MEDICO RESEARCH CHRONICLES
ISSN NO. 2394-3971
DOI No. 10.26838/MEDRECH.2022.9.6.641
Contents available at www.medrech.com

PATTERN OF SINONASAL TUMOURS PRESENTED IN SHAHEED ZIAUR RAHMAN MEDICAL COLLEGE HOSPITAL, BOGURA, BANGLADESH

Md. Shafiul Alam[1], A. Q. M. Mahmudul Haque[2], Md. Abdul Wahed[3], Md. Khorshed Alam[4]
1. Residential Surgeon, Department of ENT & Head-Neck Surgery, Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh
2. Assistant Professor, Department of ENT & Head-Neck Surgery, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh
3. Assistant Professor, Department of ENT & Head-Neck Surgery, Shaheed Ziaur Rahman Medical College, Bogura, Bangladesh
4. Registrar, Department of ENT & Head-Neck Surgery, Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh

ARTICLE INFO

Article History
Received: September 2022
Accepted: November 2022
Key Words: Carcinoma, Maxillectomy, Papilloma, Sinonasal Tumor.

ABSTRACT

ORIGINAL RESEARCH ARTICLE

Introduction: Sinonasal tumors most commonly arise from the nasal cavity, followed by the maxillary and ethmoid sinus; sphenoid and frontal sinus tumors are both extremely rare entities. In the sinonasal complex, squamous cell carcinoma (SCC) is the most common histology, constituting 40 to 50% of all sinonasal malignancies. **Objective:** To assess the pattern of sinonasal tumors presented in Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh. **Methods:** This is a retrospective study carried out in the Department of ENT & Head-Neck Surgery, Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh from January to June 2022. It includes 52 cases of neoplastic sinonasal growths. All cases were thoroughly evaluated including history, head and neck examination including endoscopy, imaging and histopathological examinations. All the non-neoplastic cases were excluded from the study. Details of clinical presentation, examination, radiological and histopathological findings were recorded. **Results:** A total of 52 sinonasal tumors presented during the period. Out of which, 41 were benign and 12 were malignant tumors. Out of 41 benign tumors, inverted papilloma was the most common comprising 12 cases (22.6%) followed by squamous (epithelial) papilloma 11 cases (20.8%), hemangioma 10 cases (18.9%), osteoma and fibrous dysplasia each 2 cases (3.8%) and ossifying fibroma, pleomorphic adenoma and angiomyoma one case each (2%). Out of 12 malignant tumors, squamous cell carcinoma was the commonest malignancy observed in the study. They were four in number (7.5%), followed by basal cell carcinoma in three cases (5.7%)

and malignant melanoma in two (3.8%). Adenocarcinoma, osteosarcoma and Rhabdomyosarcoma were each one in number (5.37%) (Table-1). Nasal blockage (94.3%), nasal discharge (66.04%), epistaxis (39.6%), hemifacial pain/pressure (34%) and facial fullness/external deformities, each (18.9%) were among the commonest presentation. **Conclusion:** The similarities of benign and malignant disorders at initial presentation may lead to a significant delay in the diagnosis of malignancy. Key indicators of malignancy such as cranial neuropathies and proptosis are uncommon at initial presentation and signify advanced disease. Neoplasms of the nasal cavity and paranasal sinuses are rare but require a high index of suspicion for diagnosis due to the overlapping presentation between benign and malignant ones.

Corresponding author
Dr. Md. Shafiul Alam*

2022, www.medrech.com

INTRODUCTION

Sinonasal tumors most commonly arise from the nasal cavity, followed by the maxillary and ethmoid sinus; sphenoid and frontal sinus tumors are both extremely rare entities. In the sinonasal complex, squamous cell carcinoma (SCC) is the most common histology, constituting 40 to 50% of all sinonasal malignancies. Sinonasal neoplasms are relatively rare and malignant sinonasal neoplasms are more common than their benign counterparts. Sinonasal malignancies comprise only 3% of all head and neck cancers and 1% of all malignancies [1,2] However, such tumors represent both a diagnostic and therapeutic challenge because the presenting signs and symptoms may be indistinguishable from non-neoplastic benign or inflammatory disorders. A large number of diseases affecting the region are mainly due to several specialized tissues in the region and their aberrations [3,4]. The complex anatomy of the region and the rare occurrence of these tumors pose diagnostic and therapeutic challenges. Of the various histological subtypes of malignant sinonasal tumors, squamous cell carcinoma (SCC) is the most common subtype, whereas the other subtypes, such as adenocarcinoma, minor salivary gland carcinoma, undifferentiated carcinoma, neuroendocrine carcinoma, and nonepithelial malignancies (such as sarcoma, lymphoma, plasmacytoma, olfactory neuroblastoma, and melanoma) are considerably less common. Inverted papillomas and hemangiomas are common benign tumors while squamous cell carcinoma being the malignant ones. Nickel and chrome refining processes have been implicated in the development of carcinoma of the paranasal sinuses, [5] and exposure to wood dust has been implicated specifically in adenocarcinoma of the ethmoid [6,7]. Leather workers, especially those involved in the tanning process, show an increased incidence of epithelial sinonasal malignancies [8]. Open transfacial and craniofacial approaches have been the traditional approach for surgical management of sinonasal malignancies. These approaches have consistently shown favorable results, but are associated with treatment-related morbidity, including facial scarring and a need for free flap reconstruction when subtotal maxillectomy or orbital exenteration is required. Careful clinico-pathological workup aided by various imaging is essential for a correct diagnosis and timely intervention and to lessen the morbidity to the patient. This study was carried out to recognize the great variety of neoplastic sinonasal growths, their character and frequency in our region. Thus, diagnostic imaging plays a key role in predicting the histological subtype and in evaluating a tumor extension into adjacent structures. This article describes the computed

tomography and magnetic resonance imaging findings for malignant sinonasal tumors.

MATERIALS AND METHODS

This is a retrospective study carried out in the Department of ENT & Head-Neck Surgery, Shaheed Ziaur Rahman Medical College Hospital, Bogura, Bangladesh from January to June 2022. It includes 52 cases of neoplastic sinonasal growths. All cases were thoroughly evaluated including history, head and neck examination including endoscopy, imaging and histopathological examinations. All the non-neoplastic cases were excluded from the study. Details of clinical presentation, examination, radiological and histo-pathological findings were recorded. The data was analyzed using the Statistical Product and Service Solutions (SPSS) software IBM SPSS Statistics for Windows, version 20 (IBM Corp., Armonk, N.Y., USA). Student t-test and Chi-square tests were used to test for possible difference or association. The level of statistical significance was set at p-value of <0.05.

RESULTS

Total 52 cases of sinonasal tumours' were found during the study out of which 41 (77.7%) were benign and 12 (22.6%) malignant. Age of presentation ranged from 1st to 8th decade of life with 62.8% benign tumors falling under 16-30 years' age group while 77.7% of the malignant cases were between 40 -60 years' age. Average duration of presentation was nine months for benign tumors and 7 months for malignant tumors. The male to female ratio were 3:2 and 3:1 for benign and malignant tumors respectively. Race distribution between Mangoloids and Indo-Aryan was almost equal. Out of 41 benign tumors, inverted papilloma was the most common comprising 12 cases (22.6%) followed by squamous (epithelial) papilloma 11 cases (20.8%), hemangioma 10 cases (18.9%), osteoma and fibrous dysplasia each 2 cases (3.8%) and ossifying fibroma, pleomorphic adenoma and angiomyoma one case each (2%) (Table-1). Out of 12 malignant tumors, squamous cell carcinoma was the commonest malignancy observed in the study. They were four in number (7.5%), followed by basal cell carcinoma in three cases (5.7%) and malignant melanoma in two (3.8%). Adenocarcinoma, osteosarcoma and Rhabdomyosarcoma were each one in number (5.37%) (Table-1). Nasal blockage (94.3%), nasal discharge (66.04%), epistaxis (39.6%), hemifacial pain/pressure (34%) and facial fullness/external deformities, each (18.9%) were among the commonest presentation (Table-2).

Table-1: Distribution of cases (N=52)

Benign	n	%	Malignant	n	%
Inverted Papilloma	13	24.5	Squamous cell carcinoma	4	7.5
Squmaous Papilloma	11	20.8	Basal cell carcinoma	3	5.7
Hemangioma	10	18.9	Malignant Melanoma	2	3.8
Osteoma	2	3.8	Adenocarcinoma	1	1.9
Fibrous Dysplasia	2	3.8	Osteosarcoma	1	1.9
Ossifying Fibroma	1	1.9	Rhabdomyosarcoma	1	1.9
Pleomorphic Adenoma	1	1.9			
Angiomyoma	1	1.9			
Total	41	77.4	Total	12	22.6

Table-2: Presenting features (N=52)

Symptoms	Frequency	Percentage
Nasal blockage	50	94.3
Nasal discharge	35	66.04
Nasal bleeding	21	39.6
Hemifacial pressure/pain	18	34.0
Facial swelling/external deformity	10	18.9
Proptosis	1	1.9
Palatal perforation	1	1.9
Neck mass	1	1.9

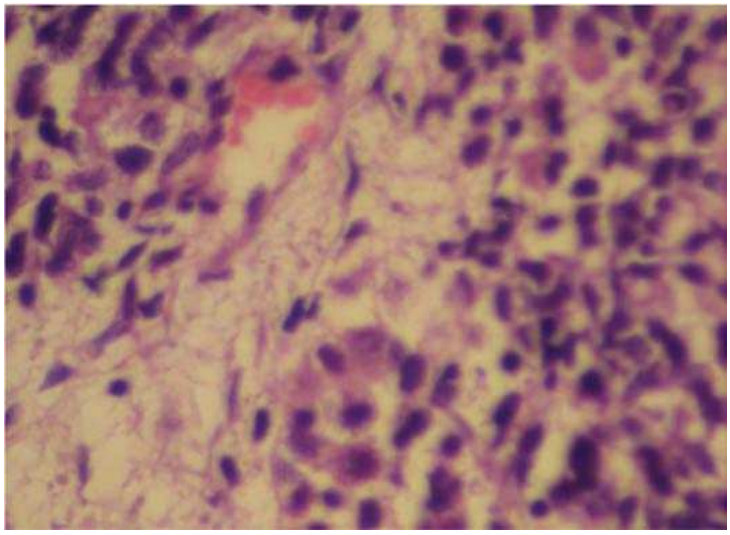

Fig-1: Photomicrograph of angiomyoma showing variably calibered blood vessels surrounded by vascular smooth muscle (H&E, 40X).

Fig-2: Clinical picture of malignant melanoma nose.

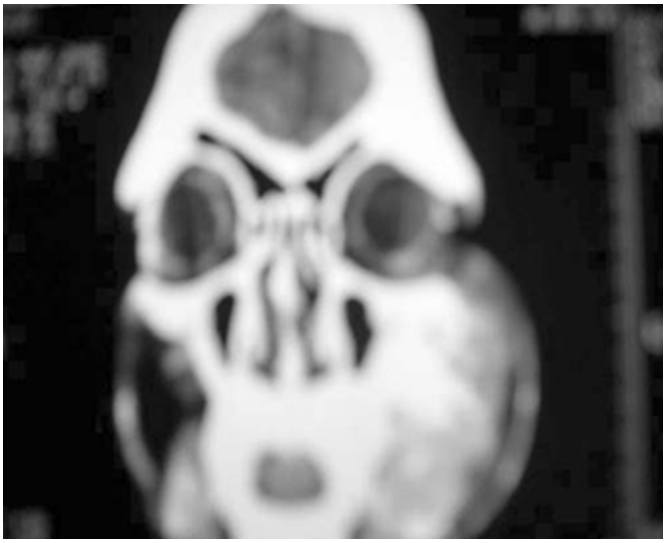

Fig-3: CT scan showing typical sunray appearance of osteosarcoma.

DISCUSSION

In the past two decades, however, there has been growing acceptance and utilization of endoscopic approaches for surgical management of these tumors. In spite of this, large cohort studies comparing open and endoscopic surgical approaches remain rare. This work represents the largest study comparing these approaches for sinonasal malignancies. Squamous cell carcinoma is the predominant malignant sinonasal tumor as reported in most of the series [6,8,9]. There is a male predominance and a majority of the patients are older than 50 years of age at the time of diagnosis. Maxillary sinus is the most common site of origin, followed by lateral nasal wall and ethmoid sinuses. Primary carcinomas arising from frontal and sphenoidal sinuses are rare [10]. Our study showed the maxilla to be primary site for all the tumors with involvement of ethmoids and nasal cavity. All the cases in our series were of 5-6th decade with male M: F ratio 4:1 which is consistent with series by Goldenberg et al. though in our series male predominance is even higher [11]. Nose is the most common site for basal cell carcinoma in head and neck. Clinical appearance can vary from small nodular growths to chronic ulcers or the ulceronodular lesions [12]. All our cases presented as chronic ulcers with rolled out border over the dorsum and lateral nasal wall, only one on the dorsum exposing the underlying bone. Sinonasal malignant melanoma is an uncommon tumor accounting for 0.3-2% of all malignant melanomas, 4% of head and neck melanomas and 4% of all sinonasal neoplasms [13]. This was in contrast to both the patients were females of 4th decade in our series. They are reported to be arising predominantly from nasal cavity or nasal cavity and sinuses as in our series [14]. They have high propensity to disseminate due to the rich lymphatic and vascular network of the sinonasal tract. The metastatic status is the most important factor for prognosis and outcome of the disease [13]. One case in our series had neck metastasis. Adenocarcinoma is the second commonest malignant tumor in sinonasal tract after squamous cell carcinoma, commonly accounting about 15% of all sinonasal cancer [15]. They commonly arise from the ethmoid sinus and the roof of nasal cavity. However, the only case in our series had its rare origin at the lower part of nasal septum. Osteosarcoma in head neck region is more often encountered in mandible than the maxilla [16]. We encountered a case of osteosarcoma in a 30 years old male with classic sunray appearance in CT scan. Surgery

with postoperative radiotherapy is the most effective mode of treatment, though chemotherapy has been tried in ostosarcoma of long bones [17]. Clinical presentation of sinus malignancies is non-specific and often mimics benign disease [7]. Indeed, 9-12% of patients with sinonasal malignancies are asymptomatic [8]. It is not surprising that delay in diagnosis is common; 75% of all paranasal sinus malignant tumors are Stage T3 or T4 at the time of diagnosis. The most common presenting symptoms were nasal blockage, nasal discharge and epistaxis in study by various series which was in comparable to our study [18,19]. Inverted papilloma is characterized best by its predilection for males, local invasion, tendency for recurrence and association with malignancy [20]. One case in our study had the histologic feature of malignant transformation. CT scan was done in all cases, most showing the bowing of medial wall with bony erosion at places as was shown in other studies [19,21]. Out of 10 squamous (epithelial) papilloma arising from nasal vestibule region, only two cases were biopsied preoperatively due to their suspicious look. In all remaining cases, excision biopsy was done. All turned out to be squamous papilloma subsequently. Abraham et al in their series of 17 cases of intranasal epithelial papillomas found that 13 were epithelial papillomas and four were squamous cell carcinomas associated with epithelial papillomas suggesting that squamous cell carcinoma may occasionally arise from a previously benign epithelial papilloma [22]. Sinonasal hemangiomas are uncommon in literature [23,24]. In our study, three cases were cavernous hemangiomas, rest being minor arteriovenous malformationas and pyogenic granulomas (lobular capillary hemangiomas). All the cases being adolescents and young adults. Osteoma is the most common benign fibro-osseous sinonasal tumor. In this study there were two osteomas, one each arising from frontal and maxillary sinus, both presented with facial pain/headache and local swelling. There were also two cases of fibrous dysplasia arising one each from frontal and maxillary sinus presenting with local swelling. There was a rare case of psammomatoid ossifying fibroma of frontoethmoid region in a seven-year-old boy who presented with headache and proptosis for one year [25]. His vision was normal. CT scan was suggestive of left frontal sinus mucocele with fibro-osseous lesion in the same side frontoethmoid region. Angiomyoma is an uncommon, benign tumor, which usually occurs on the extremities, especially the lower extremities. Occurrence in the nasal cavity is extremely rare and has rarely been described in the literature [26,27]. Rhabdomyosarcoma involves the head and neck region in 45 to 45% of cases. The sinonasal tract is involved in about 10% of cases affecting the head and neck [28]. Histologically, the embryonal and alveolar types are more common in pediatric population while pleomorphic variety is more common among adults [29]. We encountered a case of pleomorphic Rhabdomyosarcoma in a 35 years old male whom partial maxillectomy was done and sent for chemoradiation. Accuracy rate of 78-85% have been reported for CT prediction of extent of neoplasm when compared with surgical finding [30]. MRI provide a distinction among inspissated mucus or retained secretions, soft tissue edema or neoplasm which CT cannot. However, it assesses poorly the bony destruction or erosions. In comparison with surgical findings, accuracy rates of 94% for MRI and 98% for MRI with gadolinium have been reported [31]. CT and MRI didn't differ significantly in the staging of nose and paranasal tumors [32].

CONCLUSION

The similarities of benign and malignant disorders at initial presentation may lead to a significant delay in the diagnosis of malignancy. Key indicators of malignancy such as cranial neuropathies and proptosis are

uncommon at initial presentation and signify advanced disease. It is estimated that a span of 6 to 8 months passes on average from the time of initial symptoms until diagnosis is established. A high index of suspicion must be maintained for patients who do not respond to medical treatment of their sinonasal symptoms. Benign tumors like inverted papillomas are potential malignant and timely diagnosis and surgery can prevent them from malignant transformation.

CONFLICT OF INTEREST: None:

REFERENCES:

1. Haerle S.K., Gullane P.J., Witterick I.J., Zweifel C., Gentili F. Sinonasal carcinomas: Epidemiology, pathology, and management. Neurosurg. Clin. N. Am. 2013;24:39–49.
2. Turner J.H., Reh D.D. Incidence and survival in patients with sinonasal cancer: A historical analysis of population-based data. Head Neck. 2012;34:877–885.
3. Cooper J.S., Porter K., Mallin K., Hoffman H.T., Weber R.S., Ang K.K., Gay E.G., Langer C.J. National Cancer Database report on cancer of the head and neck: 10-year update. Head Neck. 2009;31:748–758. doi: 10.1002/hed.21022.
4. Razek A.A., Sieza S., Maha B. Assessment of nasal and paranasal sinus masses by diffusion-weighted MR imaging. J. Neuroradiol. 2009;36:206–211. doi: 10.1016/j.neurad.2009.06.001.
5. Sasaki M., Eida S., Sumi M., Nakamura T. Apparent diffusion coefficient mapping for sinonasal diseases: Differentiation of benign and malignant lesions. AJNR Am. J. Neuroradiol. 2011;32:1100–1106.
6. Dulguerov P, Jacobsen MS, Allal AS, Lehmann W, Calcaterra T. Nasal and paranasal sinus carcinoma: are we making progress? A series of 220 patients and a systematic review. Cancer 2001; 92: 3012-29.
7. Mills SE, Fechner RE. The nose, paranasal sinuses and nasopharynx. In: Sternberg SS, editor. Diagnostic Surgical Pathology. (3rd ed). Philadelphia: Lippincott Williams & Wilkins1999: 885-92.
8. Hernberg S, Westerholm P, Schultz-Larsen K, et al. Nasal and sinonasal cancer. Connection with occupational exposures in Denmark, Finland and Sweden. Scand J Work Environ Health 1983; 9: 315-26.
9. Osguthorpe JD. Sinus Neoplasia. Arch Otol Head Neck Surg 1994; 120: 19-25.
10. Hanna E, Westfall CT. Cancer of nasal cavity, paranasal sinuses and orbit. In Myers EN, et al, editor. Cancer of the head and neck. (4th ed). Philadelphia: Elsevier 2003: 163.
11. Golden berg D, Golz A, Fradis M, Mârtu D, Netzer A, Joachims HZ. Malignant tumours of the nose and paranasal sinuses: a retrospective review of 291 cases. Ear Nose Throat J 2001; 80: 271-7.
12. Watkinson JC, Gaze MN, Wilson JA. Tumours of nose and sinuses. In Watkinson JC et al editor. Stell and Maran's Head and Neck Surgery. (4th ed). Oxford: Butterworth Heinemann 2000: 380.
13. Thompson LD, Wieneke JA, Miettinen M. Sinonasal tract and nasopharyngeal melanomas: a clinicopathologic study of 115 cases with a proposed staging system. Am J Surg Pathol 2003; 27:594-611.
14. DeMatos P, Tyler DS, Seigler HF. Malignant melanoma of the mucous membranes: a review of 119 cases. Ann Surg Oncol 1998; 5: 733-42.
15. Bridger AG, Smee D, Baldwin MA, Kwok B, Bridger GP. Experience with

mucosal melanoma of the nose and paranasal sinuses. ANZ J Surg 2005; 75: 192-7.
16. Hanna E, Vural E, Teo C, et al. Sinonasal tumours: The Arkansas experience. Skull Base Surg 1998; 8: 15.
17. Weymuller EA, Gal TJ. Neoplasm, In Cummings CW editor. Otolaryngology Head and Neck Surgery. (4th ed). Pennsylvania: Elsevier Mosby 2005: 1212.
18. Panchal L, Vaideeswar P, Kathpal D, Madiwale CV, Prabhat DP. Sinonasal epithelial tumours: A pathological study of 69 cases. J Postgraduate Med 2005: 51; 30-4.
19. Lilly-Tariah da OB. Cancer of nose and paranasal sinuses in Jos: A 10 years study. West Afr J Otol Head Neck Surg1999; 2: 11-6.
20. Melroy CT, Senior BA. Benign sinonasal neoplasms: a focus on inverting papilloma. Otolaryngol Clin North Am 2006; 39: 601-17.
21. Som PM, Lawson W, Lidov MW. Simulated aggressive skull base erosion in response to benign sinonasal disease. Radiology 1991; 180: 755-9.
22. Lasser A, Rothfeld PR, Shapiro RS. Epithelial papilloma and squamous cell carcinoma of the nasal cavity and paranasal sinuses: a clinicopathological study. Cancer 1976; 38: 2503-10.
23. Jammal H, Barakat F, Hadi U. Maxillary cavernous hemangioma: a rare entity. Acta Otolaryngol 2004; 124: 331-3.
24. Iwata N, Hattori K, Nakagawa T, Tsujimura T. Hemangioma of the nasal cavity: A clinicopathologic study. Auris Nasus Larynx 2002; 29: 335-9.
25. Singh I, Ghimire A, Bhadani P, et al. Proptosis in a young Child. Indian J Paed 2006; 73: 537-8.
26. Hashimoto H, Quade B. Angioleiomyoma. In: Fletcher CDM, Unni K, Mertens F. WHO classification of tumours. Pathology and genetics of tumours of soft tissue tumours. Lyon: IARC Press 2002: 128-9.
27. Choi JH, Kim JM, Kim YD. Angioleiomyoma of the Nasal Septum: A Case Report. Yeungnam Univ J Med 2008; 25: 154-9.
28. Mardinger O, Givol N, Talmi YP, Taicher S. Osteosarcoma of the jaw. The Chaim Sheba Medical Center experience. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001; 91: 445-51.
29. Barnes L. Surgical Pathology of the Head and Neck. (2nd ed). New York: Marcel Dekker 2001: 356.
30. Callender TA, Weber RS, Janjan N, et al. Rhabdomyosarcoma of the nose and paranasal sinus in adults and children. Otolaryngol Head Neck Surg 1995; 112: 252-7.
31. Chow JM, Leoneth JP, Mafee MF. Epithelial tumours of paranasal sinuses and nasal cavity. Radiol Clin North Am 1993; 31: 61.
32. Lund VJ, Howard DJ, Lloyd GAS, Cheesman AD. Magnetic resonance imaging of paranasal sinuses for craniofacial resection. Head Neck 1989; 11: 279-83.