) Lesions of the nasopharyngeal region and lesions arising from the external nose.

### Study method

The study comprised of 24 cases of pediatric sinonasal lesions. The detailed clinical history including age, clinical signs and symptoms, duration, and results of relevant investigations done were collected from the patient's case file.

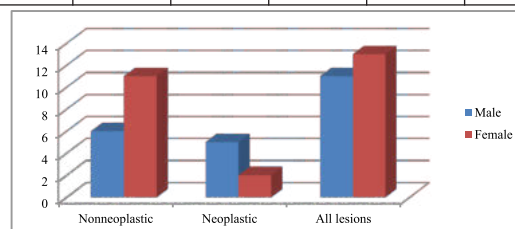
After surgery, the specimens were collected and fixed in 10% formalin solution in the operation theatre. The gross appearances of the specimens were noted and any special features were recorded. The tissue was then sectioned and processed in the conventional manner. After completion of processing, they paraffin blocks were prepared and cut in rotatory microtome to give sections of 3- 5 $\mu$  thickness. The sections were stained by conventional Haematoxylin and Eosin, mounted in DPX and examined under Light microscope and their special features were noted.

### RESULT

Out of 24 specimens received during the 1 year study, nonneoplastic lesions (70.83%) outnumbered the neoplastic lesions (29.17%). Youngest patient affected was 6 years and oldest was 18 years.

**Table 1: Distribution of nonneoplastic and neoplastic lesions**

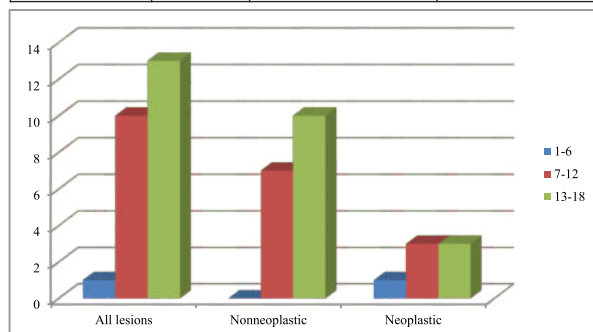
| Nonneoplastic lesions |                | Neoplastic lesions |                |             |                |
|-----------------------|----------------|--------------------|----------------|-------------|----------------|
|                       |                | Benign             |                | Malignant   |                |
| No of cases           | Percentage (%) | No of cases        | Percentage (%) | No of cases | Percentage (%) |
| 17                    | 70.83          | 7                  | 29.17          | 0           | 0              |



**Figure 1: Gender distribution**

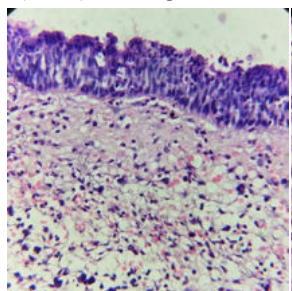
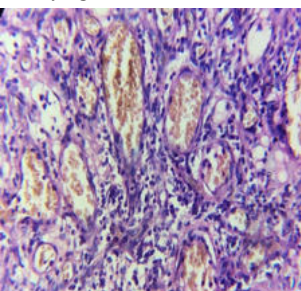
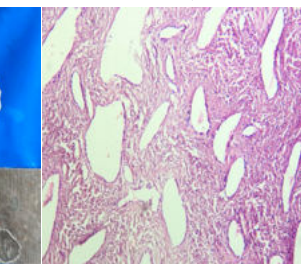
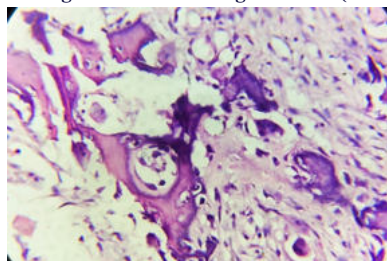
**Table 2: Distribution of lesions in the various age groups**

| Age group(yrs) | All lesions | Nonneoplastic lesion | Neoplastic lesion |
|----------------|-------------|----------------------|-------------------|
| 1-6            | 1           | 0                    | 1                 |
| 7-12           | 10          | 7                    | 3                 |
| 13-18          | 13          | 10                   | 3                 |
| Total          | 24          | 17                   | 7                 |

**Figure 2: Distribution of lesions in various age groups****Table 3: Histopathological typing of benign sinonasal lesions**

| Lesions                       | No of cases | Percentage(%) |
|-------------------------------|-------------|---------------|
| Capillary haemangioma         | 4           | 16.67         |
| Angiofibroma                  | 2           | 8.33          |
| Psmmomatoid ossifying fibroma | 1           | 4.17          |
| Total                         | 7           | 100           |

Polyp was the nonneoplastic lesion comprising of 17 (100%) cases. Out of total 7 cases of neoplastic lesions, 4 (16.67%) cases were capillary haemangioma, 2(8.33%) cases were angiofibroma and 1(4.17%) case was psmmomatoid ossifying fibroma.

**Fig 3: Microscopic appearance of nasal Polyp (40 X, H & E)****Fig 4 : Photomicrograph of capillary haemangioma (40 X, H & E)****Fig 5: Gross appearance of a specimen of angiofibroma****Fig 6: Photomicrograph of angiofibroma (40 X, H & E)****Fig 7: Photomicrograph showing psmmomatoid ossifying fibroma (40 X, H & E)**

Masses in nasal cavity form a heterogeneous group of lesions with a broad spectrum of histopathological features. A variety of these non-neoplastic and neoplastic lesions are quite impossible to differentiate clinically and they are clinically diagnosed as nasal polyp.<sup>(6)</sup> The lack of clinical differentiation between neoplastic and non-neoplastic, benign or malignant at times causes delay in diagnosis and definite treatment in some cases.<sup>(7)</sup>

Nasal obstruction in children is a very frequent symptom, with benign etiology in the vast majority of cases. It may, however, be threatening in neonates and infants, or involve pathologies that must be identified and explored.<sup>(8)</sup>

In the present study, the age range of the patients varied from 6-18 years. Majority of the patients were in the age group of 13-18 years, followed by 7-12 years. A female predominance was observed in the present study with a male to female ratio of 0.87:1. Male predominance was noted in case of neoplastic lesions. Polyp was the most common sinonasal lesion comprising 17(70.83%) cases. Capillary haemangioma was the most common neoplastic lesion comprising 4(16.67%) cases. No malignant lesion was found in the present study.

## CONCLUSION

Sinonasal lesions has wide range of heterogenous diversity, and at many times these lesions creat diagnostic and therapeutic dilemma. Sometimes, based on the history and clinical examination of the patient, it becomes difficult to give a accurate diagnosis. Hence histopathological examination of all sinonasal lesions is justified. Many case reports on sinonasal malignancies in pediatric age group are available, but study of nonneoplastic and benign lesions is equally important as these lesions are commonly encountered in clinical practice.

## CONFLICT OF INTEREST

Authors declare no conflicts of interest.

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## DISCUSSION