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Demographic and Clinical Characteristics of Sino-Nasal Tumour Patients: A Cross-Sectional Study of 60 Cases

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Abstract **Original Research Article**

Introduction: Sino-nasal tumors are a rare yet clinically significant group of neoplasms that affect the nasal cavity and paranasal sinuses. Although these tumors represent a small percentage of head and neck cancers, they often present with complex symptoms and can be challenging to diagnose early. This study aimed to evaluate the demographic and clinical characteristics of sino-nasal tumor patients. ***Methods:*** This cross-sectional observational study was conducted at the ENT and Head-Neck Surgery department, Rajshahi Medical College Hospital, Rajshahi, from June 2014 to November 2014. A total of 60 patients presenting with sinonasal tumors were selected as study subjects by purposive sampling technique. Data analysis was done by Statistical Package for Social Sciences (SPSS) version 20.0. A descriptive method was adopted. ***Result:*** In this study of 60 sino-nasal tumor patients, the age groups 21-30 and 51-60 years had the highest representation (20% each), with the majority being male (76.67%) and primarily woodworkers (40%). Socioeconomically, 75% of patients were classified as "poor." Smoking was the most prevalent habit, affecting 50% of patients. Clinically, nasal obstruction was the most common symptom (93.33%), followed by loss of smell (70%) and epistaxis and headache (50% each). The majority of tumors were benign (93.33%), with only 6.67% being malignant. Among malignancy cases, nasal obstruction was a universal symptom, with facial pain, headache, and hyposmia observed in 75% of these patients. ***Conclusion:*** This study concludes that sino-nasal tumors predominantly affect middle-aged men, often with significant occupational exposure to carcinogenic materials like wood dust and industrial chemicals. Socioeconomic and lifestyle factors further compound the risk, highlighting the importance of comprehensive preventive measures and early detection strategies, particularly in high-risk occupations. Awareness of prevalent symptoms such as nasal obstruction, loss of smell, and epistaxis could facilitate timely diagnosis, improving patient outcomes.

Keywords: Demographic characteristics, Clinical characteristics, Sino-nasal tumors, Woodworker.

INTRODUCTION

Sino-nasal tumors, although rare, represent an important subset of head and neck cancers with distinct clinical and demographic characteristics. The tumors originate from the epithelial or mesenchymal tissue of the nasal cavity and paranasal sinuses, encompassing a wide spectrum from benign entities to aggressive malignancies, such as squamous cell carcinoma (SCC), adenocarcinoma, and sinonasal undifferentiated carcinoma (SNUC) [1,2]. Sino-nasal malignancies, which constitute less than 3% of head and neck cancers and less than 1% of all cancers, typically present with non-specific symptoms such as nasal obstruction, epistaxis, facial pain, or visual disturbances. These overlapping symptoms can delay diagnosis and lead to presentations in advanced stages [3]. The incidence and distribution of sino-nasal tumors vary based on factors such as age, gender, and environmental exposures. Studies have shown that malignant sino-nasal tumors are more commonly diagnosed in middle-aged and elderly patients, with a peak incidence in the fifth to seventh decades of life [4]. Age appears to influence not only the prevalence but also the histological subtypes and prognosis of sino-nasal malignancies. Older patients, for instance, often present with more aggressive malignancies such as SCC and SNUC, which tend to have poorer outcomes due to advanced disease stages at diagnosis and age-related health challenges that can complicate treatment options [5]. The incidence of sino-nasal tumors is influenced by several demographic factors, including age, gender, and environmental exposures. Studies consistently indicate that malignant sino-nasal tumors predominantly affect middle-aged and elderly populations, with a peak incidence typically observed between the fifth and seventh decades of life

[6]. The clinical presentation of sino-nasal tumors often lacks specificity, which can delay diagnosis. Symptoms like nasal obstruction, recurrent epistaxis, and facial swelling overlap with benign conditions, such as chronic rhinosinusitis, leading to frequent misdiagnoses. Tran *et al.*, examined clinical presentations and noted that advanced symptoms, including proptosis and visual disturbances, are generally observed in later stages of malignancy due to the proximity of the sino-nasal region to the orbit and cranial nerves, which further complicates diagnosis and treatment. In addition to age, gender, and occupational exposure, lifestyle factors such as smoking and alcohol consumption play a significant role in sino-nasal cancer risk. Kondo *et al.*, found a strong association between tobacco use and the incidence of SCC in the sino-nasal region, highlighting the carcinogenic impact of tobacco smoke on the respiratory mucosa [7]. Understanding the demographic patterns and clinical presentations associated with sino-nasal tumors is essential for improving early detection and optimizing treatment outcomes. This study aimed to evaluate the demographic and clinical characteristics of sino-nasal tumor patients.

METHODS

This cross-sectional observational study was conducted at the ENT and Head-Neck Surgery department, Rajshahi Medical College Hospital, Rajshahi, from June 2014 to November 2014. All patients with Sino-nasal Tumours attending in indoor department of ENT & Head Neck Surgery of Rajshahi Medical College Hospital, Rajshahi were considered as the study population. A total of 60 patients were selected as study subjects by purposive sampling technique. Detailed history taking and general examinations and Ear, Nose & Throat examinations were done & recorded in a data collection sheet by the investigator. The diagnosis was based on history taking, thorough examination (both general and systemic), and histopathological examination. The nature of the study was fully explained to each guardian and written informed consent was obtained before their enrollment in the study. Data analysis was done by Statistical Package for Social Sciences (SPSS) version 20.0. A descriptive method was adopted. After analysis data were presented in tables. Ethical clearance was obtained from the ethics committee of Rajshahi Medical College Hospital.

Inclusion criteria:

- Sino-nasal tumors of any age and any sex group.
- Patients who were willing to participate in the study.

Exclusion criteria:

- Sino-nasal mass with histological proof of benign nonneoplastic condition.
- Patients who did not give consent to participate in the study.

RESULTS

Table 1: Age distribution of the patients (N=60)

Age (years)	n	%
0-10	4	6.67
11-20	8	13.33
21-30	12	20.00
31-40	8	13.33
41-50	10	16.67
51-60	12	20.00
61-70	6	10.00

The age distribution table shows that out of 60 patients, the highest percentage of cases falls within the age groups 21-30 years and 51-60 years, each representing 20% of the total. This is followed by the 41-50 years group, comprising 16.67% of patients. The 11-20 and 31-40 years age groups each account for 13.33%, while the 61-70 years group makes up 10%, and the 0-10 years group is the smallest, with 6.67%. [Table 1]

Table 2: Sex distribution of patients (N=60)

Sex	n	%
Male	46	76.67
Female	14	23.33

The sex distribution table reveals that among the 60 patients studied, a significant majority are male, with 46 cases representing 76.67% of the total. Female patients make up the remaining 23.33%, with 14 cases. In this study male to female ratio was 3.3:1. [Table 2]

Table 3: Distribution of patients according to occupation (N=60)

Occupation	n	%
Woodworker	24	40.0
Boot or shoe worker	10	16.67
Chemical worker	8	13.32
Businessman	4	6.67
Housewife	6	10.0
Teaching	4	6.67
Shop keeper	4	6.67

The most common occupational group among the 60 patients is woodworkers, accounting for 40% of the cases with 24 individuals. This is followed by boot or shoe workers, comprising 16.67% (10 patients). Chemical workers represent 13.32% (8 patients), while businessmen and housewives each make up 6.67% and 10% of the cohort, respectively, with 4 and 6 patients. Additionally, teachers and shopkeepers each account for 6.67%, with 4 patients each. [Table 3]

Table 4: Distribution of patients according to socio-economic condition (N=60)

Socioeconomic	n	%
Poor	45	75.0
Non-poor	15	25.0

A significant majority, 75% (45 patients), fall into the "poor" category. In contrast, only 25% (15 patients) are classified as "non-poor." [Table 4]

Financial Categorization: (Poverty Alleviation and Empowerment Through Microfinance: two decades of experience in Bangladesh) [11].

Poor class: Working capital <3,338.00 Tk per month per earner

Non-poor class: Working capital- > 3,338.00 Tk per month per earner

Table 5: Distribution of patients according to the personal habits of study patients (N=60)

Personal habit	n	%
Smoking	30	50.0
Chewing habit	16	26.67
Smoking, chewing tobacco & alcohol	10	16.67
Smoking & alcohol	8	13.34
Smoking & chewing tobacco	4	6.67

Smoking is the most prevalent habit among the 60 patients, reported by 50% (30 individuals). Chewing tobacco follows, with 26.67% (16 patients) engaging in this habit. A combination of smoking, chewing tobacco, and alcohol consumption is present in 16.67% (10 patients), while 13.34% (8 patients) report smoking and alcohol use together. Lastly, 6.67% (4 patients) indicate a combination of smoking and chewing tobacco. [Table 5]

Table 6: Presenting symptoms of sino-nasal tumors (N=60)

Symptoms	n	%
Nasal obstruction	56	93.33
Nasal discharge	28	46.66
Epistaxis	30	50.0
Loss of smell	42	70.0
Sneezing	18	30%
Mouth breathing	18	30%
Headache	30	50%
Epiphora	10	16.67%
Diplopia	4	6.67%

The most common symptom is nasal obstruction, experienced by 93.33% (56 patients), indicating a significant impact on airflow. Loss of smell is reported by 70% (42 patients), while epistaxis (nosebleeds) and headache are both present in 50% (30 patients) of the cases. Nasal discharge is noted in 46.66% (28 patients) while sneezing and mouth breathing are each reported by 30% (18 patients). Additionally, epiphora (excessive tearing) affects 16.67% (10 patients), and diplopia (double vision) is the least common symptom, observed in 6.67% (4 patients). [Table 6]

Table 7: Distribution of malignancy in sinonasal tumors (N= 60)

Distribution	n	%
Malignant	04	6.67
Benign	56	93.33

The distribution of malignancy in sinonasal tumors shows that out of 60 cases, the vast majority are benign, with 56 cases accounting for 93.33% of the total. Malignant cases are relatively rare, comprising only 4 cases or 6.67%. [Table 7]

Table 8: Findings in sino-nasal malignancy (n= 04)

Findings	n	%
Nasal obstruction	04	75.0
Nasal discharge	03	25.0
Facial swelling	01	25.0
Facial pain	01	75.0
Headache	03	75.0
Epistaxis	03	25.0
Proptosis	01	25.0
Impaired vision	01	25.0
Bulged palate	01	25.0
Loosed teeth	01	25.0
Hyposmia	01	75.0

Nasal obstruction is reported by all patients, representing 100% of the cases, indicating its prevalence as a significant symptom in malignancy. Other findings include facial pain, headache, and hyposmia (reduced sense of smell), each reported by 75% (3 patients). Nasal discharge and epistaxis (nosebleeds) are observed in 25% (1 patient each), while facial swelling, proptosis (eye bulging), impaired vision, a bulged palate, and loosened teeth are also present in 25% of cases. [Table 8]

DISCUSSION

The age distribution reveals that the highest proportion of cases falls within the adult age brackets of 21–30 and 51–60 years, each accounting for 20% of the total sample. The relatively low number of younger patients (0–10 years, 6.67%) is consistent with the established rarity of sino-nasal tumors in early life stages. These tumors tend to become more prevalent with age, likely due to accumulated exposure to environmental and occupational risk factors [8]. Studies show that sinonasal malignancies, in particular, are more commonly diagnosed in the fifth and sixth decades of life, which could be attributed to prolonged exposure to carcinogenic materials over time [9,10]. The sex distribution in this study demonstrates a marked male

predominance, with males constituting 76.67% of the cohort and a male-to-female ratio of 3.3:1. In many regions, lifestyle factors such as smoking, which is more prevalent among men, may also contribute to this disparity in sino-nasal tumor incidence [11]. Occupational exposure appears to play a significant role, with woodworking identified as the most common occupation (40%) among patients in this study. The correlation between wood dust exposure and sino-nasal tumors, particularly adenocarcinomas, has been documented in various studies [12]. Lifestyle factors also appear to be relevant, as smoking is prevalent among patients (50%). Tobacco smoke is a well-established risk factor for a variety of malignancies, including sino-nasal tumors. Moreover, 26.67% of patients in this study reported a chewing habit, and some engaged in multiple substance use, including alcohol and tobacco products. Such combinations may potentiate carcinogenic effects on the mucosal linings of the nasal passages and sinuses [13]. In terms of clinical presentation, nasal obstruction emerged as the most frequent symptom, reported by 93.33% of patients. This aligns with the literature indicating that obstructive symptoms are often among the first indicators of sino-nasal tumors due to tumor mass effect on the nasal cavity [14,15]. Loss of smell was the second most common symptom, affecting 70% of patients, which is a notable finding given the impact of sino-nasal masses on olfactory structures. The presence of epistaxis (50%) and headache (50%) further reflects the invasive nature of some sino-nasal tumors, particularly those that may erode into surrounding structures or compromise local vasculature.

Comparatively, malignancies within the sino-nasal region are relatively rare, comprising only 6.67% of cases in this cohort. Benign tumors constituted the majority (93.33%), corroborating previous epidemiological studies that report higher incidences of benign sino-nasal conditions than malignant ones [16].

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The demographic and clinical data from this study suggest that sino-nasal tumors predominantly affect middle-aged men, often with significant occupational exposure to carcinogenic materials like wood dust and industrial chemicals. Socioeconomic and lifestyle factors further compound the risk, highlighting the importance of comprehensive preventive measures and early detection strategies, particularly in high-risk occupations. Awareness of prevalent symptoms such as nasal obstruction, loss of smell, and epistaxis could facilitate timely diagnosis, improving patient outcomes.

RECOMMENDATION

To improve outcomes in sino-nasal tumor cases, preventive and protective measures are crucial, particularly for high-risk occupations like woodworking and leatherwork. Implementing workplace safety protocols, such as mandatory PPE and adequate ventilation, can help mitigate exposure to harmful carcinogens. Early screening programs focusing on high-risk populations, combined with educational initiatives on lifestyle changes, could facilitate early detection and reduce disease burden.

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