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Pattern of Sinonasal Tumors in Eastern Nepal

Objective:

This study was carried out to recognize the great variety of sinonasal tumors and their frequency in region of Nepal

Materials and methods:

A retrospective chart analysis of cases of neoplastic growths in nose and PNS that underwent surgery over four years duration at Department of Otorhinolaryngology, B. P. Koirala Institute of Health Sciences, Dharan, Nepal was done. History, clinical assessment and histopathological examinations were done in all cases supplemented by radiological investigation in most of the cases.

Results:

A total of 56 sinonasal tumors presented during the period. Out of which, 43 were benign and 13 were malignant tumors.

Conclusion:

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.

Keywords:

Carcinoma, maxillectomy, papilloma, sinonasal tumor.

INTRODUCTION:

Sinonasal neoplasm are very rare, malignant tumors of sinonasal tract in general population constitute 0.2-0.8% of all malignancies, and 3% of malignancies in upper aerodigestive tract.¹ 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.² 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,³ and exposure to wood dust has been implicated specifically in adenocarcinoma of the ethmoid.^{3,4} Leather workers, especially those involved in the tanning process, show an increased incidence of epithelial sinonasal malignancies.⁵ 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.

MATERIALS AND METHODS:

This is a retrospective study carried out in the department of Otolaryngology, B. P. Koirala Institute of Health Sciences, Dharan, Nepal between April 2005 and March 2009. It includes 56 cases of neoplastic sinonasal growths. The study was approved by the ethical committee of our institution. 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 and data was analyzed using Microsoft Excel 2003.

RESULTS:

Total 56 cases of sinonasal tumors were found during the study out of which 43 (77%) were benign and 13 (23%) malignant. Age of presentation ranged from 1st to 8th decade of life with 46% benign tumors falling under 16-30 years age group while 77% of the malignant cases were between 40 -60 years age. Of all tumors, sinonasal papillomas outnumbered all benign tumors (45%) followed by hemangiomas (20%) among others while squamous cell carcinoma

(9%), basal cell carcinomas (5%) and malignant melanoma (3%) were more common malignant tumors (Table-1). 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. Nasal blockage (93%), nasal discharge (70%), epistaxis (41%), hemifacial pain/pressure (36%) and facial fullness/external deformities, each (23%) were among the commonest presentation (Table-2).

Benign	n	%	Malignant	n	%
Inverted Papilloma	13	23.22	Squamous cell carcinoma	5	8.93
Squamous Papilloma	12	21.43	Basal cell carcinoma	3	5.36
Hemangioma	11	19.64	Malignant Melanoma	2	3.56
Osteoma	2	3.56	Adenocarcinoma	1	1.79
Fibrous Dysplasia	2	3.56	Osteosarcoma	1	1.79
Ossifying Fibroma	1	1.79	Rhabdomyosarcoma	1	1.79
Pleomorphic Adenoma	1	1.79			
Angiomyoma	1	1.79			
Total	43	76.78	Total	13	23.22

Out of 43 benign tumors, inverted papilloma was the most common comprising 13 cases (30%) followed by squamous (epithelial) papilloma 12 cases (28%), hemangioma 11 cases (26%), osteoma and fibrous

Symptoms	Frequency	Percentage
Nasal blockage	52	92.85
Nasal discharge	39	69.64
Nasal bleeding	23	41.07
Hemifacial pressure/pain	20	35.71
Facial swelling/external deformity	13	23.21
Proptosis	1	1.78
Palatal perforation	1	1.78
Neck mass	1	1.78

dysplasia each 2 cases (5%) and ossifying fibroma, pleomorphic adenoma and angiomyoma one case each (2%) (Table-1).

Out of 13 malignant tumors, squamous cell carcinoma was the

commonest malignancy observed in the study. They were five in number (38.5%), followed by basal cell carcinoma in three cases (23%) and malignant melanoma in two (15.5%). Adenocarcinoma, osteosarcoma and rhabdomyosarcoma were each one in number (8%) (Table-1).

DISCUSSION:

Clinical presentation of sinus malignancies is non-specific and often mimics benign disease.⁶ Indeed, 9-12% of patients with sinonasal malignancies are asymptomatic.⁷ 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.^{6,8}

Inverted papilloma is characterized best by its predilection for males, local invasion, tendency for recurrence and association with malignancy.⁹ In his analysis of 30 years of published reports, Krause documents the finding of carcinoma in 9.1% of all patients.¹⁰ 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.^{9,11}

Out of 12 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.¹² Sinonasal hemangiomas are uncommon in literature.^{13,14} In our study, three cases were cavernous hemangiomas, rest being minor arteriovenous malformations and pyogenic granulomas (lobular capillary hemangiomas). All the cases

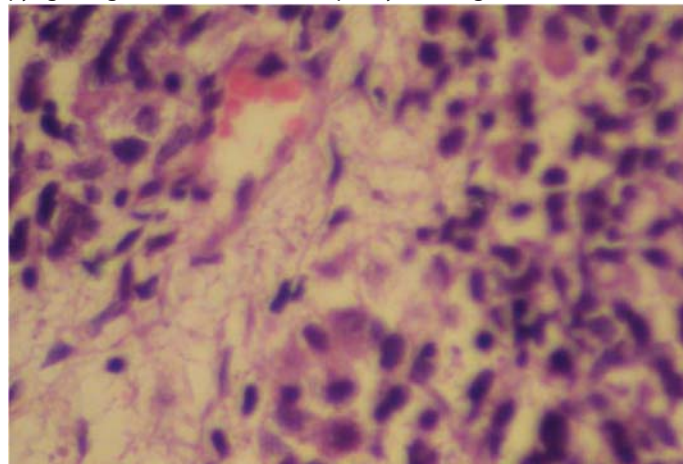


Fig: 1. Photomicrograph of angiomyoma showing variably calibered blood vessels surrounded by vascular smooth muscle. (H&E, 40X) being adolescents and young adults.

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.¹⁵ His vision was normal. CT scan was suggestive of left frontal sinus mucocoele with fibro-osseous lesion in the same side frontoethmoid region.

We observed an extremely rare case of angiomyoma (vascular leiomyoma) in a 45-year female who presented with nasal obstruction and recurrent epistaxis of one year duration. 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.^{16, 17}

Squamous cell carcinoma is the predominant malignant sinonasal tumor as reported in most of the series.^{6,8,18} 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.¹⁹ 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.²⁰ 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.²¹ 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.²² This was in consistent with our series. w and x reported in their series that at least one third of sinonasal malignant melanoma are amelanotic.^{23,24} Both of our cases were melanotic however. Thompson et al and De Matos et al in their series reported that sinonasal malignant melanomas have equal gender distribution targeting a patient population of 6 decades of life.^{22,25} 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.²⁶ They have high propensity to disseminate due to the rich lymphatic and vascular network of the sinonasal tract. The metastatic status is the



Fig: 2. Clinical picture of malignant melanoma nose.

most important factor for prognosis and outcome of the disease.²² 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.²⁷ 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.²⁸ 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 osteosarcoma of long bones.²⁹

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.³⁰ Histologically, the embryonal and alveolar types are more common in pediatric population while pleomorphic variety is more common among adults.³¹ 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

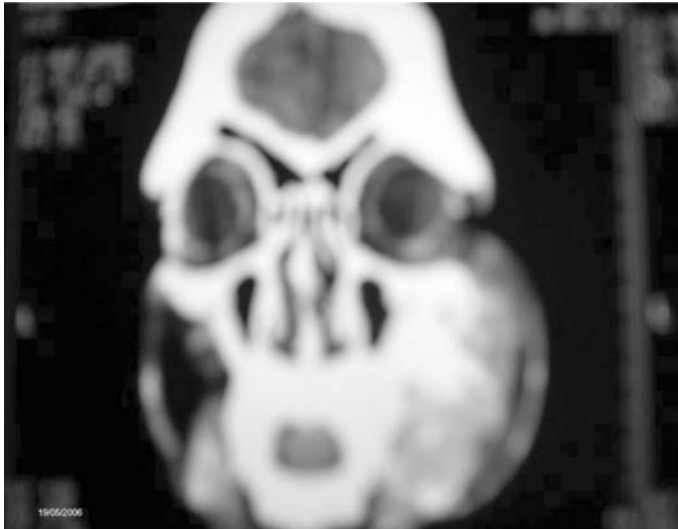


Fig: 3. CT scan showing typical sunray appearance of osteosarcoma

extent of neoplasm when compared with surgical finding.³² MRI provide a distinction among inspissated mucus or retained secretions, soft tissue edema or neoplasm which CT can not. 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.³³ CT and MRI didn't differ significantly in the staging of nose and paranasal tumors.³⁴

CONCLUSION:

Despite their rarity, sinonasal tumors represent both a diagnostic and therapeutic challenge as the presenting features may be indistinguishable from benign or inflammatory disorders. 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.

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