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ANALYSIS OF SINONASAL MASS LESIONS – A CLINICOPATHOLOGICAL STUDY

Pathology

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ABSTRACT

Over a period of 6 ½ years 304 biopsies from sinonasal mass lesions were studied. Non-neoplastic lesions (79.93%) were common than neoplastic lesions (19.07%). 68.42 % of all cases were in the age range of 11 to 40 years. Overall Male to Female ratio was 2:1. Commonest non-neoplastic lesions were inflammatory and allergic polyps(72.84%). Lobular capillary hemangioma, sinonasal papilloma and angiofibroma were common benign neoplasms. Squamous cell carcinoma, nasopharyngeal carcinoma and melanoma were common malignant neoplasms. Clinical features overlap between various non neoplastic and neoplastic lesions. FNAC and frozen section have a very limited utility. In fungal lesions, erosion of adjacent bone may lead to false impression of malignancy on CT scan.

KEYWORDS

Sinonasal lesions, Sinonasal malignancy

INTRODUCTION

Nasal cavity is subjected to various environmental insults ranging from infectious agents, allergens to gaseous and chemical toxins. This leads to a wide variety of non-neoplastic and neoplastic lesions. Sinonasal mass lesions usually present with nasal obstruction, rhinorrhoea, sneezing and epistaxis.

Radiological investigations like X-ray and CT scan may be useful to determine the extent of involvement and spread to adjacent structures. However, due to overlapping of clinical and radiological features in various non-neoplastic and neoplastic lesions, it is essential to study the histopathology of every sinonasal mass lesion.

Apart from establishing the final diagnosis in individual cases, study of biopsies can provide insights related to the pathogenesis and prognosis of these lesions. Hence, correlation of clinical, radiological and histopathological features in sinonasal mass lesions is essential and has significant impact on principles of management.

AIMS & OBJECTIVES

This study was undertaken to analyse the clinicopathological spectrum of sinonasal mass lesions and to correlate histopathological diagnosis with radiological findings .

MATERIAL & METHODS

It was a prospective and retrospective study carried in a teaching institute in Mumbai over a period of 6 years and 6 months. From the patient records clinical details and radiological findings (X-ray and CT scan) were noted. Tissue specimens were processed routinely after fixing in 10% formalin and stained with hematoxylin and eosin stains. Special stains like Gomori Methanamine Silver (GMS) stain for fungus was used as and when necessary. The neoplastic lesions were classified as per World Health Organization(WHO) classification. The inadequate samples as well as primary bony and cartilaginous lesions were not included in this study.

OBSERVATION & RESULTS

Out of the total 33654 tissue samples received in surgical pathology section over the study period, 304 biopsies from the sinonasal mass lesions were included in the present study. Neoplastic lesions constituted 61 cases (20.07%). Non-neoplastic lesions constituted 243 cases (79.93%). Amongst the neoplastic lesions benign constituted 7.89 % and malignant were 11.18% of all cases.

Maximum number of cases were in the age group of 21 to 30 years (83 cases). 68.42% of cases were in the age group of 11 to 40 years. The youngest patient was a 3 years female, a case of nasal glial heterotopia. There was an overall male preponderance with male:female ratio of 2:1. Non-neoplastic as well as neoplastic lesions showed increased incidence in males.

In the category of nonneoplastic sinonasal lesions, inflammatory polyps constituted 65.84% , followed by 11.93% of cases of fungal rhinosinusitis and chronic inflammation each. Inflammatory and allergic polyps were most common in the age range of 21 to 30 years in both males and females. Mucormycosis (10 cases) and Rhinosporidiosis(6 cases) were the common type of fungal infections. Commonly encountered benign sinonasal neoplasms included sinonasal papillomas (29.16%), hemangiomas (33.34%) and angiofibromas (25%) (Fig 1A , Table 1A). Majority of these were seen in males (17/24 cases). The age group showing maximum number of benign sinonasal neoplasms was 31 to 40 years (10 cases).

Squamous cell carcinoma was the commonest malignant sinonasal lesion (29.73%) followed by Nasopharyngeal carcinoma (24.32%), malignant melanoma (13.52%), sinonasal carcinoma (8.11%) and plasmacytoma (8.11%) (Fig 1B, Table 1B). Males (24 cases) had a higher incidence of malignancies as compared to females (13 cases). In the young age group of 11 to 20 years, 1 patient was a male diagnosed as squamous cell carcinoma, 2 patients were females diagnosed as nasopharyngeal carcinoma, 1 patient was a female diagnosed as neuroblastoma and 1 patient was male diagnosed as Tetarocarcinosarcoma.

Nasal obstruction(74.01%), nasal discharge(42.76%) and epistaxis(30.26%) were the common presenting symptoms in non-neoplastic and neoplastic lesions.

Out of 151 cases where CT scan findings were available, 114 cases could be categorized correctly as non-neoplastic, benign neoplasms and malignant neoplasms. 7 cases diagnosed as malignant lesions on CT scan (due to adjacent bony erosions) turned out to be fungal lesions

on histopathology.
FNAC was done in 8 cases and frozen section was done in 8 cases. In 4 cases of FNAC and 5 cases of frozen section, diagnosis correlated with final histological diagnosis.

Fig.1A) : Inverted Papilloma (H and E x 40)

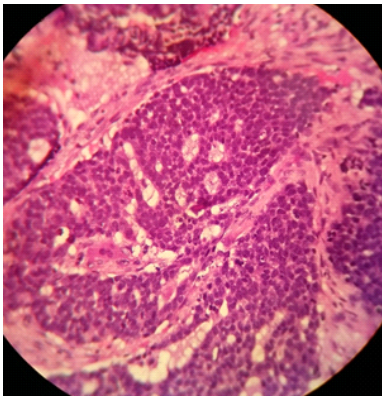

Fig.1B) Adenoid Cystic Carcinoma (H and E x 100)

TABLE
Table 1A : Benign Neoplastic Sinonasal lesions

No.	Lesion	Total Cases	% of cases
1	Sinonasal papilloma	7	29.16
2	Hemangioma	8	33.34
3	Angiofibroma	6	25
4	Schwannoma	2	8.34
5	Neurofibroma	1	4.16
	Total No. of cases	24	100

Table 1B) : Malignant Neoplastic Sinonasal lesions

No.	Type of Lesion	Total cases	% of cases
1	Squamous cell carcinoma	11	29.73
2	Nasopharyngeal carcinoma	9	24.32
3	Malignant Melanoma	5	13.52
4	Sinonasal carcinoma	3	8.11
5	Plasmacytoma	3	8.11
6	Adenoid Cystic carcinoma	2	5.41
7	Low grade adenocarcinoma	1	2.7
8	Neuroblastoma	1	2.7
9	Teratocarcinosarcoma	1	2.7
10	Metastatic tumor	1	2.7
	Total	37	100

DISCUSSION

Nasal polyps show lining of ciliated epithelium with or without squamous metaplasia, goblet cell metaplasia, edematous stroma containing seromucinous glands sometimes with glandular hyperplasia and inflammatory cells in various proportions. The differentiating features between the two polyps were the predominant type of inflammatory cells, basement membrane thickening and goblet cell metaplasia. Inflammatory polyps show inflammatory infiltrate of lymphocytes, plasma cells, macrophages and few eosinophils. Goblet cell metaplasia is commonly seen in them. Allergic polyps on the other hand show predominantly eosinophil cell infiltrate with hyaline thickening of basement membrane and occasionally seen goblet cell metaplasia.[1] In our study the incidence of inflammatory polyps was higher than allergic polyps. Weisskopf FA and Burn HF mentioned in their study that there is little difference between inflammatory and allergic polyps.[2]

Mucormycosis was the most common sinonasal fungal infection. Of the 10 cases, 4 were known case of diabetes mellitus. Pillsbury and Fischer (1977) reported correlation of diabetes mellitus and mucormycosis.[3] Aspergillus infections are mainly primary rather than superimposed upon other diseases such as diabetes mellitus.[4] Rhinosporidiosis is more common in males and in third decade of life, a finding seen in our study as well. Early stage of Rhinosporidiosis shows variable forms of life cycle of the organism with chronic inflammation while later stages show collapsed chitinous shells provoking foreign body giant cell reaction.[5] In our study 5 cases were in early stage and 1 case was in later stage.

Sinonasal papillomas on histology are of 3 types namely inverted papilloma, oncocytic papilloma and exophytic papilloma.[6] In our study,all were of inverted papilloma type. The incidence of hemangiomas in our study was 33.34% of benign sinonasal lesions which correlates with the study by Fu and Perin.[7] Hemangiomas show a wide age group distribution which is seen in our study and is comparable with the study by Osborn OA et al.[8] Commonest clinical presentation as mentioned in literature for hemangiomas are epistaxis and nasal obstruction. Nasal angiofibromas are highly cellular and richly vascularised mesenchymal neoplasms that involve the nasopharynx in males. All 6 cases of Nasal angiofibromas in our study were exclusively males.

Malignant lesions typically present with symptoms of long duration which mimics chronic inflammatory disease of nose and paranasal sinuses. The commonest clinical presentations mentioned in literature are nasal obstruction, nasal discharge, facial swelling and epistaxis. Uncommon clinical presentations in our study were headache, anosmia, facial pain and loss of vision. [9] Squamous cell carcinoma followed by the nasopharyngeal carcinoma are the common malignant lesions[10], the findings which were seen in our study as well. Our cases of squamous cell carcinomas were of Keratinizing type. Squamous cell carcinomas occur most frequently in the maxillary sinus(60-70%), followed by nasal cavity, ethmoid sinus and least commonly in the sphenoid and frontal sinus(1%). [11]

Nasopharyngeal carcinomas arise from the nasopharyngeal mucosa which shows squamous differentiation. This tumor commonly arises from the lateral wall of nasopharynx followed by superior and posterior wall of nasopharynx. [12] In our study, patients with nasopharyngeal carcinoma were between age range of 2nd to 7th decade with male to female ratio of 1:3.5 which correlates with the wide age range incidence and higher female to male ratio as seen in study by Yong-Ming Jeng et al.[13]

The utility of FNAC and frozen section in the diagnosis of lesions of nose and paranasal sinuses is rarely documented. However, CT scan & MRI provide significant information about texture, margins, the effect on bone and the vascularity of lesion. Out of 115 non-neoplastic lesions 7 cases were diagnosed as possibly malignant on CT scan, whereas 15 out of 27 malignancies were diagnosed as non-neoplastic and benign neoplasms highlighting the superior role of histopathology in establishing the final diagnosis.

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