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Histopathological study of neoplastic lesions in the nasal cavity,paranasal sinuses and nasopharynx

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Abstract:*Sinonasal tract including nasopharynx forms part of upper air way and affected by a wide range of neoplastic and non neoplastic lesions. The present study is a prospective study for a period of 2 years, at a tertiary care centre in Andhra Pradesh to evaluate the neoplastic lesions of nasal cavity, paranasal sinuses and nasopharynx by histopathological examination.Biopsy specimens received in the histopathology laboratory were analysed by routine H&E staining and IHC was done in few cases for definite diagnosis. Total number of lesions in the present study were 56. Out of these 30 were benign and 26 were malignant masses. Amongst the benign neoplastic lesions in the sinonasal tract inverted papilloma was most common and squamous cell carcinoma was most common amongst malignant lesions.Histopathological diagnosis of neoplastic lesions is essential as the treatment modality varies in the benign and malignant lesions. H&E staining is a golden standard method. However, IHC is useful in differentiating various undifferentiated or poorly differentiated malignancies.*

Keywords:*Histopathological study, Neoplastic lesions, Nasal cavity, Paranasal sinuses and Nasophaynx*

I. Introduction

The nasal cavity and paranasal sinuses are collectively called as sinonasal tract. Thesinonasal tract and nasopharynx form a functional unit and affected by a wide range of non neoplastic and neoplastic lesions[1]. Mechanical trauma , exposure to chemical agents, allergens and infectious agents results in formation of various tumour like conditions and neoplastic lesions[2]. The lesions present as mucosal thickenings or polypoidal masses with epistaxis or obstruction, making it difficult to differentiate nonneoplastic lesions from neoplastic masses on clinical examination[3,4].Histopathological diagnosis is mandatory for treatment and prognosis of sinonasal and nasopharyngeal lesions[5,6].IHC is useful to differentiate various poorly differentiated malignancies[7].

II. Aims And Objectives

The study was conducted to analyse the histopathological spectrum of neoplastic lesions and to classify the lesions into benign and malignant types.

III. Materials And Methods

The present study was a prospective study and carried out at tertiary care hospital in Andhra Pradesh for a period of two years. Total number of 56 biopsy specimens received in the department of pathology were analysed after routine processing and H&E staining technique.IHC was done in cases with diagnostic dilemma.

IV. Results

A total number of 56 cases in the nasal cavity,paranasal sinuses and nasopharynx were encountered in the present study. In the study population, males were 32(57.14%) commonly effected than females 24(42.86%). Maximum number of malignant lesions were found in the age group of 51-60 years. No significant age association was found with benign lesions. Among 56 cases,44 cases of sinonasal tract neoplasms and 12 cases of nasopharyngeal neoplasms were observed.

Sinonasal tract neoplasms

Among the 44 neoplastic lesions of sinonasal tract 27(61.37%) cases were benign and 17(38.63%) cases were malignant. Out of 27 benign lesions, there were 12(44.44%) cases of hemangioma,10(37%) cases of papilloma and 1(3.7%) case each of Angiofibroma, Schwannoma, Odontogenic fibroma, Chondroma and Pituitary adenoma.(Table 1)

In the present study it was seen that squamous cell carcinoma was the common malignant lesion constituting 9(53%) cases out of 17 cases followed by 2(11.7%) cases each of adenoid cystic carcinoma and melanoma with 1(5.9%) case each of transitional cell carcinoma, olfactory neuroblastoma, non hodgkins lymphoma and sarcoma. Out of 17 malignant cases, 1 case was primarily diagnosed as poorly differentiated

carcinoma/ sarcoma on H&E staining technique. On IHC this tumour was negative for EMA and positive for vimentin, confirmed as sarcoma. Out of 2 cases of melanoma 1 case was subjected for IHC with HMB45 and confirmed as melanoma.(Table 2)

Nasopharyngeal masses

Out of 12 cases 3(25%) cases were benign neoplasms and 9(75%) were malignant tumours. All benign neoplasms involving the nasopharynx in the present study were Angiofibroma only. Among the 9 cases of malignant lesions 4(44.45%) cases were diagnosed as squamous cell carcinoma followed by 3(33.33%) cases of nasopharyngeal undifferentiated carcinoma (lymphoepithelioma) and 2(22.22%) cases of Non Hodgkins Lymphoma..(Table 3) Microscopically out of 3 cases of undifferentiated carcinoma 2 cases were diagnosed as poorly differentiated carcinoma/lymphoma on H&E stained sections. These two tumours were further correlated with IHC markers Pan CK and LCA. The Pan CK was positive in tumour cells and LCA is positive in the lymphoid population of cells in between the tumour cells. Diagnosed finally as nasopharyngeal undifferentiated carcinoma/lymphoepithelioma with schmincke's pattern.

V. Discussion

The histopathological spectrum of neoplastic lesions of sinonasal tract and nasopharynx is complex and display a wide range of benign and malignant types. Clinical features with advanced imaging technique correlation gives a probable diagnosis, however histopathological examination for categorisation of these lesions is essential for proper management. Inflamatory lesions comprising majority of sinonasal lesions and neoplasms constituting approximately 3% of head and neck tumours[8].In the present study of lesions of sinonasal tract including nasopharynx showed, male preponderance with male female ratio of 1.33:1 which is similar to the study by dineshgarget al[9]. But a Nigerian study revealed female predilection with male female ratio of 1:1.2(Bakari A et al)[10] .

In our study age group ranging from 12-75 years and no significant age association was found with benign lesions which is comparable to the study done by SV Swamy et al[11]. Dinesh garg et al[9] study revealed second and third decades of life were the most vulnerable period as observed byBakari A et al[10] .large number of malignant lesions were found in the age group of fourth to sixth decade. But the Dinesh garg study showed large number of malignant lesions in the sixth and seventh decade of life. In our study out of 56 cases 30(53.57%) were benign and 26(46.43%) were malignant tumours similar to the study done by Jaffar U. Khan N et al in which the benign lesions were 56(58.33%) cases and malignant lesions (41.67%)[5].

Among benign epithelial tumours, commonest tumour was papilloma.Amongpapillomas inverted papilloma is common (of 10 papillomas 9 were inverted type and 1 was exophytic squamous papilloma).Squamous cell carcinoma was the commonest malignant tumour and second most common was adenoid cystic carcinoma which is comparable to the study of Panchal et al [12]. Panchal et al studied 120 specimens of sinonasal tumours in 10 years in which 69 cases were epithelial(59.2%). Of these, inverted papilloma in benign group and squamous cell carcinoma in malignant group were frequent neoplasms. A study done by Bhattacharya J et al also revealed similar findings[13]. Buchwald et al from 1975 -1993 histopathologically studied 82 cases of inverted papilloma, of these in 5 cases associated carcinoma was observed[14].In our study one case of pituitary adenoma extending into the nasal cavity was observed.

In our study, 1 case each of transitional cell carcinoma, olfactory neuroblastoma arising from the olfactory sensory epithelium were reported which is comparable to the study done by Parajuli et al and a study by SV Swamy et al[15,11].

In nonepithelial type tumours commonest was hemangioma(lobular capillary and capillary) constituting 12 out of 19 non epithelial benign neoplasms which was correlated with Modh et al study[3].

Schwannoma in the nose is a rare entity, but we diagnosed a case of schwannoma in a female aged 16 years which was also observed by Modh et al and Dinesh garg et al.one case of odontogenic fibroma extending from maxilla into the nasal cavity was also reported in our study. Tufalipatanakaret al studied a case of nasal chondroma which is relatively uncommon in nasal cavity[16]. This rare tumour was encountered in our study and reported in 45 years female.

In our study 4 cases of angiofibromas constituting (13.33%) of benign lesions.Buttacharya J et al study revealed 4(23.52%) cases of angiofibroma in benign group.In the present study Non Hodgkins Lymphoma constituting 3 cases in malignant group.NHL cases were also reported in Battacharya J et al study.

A total number of 4 malignancies were subjected for IHC. Of these two were nasopharyngeal undifferentiated carcinoma, and one each case of melanoma and sarcoma. IHC is used in our study for conformation of diagnosis after histopathological examination on routine H&E stained sections. On routine examination sarcoma was reported as spindle cell carcinoma/ sarcoma, undifferentiated carcinoma as poorly differentiated carcinoma/lymphoma and melanoma as melanoma.

VI. Conclusion

Despite clinical diagnostic dilemma in the lesions of sinonasal tract and nasopharynx, histopathological examination is essential to differentiate various inflammatory, benign lesions from malignant tumours as the treatment modality varies.Routine H&E staining technique is a golden standard procedure, however IHC is mandatory in differentiating poorly differentiated or undifferentiated malignant tumours for proper diagnosis and management. Of the benign epithelial neoplasms, commonest was papilloma and commonest malignant tumour was squamous cell carcinoma. Benign tumours like inverted papilloma, chondroma need close follow up as they may reccur and transform into malignancy.

References

[1] Rosai and Ackerman's Surgical Pathology. 9th Ed. (Vol 1),2004;7:305-305,317-318.
[2] Lingen MW, Kumar V. Head and Neck. In: Kumar V, Abbas AK, Fausto N, editors.Robbin's and Cotran Pathologic Basis of Disease. 7th ed. Philadelphia: Elsevier inc; 2005. p. 783
[3] Modh S K, Delwadia K N, Gonsai R N. Histopathological spectrum of sinonasal masses- A study of 162 cases. Int J Cur Res Rev 2013; 5(3): 83-91[
[4] Tondon PL, Gulati J, Mehta N. Histological study of polypoidal lesions in the nasal cavity. *Indian J Otolaryngol.* 1971;13:3-11.
[5] Khan N, Zafar U, Afrozi N, Ahmad SS, Hafan SA. Masses of Nasal cavity, Paranasal sinuses and Nasopharynx. A clinicopathological study. *Indian Jotolaryngol Head Neck Surg.* 2006;58:233-37.
[6] Wenig M B. Tumors of the upper respiratory tract. Part A: Nasal cavity, paranasal sinuses, and nasopharynx. Chapter 4, in Fletcher C D M, Ed. Diagnostic Histopathology of Tumors; vol 1, 3rd ed. Philadelphia, USA: Churchill Livingstone (Elsevier); 2007: pp 83-149
[7] Bruce M. Wenig MD. Undifferentiated- Neoplasm of the sinonasal tract. Arch Pathol Lab Med-Vol 133, may 2009.
[8] Sharma R, Sharma VK, Madhok R, Agarwal T, Mehrotra A, Kochchar A. Uncommon and atypical sinonasal masses: Diagnostic and therapeutic challenges. ClinRhinol An Int J 2012; 5(3): 114-11
[9] Dinesh garg, Kusummathur. Clinico-pathological study of space occupying lesions of nasal cavity,Paranasal sinuses and nasopharynx. Journal of clinical and diagnostic research.2014 Nov,Vol(B11):FC04-FC07.
[10] Bakari A, Afolabi QA, Adoga AA, et al. Clinico-pathological profile of sino nasal masses: An experience in National Ear Care Center Kaduna, Nigeria. *BMC ResNotes.* 2010;3:186.
[11] SV Swami, SD Birare ,KTDalve, ST Korade.Clinicopathalogical study of non-neoplastic and neoplastic sinonasal lesions. Journal of Diagnostic Pathology and oncology, .April-june 2017;2(2):40-43.
[12] Panchal L, Vaideeswar P, Kathpal D, Madiwale CV, Prabhat DP. Sinonasal epithelial tumors: a pathological study of 69 cases. J Postgrad Med 2005; 51:30–35.
[13] Bhattacharya J, Goswami BK, Banerjee A, Bhattacharyya Ranjan,Chakrabarti, Giri A. The Egypitian Journal Of Otolaryngology; 2015; 31:98-104.
[14] Buchwald C, Franzman MB, Tos M. Sinonasalpapillomas: a report of 82 cases in Copenhagen County including a longitudinal epidemiological and clinical study. Laryngoscope 1995; 105:72–79.
[15] Parajuli S, Tuladhar A. Histomorphological spectrum of masses of nasal cavity, paranasalsnues and nasopharynx, journal of pathology of Nepal,2013;3(5):351-55.
[16] TufailPatanakar, Diane Armao ,Suresh K. Mukherji. Nasal Chondroma. American Roentgen Society.2000;174:1166.

Table 1: Benign tumours of sinonasal tract-(61.37%)-27 cases

Age group (in years)	males	females	Papilloma(37%)		Hemangioma (44.44%)	Schwannoma (3.7%)	Pituitary adenoma (3.7%)	Angio-Fibroma (3.7%)	Chond-roma (3.7%)	Odantogenic Fibroma (3.7%)
			Inverted	Squamous	Capillary/ Lobular capillary					
11 to 20	1	4	0	0	3	1	0	1	0	0
21 to 30	3	1	1	0	2	0	0	0	0	1
31 to 40	1	4	2	0	3	0	0	0	0	0
41 to 50	2	4	3	0	2	0	0	0	1	0
51 to 60	2	0	0	0	1	0	1	0	0	0
61 to 70	4	0	2	1	1	0	0	0	0	0
71 to 80	1	0	1	0	0	0	0	0	0	0
total	14	13	9	1	12	1	1	1	1	1

Table 2: Malignant tumours of sinonasal tract-(38.63%)-17 cases

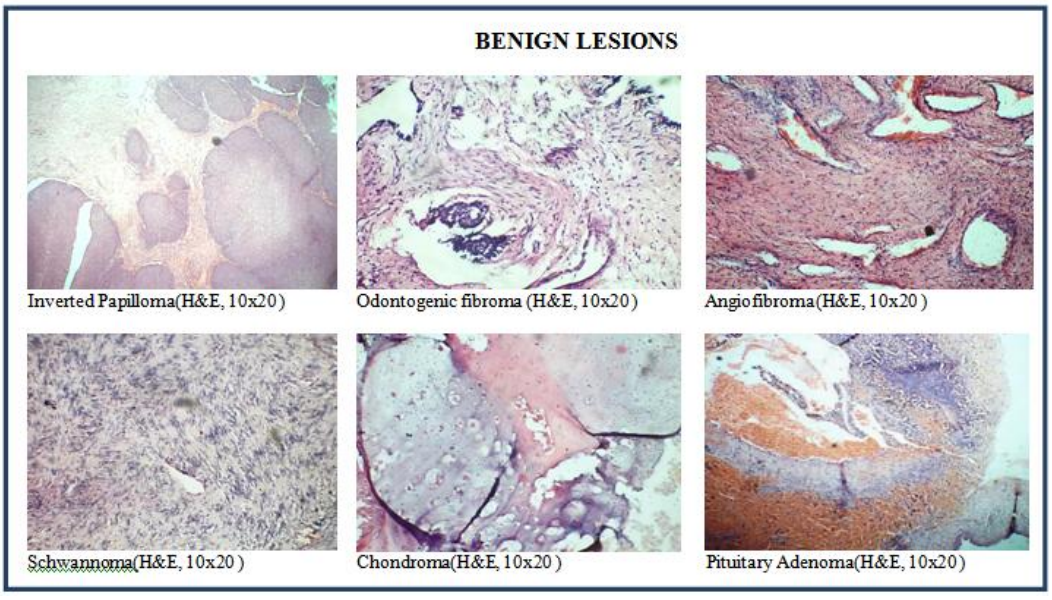
Age group (in years)	males	females	squamous cell carcinoma (53%)	Adenoid cystic carcinoma (11.7%)	transitional cell carcinoma (5.9%)	Melanoma (11.7%)	olfactory neuroblastoma (5.9%)	Lymphoma (5.9%)	Sarcoma (5.9%)
21 to 30	2	1	2	0	0	0	0	0	1
31 to 40	2	2	1	1	1	0	1	0	0
41 to 50	1	0	0	0	0	0	0	1	0
51 to 60	6	2	5	1	0	2	0	0	0
61 to 70	0	1	1	0	0	0	0	0	0
total	11	6	9	2	1	2	1	1	1

Table 3: Benign and Malignant tumours of nasopharynx

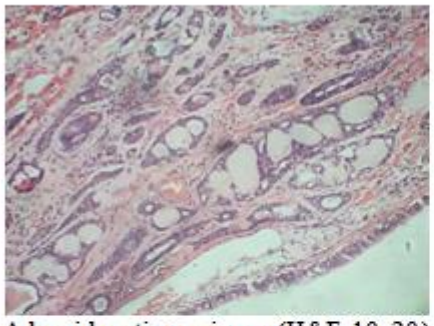
Age group (in years)	males	females	Benign	Malignant		
			Angiofibroma	squamous cell carcinoma	undifferentiated carcinoma	lymphoma
11 to 20	1	1	1	0	1	0
21 to 30	2	0	2	0	0	0
31 to 40	1	2	0	2	0	1
41 to 50	1	2	0	1	1	1
51 to 60	0	0	0	0	0	0
61 to 70	2	0	0	1	1	0
total	7	5	3	4	3	2

Table 4: Neoplastic lesions of sinonasal tract and nasopharynx

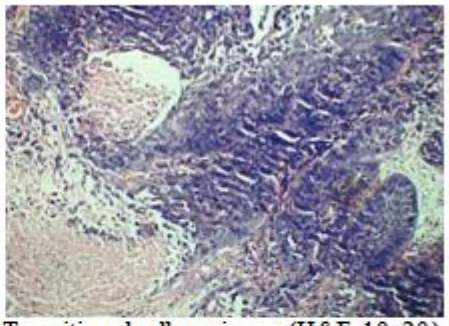
Benign 30 cases(53.57%)		Malignant 26cases (46.43%)	
Hemangioma	12(40%)	Squamous cell carcinoma	13(50%)
Papilloma	10(33.33%)	Undifferentiated carcinoma	3(11.54%)
Angiofibroma	4(13.33%)	Lymphoma	3(11.54%)
Schwannoma	1(3.33%)	Adenoid cystic carcinoma	2(7.77%)
Pituitary Adenoma	1(3.33%)	Malenoma	2(7.77%)
Chondroma	1(3.33%)	Transitional cell carcinoma	1(3.84%)
Odontogenic fibroma	1(3.33%)	Olfactory neuroblastoma	1(3.84%)
		Sarcoma	1(3.84%)



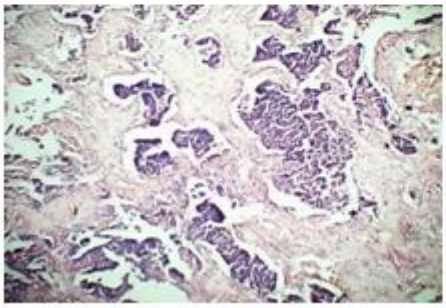
MALIGNANT LESIONS



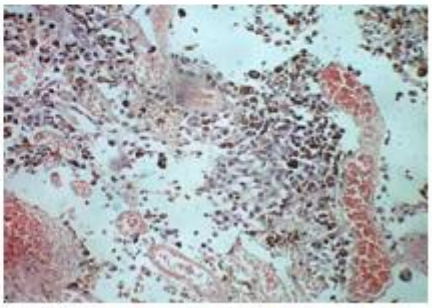
Adenoid cystic carcinoma(H&E, 10x20)



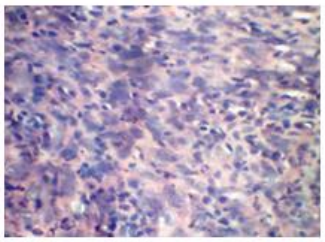
Transitional cell carcinoma(H&E, 10x20)



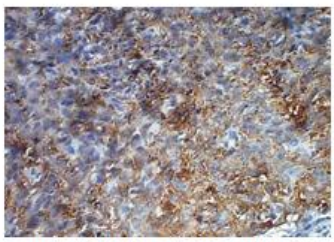
Ofactory neuroblastoma(H&E, 10x20)



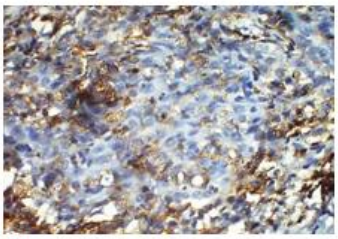
Melanoma(H&E, 10x20)



(H&E, 10x40)

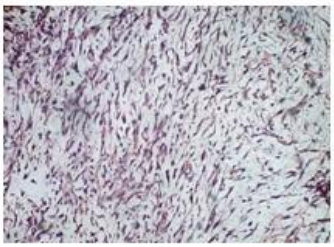


(IHC-Pan CK positive in tumour cells, 10x20)

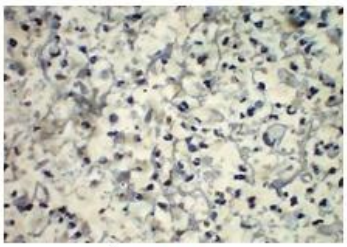


(IHC- LCA positive in lymphocytes, 10x40)

Nasopharyngeal undifferentiated carcinoma



(H&E, 10x20)



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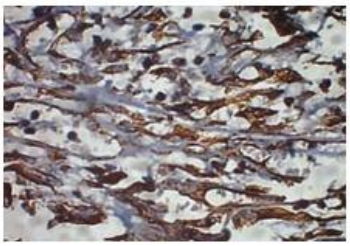

(IHC- Viementin positive, 10x40)

Sarcoma