

Original Article

Clinico-Pathological Spectrum of Sino-Nasal Malignancy: Our Experience

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ABSTRACT

BACKGROUND : Sino-nasal malignancies present some of the most challenging scenarios in head and neck oncology practice. Rarity of these tumours and myriad of individual histology with individual natural histories renders large clinical trials and subsequent statistical analysis difficult. We aim to evaluate the inter-relationship of clinical, radiological and histopathological characteristics in cases sino-nasal malignancies.

METHODS : This prospective observational study was conducted in Dept of ENT, Nil Ratan Sircar Medical College and Hospital, Kolkata, over 18 months period, where patients with primary sinonasal malignancy were selected for accrual following a pre-defined inclusion and exclusion criteria with prior clearance from Institutional Ethics Committee. After clinical, endoscopic and radiological examination, histopathology of tissue sample or resected specimen was mandatorily performed in all the cases.

RESULTS : Total number of patients was 32. Most of the patients with primary sinonasal malignancy were male (26). Patients in 7th decade (61-70 years) comprised of almost one-third of all the cases studied. Nasal discharge, nasal obstruction and nasal bleeding were present in all patients. Maxillary sinus was the commonest primary site of involvement found on CT scans. Contrast-enhanced CT scan showed evidence of bone erosion and contrast-enhancement in all cases. Squamous cell carcinoma was the commonest histopathological type found. Adenocarcinoma was the second most common type.

CONCLUSION: Integrated clinical, radiological, pathological data along with histopathology will optimize the treatment planning and thus, favourably influence the final outcome of sino-nasal malignancy.

KEY WORDS : Sino-nasal malignancy; Histopathology; Immuno-histochemistry

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Introduction:

The nasal cavity and the para-nasal sinuses form a single functional unit with common pathological processes affecting both of them. These tumours are considered together as the lesions are frequently advanced when first encountered and is often difficult to determine the exact site of origin.¹ They represent a diverse group, some of which are unique to this area. These tumours only account for less than 1 percent of all malignancies. At the outset they produce non-specific symptoms which causes delay in diagnosis.² They occur more often in men and usually appear after the age of 40 years except for minor salivary gland tumor and rhabdomyosarcoma, which may appear before 20 years of age.¹ A number of occupations have been associated with the development of tumours in this area most notably woodworking: the furniture industry, saw-mill work, and carpentry. Other occupations with dust-filled work environments such as shoe-making, baking and flour milling industry also have been implicated.¹

Imaging has a key role in the evaluation of sino-nasal malignancies. The radiological appearances may be non-specific but when combined with clinical presentations these can help in narrowing the differential diagnosis of the lesions.² Histopathology is the corner-stone for diagnosis, as the sino-nasal tract represents the area of greatest histological diversity in the body with almost every tissue type represented.³ Squamous cell carcinoma is the most common histological type followed by carcinomas of minor salivary glands (adenoid cystic carcinoma, adenocarcinoma, muco-epidermoid carcinoma), melanoma, olfactory neuroblastoma.³

Prognosis is generally poor, and has not changed substantially over the last three decades, according to the published data. Multidisciplinary surgical, medical

and radiation oncologic approaches, which include ablation and reconstruction, have enhanced the survival outcome over the past few decades.⁴ There is scarcity of published data or case-series on sino-nasal malignancy in world literature from India.⁵ Present study aims to evaluate the inter-relationship of clinical, radiological and histopathological characteristics in cases sino-nasal malignancies.

Materials & Methods:

This prospective observational study was conducted at Nil Ratan Sircar Medical College and Hospital (NRSMCH), Kolkata, a tertiary care teaching institute and a referral centre in the department of Otolaryngology for a period of 18 months. The study was approved by the Institutional Ethics Committee. Informed consent was obtained from the patient. All the patients attending the outpatient department and emergency wing of the department of Otorhino-laryngology, NRSMCH, during the study period, has biopsy-proven sino-nasal malignancy. Inclusion criteria were 1) primary lesions of nasal cavity and para-nasal sinuses only, 2) histopathological proof of malignancy and exclusion criteria were 1) primary lesion of nasal vestibule, external nose 2) Metastatic lesions of nasal cavity and para-nasal sinuses 3) Previous definitive treatment for the lesions 4) Recognized primary lesions of surrounding structures extending secondarily to nasal cavity and para-nasal sinuses. Comprehensive history taking & physical examination was done. Then CT PNS (Para-nasal sinuses), nasal endoscopy with punch biopsy from the mass were performed. In patients where surgical management was done, resected tissue was sent for histopathological confirmation.

Results:

Total 32 patients were studied. Out of 32 patients studied, 26 patients were male and

only 6 patients were female. Male to female ratio of our study was 4.33:1. Age ranged from 28 to 78 years. Median age was 60.5 years. The mean age was 58.56 years (S.D. ± 12.9). Among all the age groups, 61-70 years was the single largest age group with 10 patients. For male patients mean age was 61.19 years whereas for female patients mean age was 47.17 years. (Fig.1)

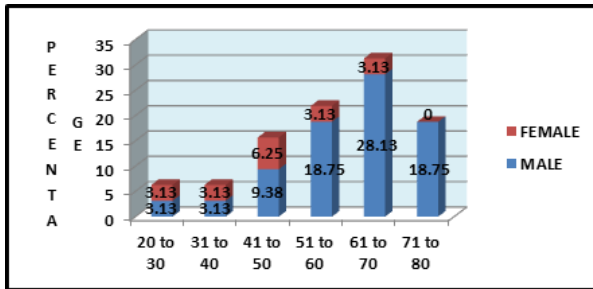


Fig. 1 Distribution of patients according to age and sex

Majority (20 out of 32) of the patients presented between 6 months and 1 year of appearance of their presenting complaints. Overall, the range was 4-18 months, with mean of 9.4 months and median duration of complaints was 9 months. Farmers were the most frequent among the patients studied. All the females of our study were house wife. Industrial workers and carpenters constituted 12.5% and 9.38% of our study sample respectively.

Nasal discharge, nasal obstruction and epistaxis were present in all patients. Epiphora and double vision were individually the most frequent orbital complaint. Proliferative mass was the most frequent finding on endoscopy. But in few patients no mass was found but a bulge in middle turbinate was appreciated on endoscopy. (Fig. 2)

Maxillary sinus was the commonest primary site of involvement found on radiology (CT scan). Few patients had involvement of nasal cavity or ethmoid sinuses (naso-ethmoidal complex). But in



Fig. 2 Palatal bulge and loosening of teeth

5 cases disease was so advanced that the primary site of involvement could not be specified. Contrast-enhanced CT scan showed evidence of bone erosion and contrast-enhancement was found in all cases. Middle meatus was the most frequently involved 21 out of 32 patients. Involvement of medial wall of orbit was the most common form of radiological involvement of orbit found in 12 out of 32 patients studied. (Fig 3)

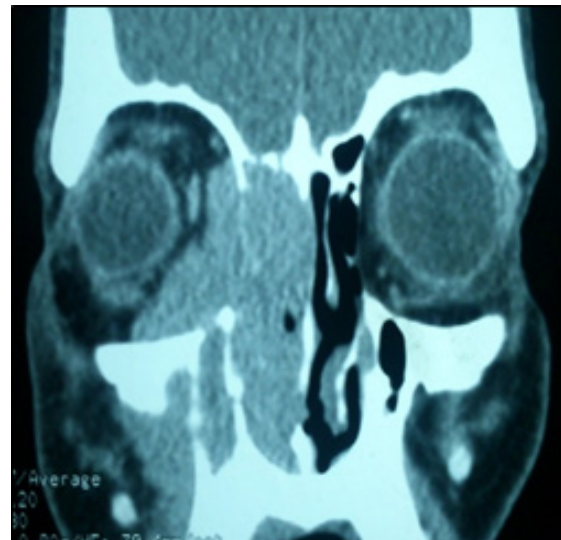


Fig. 3 CECT scan (corinal cut) showing involvement of orbital contents and bone erosion

Histopathology showed that epithelial malignancy formed vast majority of the 32 cases studied. (Fig. 4) Squamous cell carcinoma was the commonest histopathological type found in 18 patients. Adenocarcinoma in 5 patients was the second most common type. 1 case of neuro-endocrine carcinoma and 2 cases of olfactory neuroblastoma were confirmed by immunohistochemistry. (Fig.5, 6)

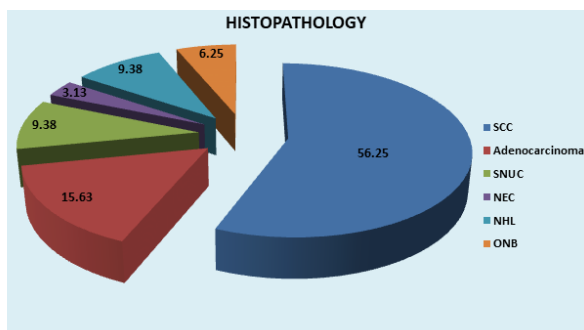


Fig. 4 Distribution of patients according to histopathology (Squamous cell carcinoma, Adenocarcinoma, Sinonasal undifferentiated carcinoma, Neuro-endocrine carcinoma, Non-Hodgkin's lymphoma, Olfactory neuroblastoma)

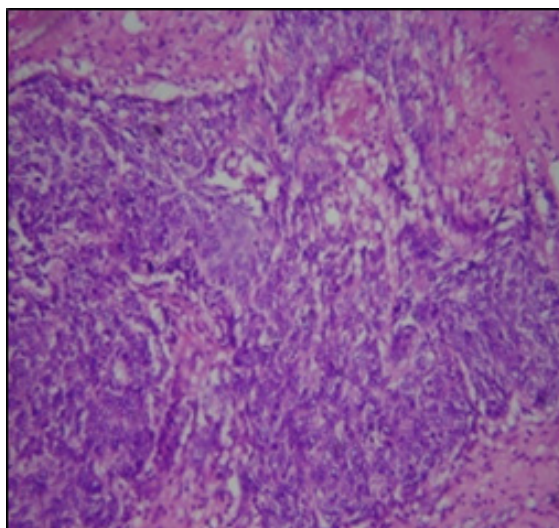


Fig. 5 Histomicrograph of sinonasal squamous cell carcinoma (non-keratinising type) [H&E stained 100x]

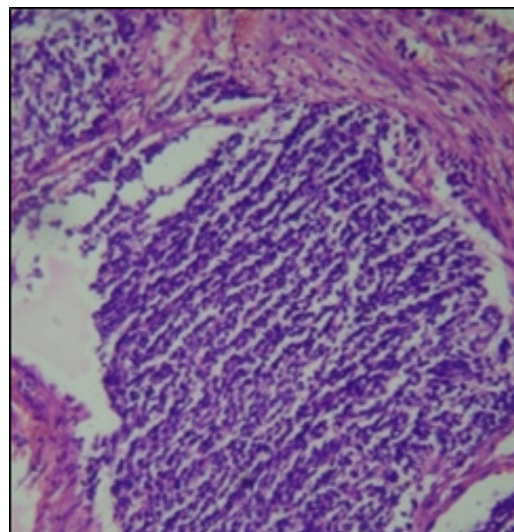


Fig. 6 Histomicrograph of olfactory neuroblastoma [H&E stained 100x]

Discussion:

Sino-nasal malignancy (SNM) is uncommon, with an estimated incidence in the United States of 0.556 cases per 100,000 populations.⁶ They represent approximately 0.2% to 0.8% of all cancers and 3% to 5% of cancers in the upper aero-digestive tract.⁷ Sino-nasal malignancies (SNM) comprised of 11.61% of all cases of sino-nasal mass and 40.63% of all cases of sino-nasal neoplasm in an Indian study.⁸

In our study, patients with sino-nasal malignancy comprised of 81.25% male and 18.75% female with male to female ratio of 4.33:1. Similar observation was reported by Lathi A, et al,⁸ with 76.9% male and male to female ratio of 3.33:1. But, the international scenario differs from the Indian scenario. Zylka S, et al,⁹ reported 55.2% male and 44.8% female with male to female ratio of 1.2:1. Fasunla AJ, et al,¹⁰ observed more female (54.1%) than male (45.9%) in their series with male to female ratio of 1:1.2. The high percentage of male patients compared to female patients may be explained by the less health care seeking behaviour and other socio-cultural factors of this part of our country.

In our study, age range was 28-78 years. This was similar to that observed by Panchal L, et al,⁵ where range was 21-72 years.

We found that the median age at presentation was 60.5 years. It corroborated well with the result of the study by Myers LL, et al,¹¹ where median age was 60 years.

Among all the age groups, we studied, 61-70 years was the most common age group with 31.25% patients. Lathi A, et al,⁸ had similar observation, with 53.8% patients in the 61-70 years age group. Although, Zylka S, et al,⁹ reported that most common age group affected was 71-80 years (33.3%) but overall 59.8% of their patients were more than 60 years age at presentation.

In our study, 62.50% patients presented between 6-12 months with the mean of 9.4 months. But, Fasunla AJ, et al,¹⁰ reported that 47.5% patients presented more than 1 year after the onset of symptoms, with mean duration of 9 months.

Various large, population-based, case-control studies have reported the pattern of association of different histological types of sino-nasal malignancy with the occupational exposure to several agents.¹² But, it is beyond the scope of this type of single institution based observational studies to highlight any of such association.

Sino-nasal malignant lesions often present in locally advanced stage, thus ascertaining the primary site of origin or epicentre of the tumour is often troublesome. One study reported that all cases were too advanced to specify the site.¹⁰ Another study observed that commonest site at presentation was antro-naso-ethmoidal (62%),¹³ but, none was found to be limited to maxillary sinus only. In our study, maxillary sinus was the commonest primary site of involvement with 59.38% of all patients. But in 15.63% cases primary site was not specifiable. Similarly,

one study reported maxillary sinus (33.3%) as the commonest site of involvement.⁹

In our study, nasal discharge, nasal obstruction and epistaxis were present in all the patients (100%). Epiphora and double vision were individually the most frequent (43.75%) orbital complaint, which is in agreement with other observation.¹³

In our study, epithelial malignancy was the commonest (84.38%). Others also observed that epithelial types constituted majority (65%) of malignant tumours of sino-nasal area.¹⁴

We found that, overall commonest histological type as well as commonest epithelial malignancy was squamous cell carcinoma. Another study also found squamous cell carcinoma in 56.5% of all epithelial SNM and in 29.9% of all types of SNM.⁹

In our study, commonest non-squamous epithelial SNM was adenocarcinoma (15.63% all SNM). Similarly, one study also found adenocarcinoma to be the second most common epithelial malignancy.⁸ Whereas, other study found SNUC (Sinonasal undifferentiated carcinoma) was the second most frequent epithelial SNM (19.3% all epithelial SNM).¹⁵ But, a third study reported adenoid cystic carcinoma (12%) to be the second most common SNM whereas adenocarcinoma (11%) was close third.¹¹

In our study, most common non-epithelial type was NHL (9.38% of all SNM). One study also found lymphoma as most common non-epithelial SNM, with 11.5% of all types of SNM.⁹

In our study, 74.07% patients with epithelial malignancy were of stage III and 25.93% were of stage IVA. Similarly, one study found that the commonest (78.67%) stage at presentation was stage III.¹³ Whereas according to another study, stage IV (47.93%) was the commonest stage of

presentation.¹⁶

Late presentation also possibly occurs as most patients would have tried self-medication or resorted to spiritual assistance before presenting to the hospital. This might be directly or indirectly related to poverty and illiteracy, which still prevail.¹³

The diagnostic as well as therapeutic approach to sino-nasal malignancies require multidisciplinary co-operation. A high index of suspicion, early recognition and timely referral in equipped centre improves outcome.⁹

Thus, our study has corroborated the various facts and figures of several national and international studies on different clinico-pathological parameters. However, there has been a difference in some observations which is very much expected. The smaller sample size and shorter duration of study were the major limitation.

Conclusion:

The study attempts to form a baseline data to undertake future studies. The study also highlights the need to integrate clinical, radiological and pathological data for proper evaluation of sino-nasal malignancy. But, histopathology is still the corner-stone. This will optimize treatment planning and thus, favourably influence the final outcome. There is ample scope of studies on many unanswered questions on sino-nasal malignancy.

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Abbreviations:

- CT — Computed tomography
 ENT — Ear-nose-throat
 PNS — Para nasal sinuses
 SNM — Sino-nasal malignancy
 SNUC — Sinonasal undifferentiated carcinoma