

Clinical and histopathological correlation of the excised sinonasal masses

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Abstract

Background: A sinonasal mass in the nasal cavity is a commonly encountered condition by the Otorhinolaryngologists. Despite the high prevalence, its treatment often presents a clinical dilemma. A diverse group of lesions may present themselves as sinonasal masses. They may be simple mucosal polyp or a variety of other pathological entities like granulomatous diseases, papillomas, vascular masses or malignant neoplasms. A number of deceptively benign looking polyps often turn out to be malignant lesions or vice versa. **Methods:** Patients coming from various parts of Bihar with any sinonasal mass will be included in the study. Total 50 patients were included, all of the recruited patients were evaluated to the demographic distribution, clinic-pathological features, radiological findings of sinonasal masses, relative incidence and to classify the lesions into neoplastic and non neoplastic lesion. The study was conducted in the department of ENT and HNS, Darbhanga medical college and Hospital. **Results:** We have divided all the sino-nasal masses into non-neoplastic, neoplastic lesion. In our study of 50 cases, the non-neoplastic masses formed the majority group with 31 cases (62%) having maximum age incidence in 18 to 39 year and predominantly in males (74.2%) [23 cases]. The lesions found in this group were antrochoanal polyp 19 cases (61.3%) and ethmoidal polyp 5 cases (16.13%). The neoplastic masses were found in 19 of our cases (38%) had maximum age incidence between two age groups 18-29 years (47.37%) and 40-49 years (36.84%) with higher incidence in Males (73.7%). **Conclusion:** Radiological findings are of immense help in evaluating location, size, shape and extent of the mass. CT scan is invaluable in stating the extension of malignant lesion, any destruction of surrounding structures, intracranial invasion etc. Histopathological examinations give the final verdict about the correct nature of the growth and it is extremely essential for proper planning of treatment modality.

Key Word: sinonasal masses.

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INTRODUCTION

The nasal septum is composed of a small anterior membranous portion, cartilage and several bones: the perpendicular plate of the ethmoid, the vomer and two bony crests of the maxilla and palatine. The cartilaginous portion is composed of a quadrilateral cartilage with a contribution from the lower and upper lateral alar cartilages forming the anterior nasal septum. The quadrilateral cartilage is 3-4 mm thick in its centre but

increases to 4-8 mm anteroinferiorly, an area which has been termed the footplate. The upper margin of the cartilage also expands where it is connected to the upper lateral cartilages, forming the anterior septal angle, just cranial to the domes of the lower lateral cartilages. It is bound firmly by collagenous fibres to the nasal bones, and to the perpendicular plate of the ethmoid and vomer and, where it sits inferiorly in the nasal crest of the palatine process of the maxilla, the fascial attachment effects a pseudoarthrosis. It abuts the maxillary spine at the inferior septal angle. Anteriorly, it is attached by a thin membranous septum to the medial crura of the lower lateral cartilages. The perpendicular plate forms the superior and anterior bony septum, is continuous above with the cribriform plate and crista galli and abuts a variable amount of the nasal bones. The vomer forms the posterior and inferior nasal septum and articulates by its two alae with the rostrum of the sphenoid, thereby creating the vomero vaginal canals which transmit the pharyngeal branches of the maxillary artery. Occasionally, the sphenoid sinus may pneumatize the

vomer. The inferior border of the vomer articulates with the nasal crest formed by the maxillae and palatine bones. The anterior border articulates with the perpendicular plate above and the quadrilateral cartilage inferiorly. The posterior edge of the vomer forms the posterior free edge of the septum. The nasal septum, and in particular the quadrilateral cartilage, is of crucial importance in the development of the middle third of the face. This has been the subject of considerable experimental and longitudinal clinical studies. The surface area of the septum measures between 30 and 35 cm² in adults. Deflections may develop at any of the septal articulations and spurs may also be found where the quadrilateral cartilage sends small processes between the ethmoid and vomer. Theile found septal deviations were more often to the left than the right. As such deflections are far commoner in men than women, they are most likely to be acquired due to trauma than be congenital and this has been substantiated by work on identical twins in relation to deformities of the anterior septum. Several benign and malignant mesenchymal and meningotheial lesions may preferentially affect or extend into the sinonasal tract. Glomangiopericytoma (GPC, formerly sinonasal type hemangiopericytoma) is a specific tumor with a predilection to the sinonasal tract. Sinonasal tract polyps with stromal atypia (antrochoanal polyp) demonstrate unique histologic findings in the sinonasal tract. Juvenile nasopharyngeal angiofibroma (JNA) arises from specialized tissue in this location. Meningioma may develop as direct extension from its intracranial counterpart or as an ectopic tumor. Selected benign mesenchymal tumors may arise in the sinonasal tract and pose a unique differential diagnostic consideration, such as solitary fibrous tumor and GPC or lobular capillary hemangioma and JNA. Although benign and malignant vascular, fibrous, fatty, skeletal muscle, and nerve sheath tumors may occur in this location, this paper focuses on a highly select group of rare benign sinonasal tract tumors with their clinicopathological and molecular findings, and differential diagnosis.¹ ^ - 2016. HPV DNA was detected in 53.8% of antrochoanal polyps, 15.1% of nasal polyps, and 5.8% of nasal turbinates. HPV16 was the predominant type with a detection rate of 76% in nasal polyps and 62% in antrochoanal polyps. Immunohistochemically, HPV positive tissues stained positive for HPV16 antigens and p16 in epithelial cell layers. No significant p16 over expression was traceable in antrochoanal polyps, nasal polyps and nasal turbinates by western blot. There was no correlation of HPV status with sex, age, smoking, alcohol consumption or allergic background. The present study shows a significant frequency of high risk type HPV16 in antrochoanal polyps. Absence of oncogenic

transformation or correlation of the HPV status with clinical data suggests a latent super infection, possibly because of anatomical proximity to the¹² 2015.

METHODS

The study was conducted in the department of ENT and HNS, Darbhanga medical college and Hospital, from March 2016 to February 2017, Patients coming from various parts of Bihar with any sinonasal mass will be included in the study. Total 50 patients were included, all of the recruited patients were evaluated to the demographic distribution, clinic-pathological features, radiological findings of sinonasal masses, relative incidence and to classify the lesions into neoplastic and non neoplastic lesion. subjected to a comprehensive history, clinical and radiological evaluation following histopathological evaluation as per the porforma designed for this study. Histopathological slides and block was examined. All surgically excised polypoidal masses were subjected to histopathological examinations in the Department of Pathology. Haematoxylin and eosin stains were used for all section for histopathological examination. Other special stains were used as and when required and natures of polypoidal masses were ascertained

RESULTS

All the sino-nasal masses were categorized into non-neoplastic neoplastic. The age ranged from 20 to 60 years with mean age of 34 years.

Table 1: Distribution age and sex in sino-nasal masses. (n=50)

Age	Male		Female	
	No of Patients	%	No of Patients	%
<20	04	08	02	04
21-30	05	10	01	02
31-40	16	32	09	18
41-50	08	16	02	04
51-60	02	04	01	02

The mean age (mean ± SD.) of patients was 34.020 ± 9.711 years with range 20 - 60 years and the median age was 34. years.

Table 2: Distribution of patients according to duration of illness (months).

Duration of illness (months)	No of Pt.	Percent
≤6	11	22
7-12	12	24
13-24	10	20
25-36	8	16
≥ 37	9	18
Total	50	100

Duration of symptoms of illness ranging between 7-12 months. Maximum number of patients¹² came with the duration of illness from 1- 6 months(22%). Ten patients¹⁰ came with duration of illness more 13 – 24 months

(20%), another nine patients were 25-36 months (16%). 9 patients came with the duration \geq months (18%).

Table 3: Relative distribution of sino-nasal mass.

Nasal mass	No of Patients	Percent
Neoplastic	12	24.0
Non-Neoplastic	38	76
Total	50	100

Demonstrates that nonneoplasia (76%) outnumbered their neoplastic counterpart in case of sino-nasal masses.

Table 4: Relative distribution of neoplastic sino-nasal mass.

Neoplastic	No of patients	Percent
Benign	5	41.7
Malignant	7	58.3
Total	12	100.0%

Demonstrates that malignant neoplasia (58.3%) outnumbered their benign (41.7%) counterpart in case of sino-nasal masses.

Table 5: Distribution of Malignant patients.

Malignant	Frequency	Percent
Adenocarcinoma	1	14.28
Low graded transitional cell type SCC	1	14.28
Metastatic clear cell CA	1	14.28
Sarcoma maxilla	1	14.28
Well differentiated SCC	2	28.00
Transitional cell type SCC	1	14.28
Total	7	100.0%

DISCUSSION

In this series, 50 cases of sino-nasal masses were studied at Darbhanga medical college and Hospital, from March 2016 to February 2017, The result of the present study were compared to the information obtained to by the review of literature in the field of research. The sex incidence of the present study shows that male were much more affected than females (in the ratio of 2.33:1) by person who go outside more for their day to day work - males are thus more exposed to the external environment which may have an aggravating factor for causation of the disease more. It was higher (male-to female ratio of 1.7:1) in the study by Zafar *et al*³ from india. While a study from Nigeria⁴ revealed an opposite ratio showing female preponderance (M:f ratio of 1:1.2). A British review of nasal polyposis reported a ratio at 2:1 (M:F). Regarding age of the patient it is revealed that patient in their third decade of life (18-29 years) suffered most (38%) from the disease. These group of patient are more prone to atmospheric pollution, mechanical and chemical hazards at working place etc. None of the patients was below the age of 18 years which again support the postulated inference. The second and fourth decade of life are the most vulnerable period for development of sino-nasal masses. Bakari *et al*⁵ had reported a peak incidence of 33 years, while for Zafar *et al*³ the mean age of presentation was 22.5 years.

Malignancies have been reported generally after the fourth decade of life. One of the cases of antro-choanal polyp was treated by simple polypectomy 1 year back. History of allergy was present in most of the cases of antro-choanal and ethmoidal polypi. This findings is strengthened by the observations of Eggeston and Wolff, 1947. History of bronchial asthma was found in one of cases of antro-choanal polyp supported by Samter and Beers, 1968. Forty six of the patients (92%) had nasal obstruction which meant that the mass was definitely obstructing the nasal airway. Antro-choanal polyp, rhinosporidosis, inverted papilloma, nasolabial cyst, haemangioma etc. had unilateral obstruction; whereas ethmoidal polyp, fibrous dysplasia of maxilla, carcinoma of maxilla etc. had bilateral nasal obstruction. The nasal masses which were exposed to the outside air become infected resulting in nasal discharge on an off either unilateral or bilateral depending on the site of the tumour. Bleeding per nose was a constant feature of malignant lesion of nose and nasal cavities, rhinosporidosis and inverted papilloma the nasal bleeding was unilateral whereas bilateral bleeding was the rule of malignant lesion (probably because they erode nasal septum early to occupy both the nasal cavities). Headache was seen in some cases of antro-choanal polyp, sarcoma maxilla, rhinosporidosis, fibrous dysplasia of maxilla, esthesioneuroblastoma etc. Causes of headache in case of antro-choanal polyp and rhinosporidosis may be due to associated maxillary nerves. Headache in case of fibrous dysplasia was due to enormous size of the mass. Toothache and palatal bulge were seen in case of squamous cell carcinoma of maxilla, fibrous dysplasia of maxilla and esthesioneuroblastoma. In all the cases toothache was due to involvement of the palate and gum either by erosion or by pressure effect. Proptosis was associated with esthesioneuroblastoma adenocarcinoma of maxilla, fibrous dysplasia of maxilla. In the former two cases erosion of the floor of the orbit was the cause of proptosis whereas in third and fourth cases expansile tumour mass caused the orbit to be displaced outwards. In all the cases the proptosis was of eccentric type i. e the eyeball was pushed anteriorly and laterally. Cheek swelling was observed in case of nasolabial cyst, fibrous dysplasia of jaw, and esthesioneuroblastoma due to forward bulging of the antero-lateral wall of maxilla. Visual acuity was diminished in the case of esthesioneuroblastoma, adenocarcinoma of maxilla and ethmoid, and it was absent (i.e, blind), in case of the massive fibrous dysplasia of right maxilla. This again can be attributed to the involvement of the orbit and optic nerve by the tumour mass. Anterior and posterior rhinoscopic examination were done routinely which revealed unilateral nasal mass in cases of haemangioma

nasolabial cyst antro-choanal polyp, rhinosporidosis, inverted papilloma, rhinolith etc. Bilateral presentation of the mass was seen in ethmoidal polyp, malignancy of maxilla, fibrous dysplasia etc. Antro-choanal polyp, ethmoidal polypi, naso-labial cyst, etc. were pale oedematous compressible painless and did not bleed to touch. But masses of malignancy, inverted papilloma, rhinosporidosis were pink or reddish in colour (due to increased vascularity and / or ulceration) non compressible and bleed to touch. Rhinosporidosis had a special appearance with granular surface studded with minute white dots (sporangia). Radiological investigation were done in all the 50 cases which included x-ray of paranasal sinuses (occipito-mental view or Water's view), x-ray chest (posterior-anterior view) and CT scan of nose and paranasal sinuses (both plain and contrast study). X-ray of the paranasal sinuses (occipito-mental view) was done in all cases - positive findings were seen in 35 patients (76%). Positive findings indicated as the presence of any of the following abnormalities e.g. opacity of maxillary sinuses, frontal sinuses, ethmoidal sinuses, opacity in nasal cavity, destruction of bone orbit, polypoidal mucosa in maxillary antrum etc. In all cases of antro-choanal polyp radio-opaque shadow was noted in one or both maxillary sinuses with sometimes polypoidal mucosa in it. In ethmoidal polyp bilateral opacity in ethmoidal sinuses with or without opacity in maxillary sinuses was noted. One of the cases of rhinosporidosis showed opacity in respective nasal cavity and maxillary antrum. In our study all 50 patients underwent CT scan. On the basis of radiology, out of 50 patients, 38 patients (76%) were non-neoplastic, 5 patients (41.7%) were benign, and 7 patients (58.3%) were malignant. In all the 50 patients, clinical diagnosis correlated with the radiologic diagnosis. Comparison of clinical and radiological findings in present study showed that the radiological findings were consistent with that of clinical suspicion. Bist SS *et al*⁶ reported similar findings. The diagnostic algorithm for sinus diseases continues to evolve along with the advances in imaging modality. Earlier, plain radiographs were one of the basis of diagnosis of the diseases involving sinuses but now high resolution computerized tomography have replaced plain radiographs for the investigation of the sinus diseases. CT scan is an useful and informative aid in diagnosis and tumour staging and for proper management. All the patient of sinonasal masses had undergone CT scan. Clinical, radiological and CT findings for each adjacent sub site were tabulated and compared by Tandon DA *et al*

^{7,11} in consecutive cases undergoing surgery for malignant lesions of

CONCLUSION

Both nasal endoscopy and CT scan are objective measures that can increase accuracy of diagnosis in nasal pathologies. For areas that are not accessible to nasal endoscopy, CT can be useful in identifying disease and its extension. It is concluded that significant lesion can be missed on either clinical or radiological evaluation and through histopathological evaluation should be done in all cases of sino-nasal lesion for accurate diagnosis and management. Thorough and careful anamnesis along with detailed investigation including histopathological examinations are necessary to pinpoint the diagnosis in equivocal cases, successfully corroborated the facts and figures of previous workers regarding different clinicopathological parameters however there are different in some aspects which is natural in a study like this because of its small size and short duration.

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