

## Histopathological Pattern and Different Stages of Sinonasal Carcinoma Patients: A Study on 40 Cases in Bangladesh

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### Abstract

**Background:** Sino-nasal carcinoma has various histological types presented with different stages. **Objectives:** The purpose of this present study was to see the histopathological types and stages of sinonasal carcinoma patients in tertiary level hospital. **Methodology:** This cross-sectional study was conducted in the Department of Otolaryngology- Head & Neck Surgery at Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh and Dhaka Medical College Hospital, Dhaka, Bangladesh from January 2008 to December 2009 for a period of two (02) years. All consecutive cases of sinonasal carcinoma admitted in hospital and outpatient department during the study period. Suspected cases of sinonasal carcinoma was diagnosed from history and clinical examination proved by CT-scan, MRI and histopathological examination. **Result:** A total number of 40 cases of sino-nasal carcinoma were recruited for this study. Among these single site involvement was reported in 11 cases and the rest 29 cases were involved in multiple sites. Regarding multiple sites involvement maxillary sinus with nasal cavity involvement was reported in 15(51.72%) cases. Maxillary sinus, nasal cavity with ethmoid sinus involvement was found in 10(34.48%) cases. The presentation of the sinonasal carcinoma at stage T4 was 16(40.05) cases followed by T3, T2, and T1 which were 13(32.5%) cases, 7(17.5%) cases and 4(10.0%) cases respectively. Squamous cell carcinoma was found in 25(63%) cases followed by adenocarcinoma and adenoid cyst carcinoma which were 7 cases, 5 cases respectively. **Conclusion:** In conclusion majority of the sino-nasal carcinoma are squamous cell carcinoma involving the multiple sites in the T4 stage. [*Journal of National Institute of Neurosciences Bangladesh, July 2020;6(2): 110-113*]

**Keywords:** Sino-nasal; diseases; metastasis; carcinoma

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### Introduction

The majority of the carcinomas of the paranasal sinuses originate in the mucosa<sup>1</sup>. The growths are difficult to treat as they spread easily to the surrounding structures. The sino-nasal tract is the location of a diversity of malignant tumors among which squamous cell carcinoma is the most common, followed by

adenocarcinoma, malignant lymphoma, sino-nasal undifferentiated carcinoma, malignant melanoma, and olfactory neuroblastoma, due to the anatomic complexity and tissue variability<sup>2</sup>.

Malignant sino-nasal tract tumors are rare in most parts of the world and comprise less than 1% of all neoplasms and 3% of the upper aerodigestive tract<sup>3</sup>. However,

neuroendocrine carcinomas (NEC) are rare with a wide spectrum of histological differentiation and are classified into well- differentiated (typical carcinoid), moderately differentiated (atypical carcinoid), and poorly differentiated (small and non-small cell types), with the latter one being extremely rare and carrying a poor prognosis due to its aggressive nature with a high potential for recurrence and distant metastasis (DM) regardless of multimodal treatment<sup>4-6</sup>.

The staging of nasal cavity and paranasal sinus cancer is very complex<sup>7</sup>. At this time, staging systems have only created for the most common cancers like maxillary sinus and nasal cavity/ethmoid sinus cancers<sup>4</sup>. Treatment choices for less common cancers of the nasal cavity and paranasal sinuses are tailored to suit each patient depending on the tumor type, size, location, and the patient's general medical condition and desires<sup>8</sup>. Thus this present study was undertaken to see the histopathological types and stages of sinonasal carcinoma patients in tertiary level hospital.

### Methodology

This was a cross-sectional study. This study was conducted in the Department of Otolaryngology- Head & Neck Surgery at Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh and Dhaka Medical College, Dhaka, Bangladesh from January 2008 to December 2009 for a period of two (02) years. All consecutive cases of sinonasal carcinoma who were admitted in hospital or attended in the outpatient department during the study period. Suspected cases of sinonasal carcinoma were enrolled in this study from history and clinical examination proved as well as CT-scan, MRI and histopathological examination. Cases where the histological diagnosis of carcinoma was not possible were excluded from this study. Patients who were not interested to include in this study were also excluded from this study. Furthermore, where it was difficult to assess the primary site of tumour origin due to involvement of multiple sinuses were also excluded from this study. Patients suspected of sinonasal carcinoma were evaluated properly by detailed history taking, clinical examination and relevant investigation, like rigid endoscopy, CT-scan, MRI and punch biopsy. Relevant data were collected in a pre-designed data collection sheet for each of the patient with sinonasal carcinoma in Bangabandhu Sheikh Mujib Medical University & DMCH, Dhaka. Statistical analysis was performed by SPSS windows based software version 22.0.

### Results

A total number of 40 cases of sino-nasal carcinoma were recruited for this study. Among these single site involvement was reported in 11 cases and the rest 29 cases were involved in multiple sites. Out of 11 cases the most common involvement was maxillary antrum which was 7(63.7%) cases followed by nasal cavity and ethmoidal sinus which were 3(27.3%) cases and 1(9.0%) case respectively (Table 1).

Table 1: Single Site Involvement of Sinonasal Carcinoma in This Study (n=11)

Site	Frequency	Percent
Maxillary antrum	7	63.7
Nasal cavity	3	27.3
Ethmoidal sinus	1	9.0
<b>Total</b>	<b>11</b>	<b>100.0</b>

Regarding multiple sites involvement maxillary sinus with nasal cavity involvement was reported in 15(51.72%) cases. However, maxillary sinus, nasal cavity with ethmoid sinus involvement was found in 10(34.48%) cases. Maxillary sinus, ethmoid sinus with frontal sinus involvement was found in only 2 (6.8%) cases (Table 2).

Table 2: Distribution of the study patients by non-motor symptoms (n=40)

Site Involved	Frequency	Percent
Maxillary sinus + Nasal cavity	15	51.72
Maxillary sinus + Nasal cavity + ethmoid sinus	10	34.48
Maxillary sinus + ethmoid sinus+ frontal sinus	2	6.8
Nasal cavity+ethmoid	2	6.8

Total number of maxillary sinus was 34(85.0%) cases. Nasal cavity involvement was 28(70.0%) cases. Ethmoid sinus was found in 14(35.0%) cases (Table 3).

Table 3: Involvement of different site of sinonasal carcinoma

Site	Frequency	Percent
Maxillary sinus	34	85.0
Nasal cavity	28	70.0
Ethmoid sinus	14	35.0

In this study population the presentation of the sinonasal carcinoma at stage T4 was 16(40.05) cases

which was the highest rate followed by T3, T2 and T1 which were 13(32.5%) cases, 7(17.5%) cases and 4(10.0%) cases respectively (table 4).

Table 4: T stage of the tumour (primary) (n=40)

T stage	Frequency	Percent
T4	16	40.0
T3	13	32.5
T2	7	17.5
T1	4	10.0

In this study squamous cell carcinoma was found in 25(63%) cases which was most common followed by adenocarcinoma, adenoid cyst carcinoma and other carcinoma which were 7 cases, 5 cases and 3 cases respectively (Table 5).

Table 5: Distribution of Histological types of sinonasal carcinoma according to stage (n=40)

Stage	Squamous cell carcinoma	Adeno-carcinoma	Adenoid cyst carcinoma	Others	Total
I	3	0	1	0	4
II	4	1	1	1	7
III	7	3	1	1	12
IV	11	3	2	1	17
<b>Total</b>	<b>25</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>40</b>

## Discussion

The sinonasal cavities are anatomical regions affected by a number of tumours that are clinically, genetically and etiologically different from classical carcinomas of the head and neck<sup>9</sup>. Sinonasal carcinoma (SNC) is a rare disease that accounts for <3% of all head and neck tumours, with a 5-year overall survival (OS) rate of 30% across all stages<sup>10</sup>. Sinonasal carcinoma is etiologically-associated with professional exposure to leather and wood dust particles, and is therefore defined as an occupational disease<sup>11-13</sup>. Squamous cell carcinoma and adenocarcinoma are the most frequent histological types, accounting for 80% of all Sinonasal carcinomas, while neuroendocrine, adenoid cystic and undifferentiated entities are much less frequent<sup>2</sup>.

Sinonasal cancers are associated with significant otorhinolaryngologic morbidity and mortality<sup>1</sup>. The symptoms of sinonasal cancers depend on site and the extent of disease and may initially include nasal obstruction, epistaxis, or symptoms consistent with chronic sinusitis such as headache, rhinorrhoea while small tumors may be asymptomatic<sup>7</sup>.

A total number of 40 cases of sino-nasal carcinoma

were recruited for this study. Among these single site involvement was reported in 11 cases and the rest 29 cases were involved in multiple sites. Out of 11 cases the most common involvement was maxillary antrum which was 7(63.7%) cases followed by nasal cavity and ethmoidal sinus which were 3(27.3%) cases and 1(9.0%) case respectively. Regarding multiple sites involvement maxillary sinus with nasal cavity involvement was reported in 15(51.72%) cases. However, maxillary sinus, nasal cavity with ethmoid sinus involvement was found in 10(34.48%) cases. Maxillary sinus, ethmoid sinus with frontal sinus involvement was found in only 2 (6.8%) cases. Total number of maxillary sinus was 34(85.0%) cases. Nasal cavity involvement was 28(70.0%) cases. Ethmoid sinus was found in 14(35.0%) cases. Similar to the present study result it has been reported that tumours of the maxillary sinuses are more prevalent than those of the nasal cavities and ethmoid sinuses<sup>13</sup>.

In this study population the presentation of the sinonasal carcinoma at stage T4 was 16(40.05) cases which was the highest rate followed by T3, T2, and T1 which were 13(32.5%) cases, 7(17.5%) cases and 4(10.0%) cases respectively. Patients with Sinonasal carcinoma are often asymptomatic in early stages and are therefore commonly diagnosed at an advanced stage (T3-4), presenting with a large primary tumour that invades the surrounding bone structures and is associated with a high frequency of poor outcome and local failure<sup>14</sup>. Due to their rarity, there is a lack of randomized clinical trials assessing the standard treatment options for sinonasal carcinoma, with no clear guidelines concerning their treatment<sup>11</sup>. Generally, surgery, whenever possible, represents the cornerstone of therapy in early (T1-2) and advanced stage (T3-4) patients, and should always be followed by adjuvant radiation therapy, except in cases of T1 low-risk disease (absence of involved surgical margins). Chemotherapy should be administered concomitantly with radiation therapy in cases of high-risk disease (T3-4 and/or N+ and/or involved surgical margins)<sup>15</sup>. The outcome of patients with sinonasal carcinoma also depends on histological type<sup>13</sup> and prognosis is poorer in patients with squamous cell carcinoma compared with adenocarcinoma<sup>10</sup>. Undifferentiated sinonasal carcinoma (SNUc) often presents as a rapidly enlarging and decaying mass, which is associated with the poorest prognosis among all sinonasal carcinomas<sup>12</sup>.

In this study squamous cell carcinoma was found in 25(63%) cases which was most common followed by adenocarcinoma, adenoid cyst carcinoma and other

carcinoma which were 7 cases, 5 cases and 3 cases respectively. Likewise, the most of the studies reported in the literature revealed squamous cell carcinoma as the most common histological feature of sinonasal cancers followed by adenocarcinoma. Madison Michael et al<sup>16</sup> reported squamous cell carcinoma (64.0%) and adenocarcinoma (18.0%), Kuijpers et al<sup>17</sup> also reported 46.0% and 15.0%, Myers et al.<sup>[2]</sup> reported 51.0% and 11.0% while Arnold et al<sup>18</sup> reported 30.9% and 17.1%, respectively. All these studies confirm the higher incidence of squamous cell carcinoma in sinonasal cancers.

Sinonasal cancers can present a histological diversity pattern, the most common being squamous cell carcinoma, adenocarcinoma, lymphoma, melanoma, sarcoma and adenoid cystic carcinoma. Arnold et al<sup>18</sup> found squamous cell carcinoma with 30.9%, melanoma (19.5%), and adenocarcinoma (17.1%) of the patients. Others were esthesioneuroblastoma (8.9%), lymphoma (5.7%), undifferentiated carcinoma (4.9%), adenoid cystic carcinoma (4.9%), plasmocytoma (3.3%), fibrosarcoma (1.6%), leiomyosarcoma (1.6%) and metastatic disease (1.6%) in the cases studied. Kuijpers et al<sup>17</sup> found squamous cell carcinoma as the most frequent histological type in 46.0%, followed by adenocarcinoma (15.0%), melanoma (8.0%) and olfactory neuroblastoma (3.5%). Myers et al<sup>19</sup> also reported squamous cell carcinoma (51.0%), adenoid cystic carcinoma (12.0%) and adenocarcinoma (11.0%). Madison Michael et al<sup>16</sup> revealed squamous cell carcinoma (64.0%), adenocarcinoma (18.0%), adenoid cystic carcinoma and undifferentiated carcinoma (9.0%) in a histological analysis of sinonasal tumors.

### Conclusion

In conclusion majority of the sino-nasal carcinoma are squamous cell carcinoma. Maxillary sinus is the most common sites of involvement. Furthermore most of the carcinoma are involved in the multiple sites. In addition these carcinoma are found in the T4 stage. Further large scale study should be conducted to see the real scenario.

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