Section: Miscellaneous

Original Research Article

CLINICOPATHOLOGICAL AND RADIOLOGICAL STUDY OF SINONASAL MASSES IN ADULTS

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ABSTRACT

Background: Sinonasal masses represent a heterogenous group of lesions arising from the nasal cavity and paranasal sinisus, ranging from inflammatory conditions to benign and malignant neoplasms. Patients commonly present with nonspecific symptoms such as nasal obstruction and discharge, making early diagnosis challenging. A combined clinicopathological and radiological approach is essential for accurate diagnosis and effective management.
Materials and Methods: This was a descriptive study conducted on 30 patients presenting with nasal masses. Detailed history, clinical examination, radiological assessment and histopathological evaluation were performed. Data were analyzed using simple descriptive statistics**.**
Results: Out of 30 subjects, males were predominant. Most patients belonged to 36 – 40 years age group. Nasal obstruction was the most common symptom. Non neoplastic lesions were most frequent, followed by benign and malignant lesions. Radiological findings predominantly showed unilateral masses.
Conclusion: Clinicopathological and radiological correlation is essential for accurate diagnosis of sinonasal masses, with histopathology remaining the gold standard, thereby aiding in appropriate management.
Keywords: Sinonasal masses, Neoplastic masses, Non neoplastic masses.

INTRODUCTION

Sinonasal masses (SNMs) include a wide range of disorders. Frequently seen in Ear, Nose, and Throat (ENT) outpatient sections. These masses consist of non-neoplastic disorders including inflammatory polyps and congenital defects, along with benign and cancerous tumors. Their clinical presentation frequently differs. Dependent on the nature, intensity, and scope of the underlying condition. Signs including nasal blockage, secretion, nosebleeds, and changed sense of smell are often noted, rendering SNMs an important reason for illness in all age categories.

Nasal polyps, among the most common non-cancerous conditions, impact approximately 4% of the adult population and rank as a primary reason for nasal congestion. Although acknowledged since ancient periods, their precise pathophysiology is still not well comprehended, and management choices have experienced minimal advancement over the years. Congenital masses, such as dermoids, gliomas, and encephaloceles, exhibit distinct diagnostic difficulties arising from their central positioning and diverse display.[1]

The patient's functional and structural characteristics are greatly affected by nasal and nasopharyngeal masses. Due to increased air pollution, diseases of the nose and paranasal sinuses are becoming more common worldwide. They impact both sexes and all age groups. In clinical practice, both benign and malignant disorders are frequently seen. Diseases of the nose and paranasal sinuses can occasionally result in extremely dire outcomes due to their close proximity to important structures such as the brain, orbit, and essential neurovascular systems. Centuries ago, Hippocrates wrote extensively on sinonasal tumors such as simple nasal polyps and how to remove them.[2]

Nasal masses are edematous tissues, usually formed in the middle meatus, which then prolapses into the nasal cavity. The cell structure of these polyps is characterized by ciliated columnar epithelium with thickened basement membrane, which will be

infiltrated with plasma cells. Clinical diagnosis of the condition is based on the symptoms and clinical examination of nose, but often uses diagnostic tests like, nasal endoscopy, imaging studies and allergy tests. Histopathological investigations are uncommon if these tissues are bilateral in nature, but it requires histopathological examinations if it is presented unilaterally to rule out different types of malignancies.[3]

Nasal and nasopharyngeal tumors possess a significant impact on both the operational and organizational aspects of the patient. The frequency of nasal and the global prevalence of paranasal sinus diseases are on the rise due to an increase in air contamination. They influence people from every age group and of all genders. Both benign and malignant conditions are frequently observed. In medical practice. Because of its near distance to vital structures like the brain, eye socket, and significant neurovascular networks, conditions influencing the nasal passages and paranasal cavities can frequently lead to grave predictions. Centuries back, literature thoroughly examined sinonasal tumors like basic nasal polyps and their removal through Hippocrates. The sinonasal spaces are a dense anatomical area, although they might act as the origin of a broad variety of tumors with diverse histology.[4]

Lesions within the sinonasal cavity and nasopharynx can be categorized as either neoplastic or non-neoplastic. Neoplastic growths may be classified as benign or malignant in nature. These masses can exhibit a diverse array of clinical manifestations, including nasal obstruction, epistaxis, nasal pain, and even the destruction of surrounding anatomical structures. The inflammatory response elicited by these lesions may lead to alterations in local anatomy and physiology. The symptoms associated with both benign and malignant masses are often similar, underscoring the importance of conducting a comprehensive clinical evaluation for prompt and accurate diagnosis. Establishing the nature and extent of the tumor is crucial before considering surgical intervention. Diagnostic imaging modalities such as CT scans, MRI, PET scans, nasal endoscopy, and biopsies play a pivotal role in identifying these neoplasms. The primary objective of clinicopathological assessment and management of sinonasal and nasopharyngeal masses is to excise all pathological entities and alleviate any nasal cavity obstruction.[5]

MATERIALS AND METHODS

This was a hospital based cross sectional study conducted in the department of ENT and Radiology of LTBRKM Medical college Jagdalpur. The study included adult patients more than 18 years presenting with sinonasal masses over a period of 6 months from August 2025 to January 2026.All patients underwent a detailed clinical evaluation, including history taking and through ENT examination. Diagnostic nasal endoscopy was performed in all cases to assess the site, size and extent of the lesion. Radiological assessment was carried out using computed tomography (CT) scan of the paranasal sinuses, magnetic resonance imaging (MRI) was performed in selected cases where indicated. Tissue samples were obtained either by biopsy or surgical excision and were subjected to histopathological examination for definitive diagnosis. The lesions were classified into inflammatory, benign and malignant categories based on histopathological findings. Data were collected and analyzed to study the clinicopathological and radiological correlation of sinonasal masses. Appropriate statistical methods were applied, and results were presented in the form of tables and percentages.

Inclusion Criteria

- Adult patient aged less 18 years.
- Patients presenting with clinically suspected sinonasal masses.
- Patients who gave informed consent form.

Exclusion Criteria

- Patients with less than 18 years.
- Patients with non neoplastic conditions without mass lesion.

RESULTS

Table 1: age and sex distribution of study subjects

AGE	MALES	FEMALES	TOTAL
18 -25	05	02	07
26 - 30	03	03	06
31 - 35	06	02	08
36 - 40	08	01	09
TOTAL	22	08	30

Table 1 show the age and sex distribution of study subjects. A total of 30 subjects were included in the study, of which 22 (73.33%) were males and 8 (26.67%) were females.

Most participants were in the 36 – 40 years age group, followed by 31 – 35 years, 18 -25 years, and 26 – 30 years.

Table 2: Signs and symptoms of subjects

SIGNS AND SYMPTOMS	NO OF SUBJECTS	PERCENTAGE
NASAL OBSTRUCTION	11	36.67%
NASAL DISCHARGE	09	30%
BLEEDING PER NOSE	09	30%
DEVIATED NASAL SEPTUM	01	3.33%
TOTAL	30	100%

Table 2 shows the distribution of signs and symptoms among the study subjects. The most common symptom observed was nasal obstruction, present in 11 (36.67%) subjects. Nasal discharge and bleeding were reported in 9(30%) subjects each. Deviated nasal septum was the least common finding, observed in only 1(3.33%) subject.

Table 3: Histopathological findings of study subjects

HISTOPATHOLOGICAL FINDINGS	NO OF SUBJECTS	PERCENTAGE
NON NEOPLASTIC LESIONS	15	50%
NEOPLASTIC BENIGN	10	33.33%
NEOPLASTIC MALIGNANT	05	16.67%

Table 3 shows the histopathological findings of the study subjects. Non neoplastic lesions were the most common, observed in 15 (50%) cases. Neoplastic benign lesions were seen in 10(33.33%) cases, while neoplastic malignant lesions were found in 5 (16.67%) cases.

Table 4: Radiological findings of study subjects

RADIOLOGICAL FINDINGS	NO OF SUBJECTS	PERCENTAGE
UNILATERAL MASSES	19	63.33%
BILATERAL MASSES	06	20%
NASOPHARYNGEAL MASSES	04	13.33%
UNILATERAL PARANASAL MASSES	01	3.33%
TOTAL	30	100%

Table 4 shows radiological findings of study subjects. Out of 30 cases, the majority were unilateral masses 63.33%, followed by bilateral masses 20%. Nasopharyngeal masses constituted 13.33% while unilateral masses accounted for 3.33% of cases.

DISCUSSION

A broad variety of lesions is observed. The occurrence is frequently said to range from 1% to 4% of the population. During the current study timeframe, the hospital the occurrence of sinonasal masses upon admission was discovered to be 1.4 per 1000 admissions in our institution. Masses in the sinonasal region are categorized into two primary classifications; non-neoplastic abnormalities as well as neoplastic lesions. Neoplastic tumors can be either non-cancerous or cancerous. Tondon et al. conducted a study involving 134 cases that exhibited polypoid lesions in the nasal cavity examined that the the occurrence of inflammatory lesions was 74.61%, whereas those the percentage of neoplastic lesions was 25.41%. Among the tumor-related lesions, 73.5% were non-cancerous while the cancerous were 26.5%.[6]

A clinicopathological study of hemangioma conducted in Japan revealed that the capillary type originated atypically from the nasal septum, and the cavernous type emerged from the lateral nasal wall. Inverted papillomas, although less frequent, represent the predominant morphological variant among sinonasal papillomas. Other morphological variants include exophytic (everted) squamous cell papillomas and cylindric cell papillomas. Inverted papilloma accounted for 36.8% of all benign neoplastic lesions, marginally surpassing the findings reported by Humayun et al. and Bakari et al. Despite being benign, inverted papillomas may pose significant clinical challenges if not adequately addressed and observed, with the possibility of malignant transformation occurring in up to 11% of cases. Research by Califano et al. in the United States highlighted a correlation between inverted papilloma and squamous cell carcinoma within the sinonasal cavity, identifying this association in 6 (21.4%) of the 28 cases examined. The occurrence of mucocele and angiofibroma was noted in 2 and 1 patients, respectively, while Pradhananga et al. documented a total of 9 angiofibroma cases over a two-year period in Nepal. Notably, juvenile angiofibroma represents 0.5% of all tumors located in the head and neck region in Europe.[7]

Lesions within the nasal cavity comprise a diverse array of masses characterized by a wide variety of histopathological attributes. Clinically distinguishing between nonneoplastic and neoplastic lesions presents significant challenges due to the extensive variability in clinical manifestations. In our investigation, nasal obstruction (N: 12; 60%), primarily unilateral, emerged as the most prevalent symptom noted. This observation aligns with the findings documented by Lathi et al. and Singh et al. In a separate research conducted by Nair et al., nasal

obstruction was identified as the predominant symptom across both inflammatory and neoplastic categories. Additionally, facial pain and headaches were experienced by 15% of participants, linked to obstruction of the anterior ethmoid sinus, while 10% reported similar issues associated with blockage of the anterior sinuses. Furthermore, nasal discharge (N: 3; 15%) and orbital symptoms (N: 3; 15%) were also noted.[8]

In a research conducted by Dhilon V. et al. (2016) involving 60 patients, all subjects underwent computed tomography (CT) scanning. The radiological assessments revealed that among these patients, 43 (71.66%) were categorized as non-neoplastic, 10 (16.66%) as benign, and 7 (11.66%) as malignant tumors. Similar observations were reported by Bisht S.S. et al. Furthermore, in a study led by Chopra H. (2008), it was noted that the radiological findings corresponded with clinical suspicions in 70% of the instances. Most sinonasal masses identified through CT scans were reported to affect multiple regions within the sinonasal tract. This phenomenon may be attributed to various factors, including the diverse origins of sinonasal masses, delays in seeking medical advice in certain cases, and the presence of rapidly proliferating lesions, such as some malignant tumors. Studies conducted by A. Lathi et al. and Chaterjee et al. indicated that the middle meatus was the most frequently involved area.[9]

In a research conducted by Rokade V et al., histological analysis indicated that squamous cell carcinoma was present in 75% (n=3) of the malignant sinonasal masses examined, while only one instance of transitional cell carcinoma was noted, which is considered atypical. In a separate study by Pradhananga et al., it was found that 6.3% of sinonasal masses were malignant. Moreover, Fasunla et al. reported that malignant sinonasal tumors accounted for 59.4% of the 138 sinonasal neoplasms assessed. Similarly, Svane-Knudsen et al. highlighted that squamous cell carcinoma was the most frequently observed malignancy in the sinonasal tract within their Danish cohort.[10]

CONCLUSION

Sinonasal masses in adults comprise a wide spectrum of lesions ranging from inflammatory conditions to benign and malignant neoplasms. Clinical presentation alone is often non specific and insufficient for definitive diagnosis. Radiological evaluation plays a crucial role in assessing the extent and anatomical involvement of the lesions. However, histopathological examination remains the gold standard for accurate diagnosis and classification. A combined clinicopathological and radiological approach is essential for early diagnosis, appropriate management, and improved patient outcomes.

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