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Original Research Paper

Pathology

A HISTOPATHOLOGICAL STUDY OF SCHNEIDERIAN PAPILLOMAS

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ABSTRACT Sinonasal papillomas, also known as schneiderian papillomas are uncommon benign epithelial tumours arising exclusively from the ectodermally derived respiratory epithelium. These are classified into three distinct histopathological subtypes which includes inverted papillomas, exophytic papillomas and oncocytic papillomas. A retrospective and prospective study of 27 cases of schneiderian papillomas was carried in one of the teaching institutes in Mumbai, over a period of 8 and half years. This study included a total of 27 cases of schneiderian papillomas consisting of 24 cases of inverted papilloma (88.88%), 2 cases of exophytic type (7.40%) and 1 case of oncocytic type (3.7%). Most patients presented with history of chronic rhinosinusitis characterised by complaints of nasal obstruction, discharge, rhinitis and headache. Amongst the inverted papillomas, malignant transformation was observed in 3 cases (11.11%), including two cases of carcinoma in situ and one case with features of squamous cell carcinoma. Complete surgical excision is the mainstay of treatment for all sinonasal papillomas. Schneiderian papillomas are benign tumours which need complete clinical, radiological and histopathological evidences to rule out rare transformation into malignant tumours.

KEYWORDS :

INTRODUCTION

Sinonasal papillomas are uncommon benign epithelial tumours arising exclusively from the ectodermally derived respiratory epithelium also known as schneiderian epithelium[1]. Hence these tumours are also known as schneiderian papillomas. Schneiderian epithelium is formed by the invagination of the embryonic olfactory ectoderm and it forms the respiratory mucosal lining of the nasal cavity and paranasal sinuses[2]. It consists of pseudostratified columnar ciliated epithelium with interspersed goblet cell.

Ward described inverted papilloma in 1854 for the first time. Billroth (1855) described the first case of true papilloma of the nasal cavity and he called it 'villiform cancer'[3]. Ringertz (1938) described the microscopic appearance and the tendency of the tumour to invert into the connective tissue stroma[4].

In 1991, the WHO classified sinonasal papillomas into three distinct histopathological subtypes which includes inverted papillomas (inverted growth of squamous cells), exophytic papillomas (fungiform with fibrovascular core and squamous epithelium), and oncocytic papillomas (cylindrical and columnar epithelium)[5].

MATERIAL AND METHODS

A retrospective and prospective study of 27 cases of schneiderian papillomas was carried in one of the teaching institutes in Mumbai, over a period of 8 and half years. For clinical records, age, sex, clinical presentation of the patient and investigations including radiological examination were noted. The tissue specimens were processed routinely after fixing in 10% formalin and stained with hematoxylin and eosin stains.

RESULTS

We studied a total of 27 cases of schneiderian papillomas. Our study included predominantly inverted papilloma (24/27 cases) amounting to 88.88%. There were 2 cases of exophytic type (7.40%) and 1 case of oncocytic type (3.7%).

Inverted papilloma

The age distribution in our patients was between 1st decade to 7th decade with peak incidence in 5th decade. It also showed a male preponderance with M:F ratio of 3:1. Nasal cavity was involved in all the 24 cases with 8 cases of them showing extension to the adjacent sinuses. Radiology was available in 10 out of 24 cases which showed extension with bony involvement in 8 cases and localised disease process in 2 cases. Histology revealed inverted or endophytic growth of the squamous and respiratory epithelium. Also numerous intraepithelial microcysts containing cell debris, macrophages and mucin were present. Epithelial transmigration of neutrophils and delicate basement membrane was also seen. Dysplasia was noted in 10 cases (37.03%) and malignant transformation was observed in 3 cases (11.11%). In two cases, there was carcinoma in situ whereas one case showed features of squamous cell carcinoma.

Exophytic papilloma

Both the patients were male aged 22 years and 45 years respectively. Both the cases in our study had involvement of nasal cavity with one specifically arising from the nasal septum. Both of these cases were received as biopsies.

Microscopically it showed papillary fronds with fibrovascular core. Lining was composed of stratified squamous epithelium. Mitosis was rare. Surface keratinisation was not seen.

Oncocytic papilloma

It was a single case of 55 year old female with involvement of nasal cavity and presenting with nasal obstruction and headache. WHO5 states that oncocytic papilloma shows no gender predilection with majority of patients being above 50 years and that they almost always occur unilaterally on the lateral nasal wall or in maxillary sinus or ethmoid. This case was received as an excision mass.

Histologically, it showed both exophytic and endophytic patterns with epithelium composed of tall columnar cells having swollen, finely granular cytoplasm reminiscent of oncocytes. Intraepithelial mucus containing microcysts and small neutrophilic microabscesses were also seen.

Characteristic features of Schneiderian Papilloma

Of all the cases of schneiderian papilloma, 55.55% cases had

a history of chronic rhinosinusitis characterised by complaints of nasal obstruction, discharge, rhinitis and headache. 10 cases (37.03%) of our study had evidence of dysplasia on histology whereas 3 cases (11.11%) had malignant transformation. All the three cases were of inverted papilloma subtype. Out of these three cases, two had evidence of carcinoma in situ whereas one had features of squamous cell carcinoma.

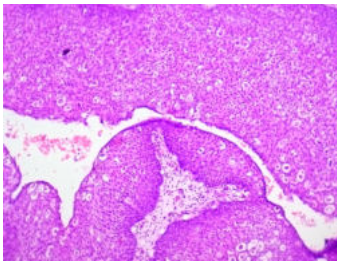

Figure 1: Histopathology of Inverted Papilloma showing inverted growth of squamous and respiratory epithelium

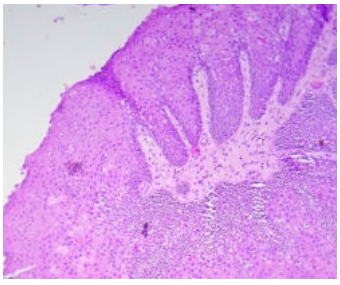

Figure 2: Histopathology of Inverted Papilloma showing endophytic growth of non-keratinising squamous epithelium

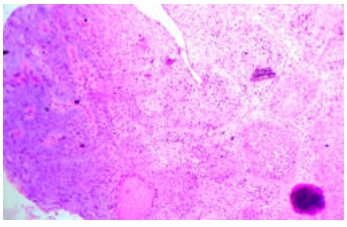

Figure 3: Histopathology of Exophytic Papilloma showing exophytic proliferation of well differentiated stratified squamous epithelium

TABLE 01 : SITE DISTRIBUTION IN SCHNEIDERIAN PAPILLOMA

SITE INVOLVED	Associated paranasal sinus	NO. OF CASES
Nasal cavity alone		19
Nasal cavity with one paranasal sinus	Maxillary sinus	4
	Ethmoid sinus	1
Nasal cavity with more than one sinus	Maxillary sinus + sphenoid sinus	1
	Ethmoid sinus + frontal sinus	1
	Sphenoid sinus + Ethmoid sinus	1
TOTAL		27

TABLE 02 : FEATURES OF SCHNEIDERIAN PAPILLOMAS

FEATURE	PERCENTAGE OF CASES
HISTORY OF CHRONIC RHINOSINUSITIS	55.55%
BONY INVOLVEMENT	33.33%
DYSPLASIA	37.03%
MALIGNANT TRANSFORMATION	11.11%

DISCUSSION

Sinonasal papillomas make up 0.5-4% of all primary nasal tumours[6]. The most commonly diagnosed subtypes include IP and exophytic papillomas with almost equal incidence whereas oncocytic papillomas are the rarest type with an incidence of only 3-5% of all papillomas[7,8]. Hyams et al[9] in a study of 315 cases of sinonasal papilloma have found almost equal incidence of inverted (47.30%) and exophytic papilloma (49.53%) with 10 cases of oncocytic papilloma (3.17%). Whereas Vorasubin N et all found inverted papilloma to be the most predominating type (52.85%) followed by exophytic papilloma (35.71%) and oncocytic papilloma (12.85%) respectively. Exophytic papillomas and IP present with a 3:1-8:1 male:female predominance, whereas no sex predilection is seen in oncocytic papillomasl. Our study findings correlate with that of Snyder and Perzin[10], Dasgupta et al[11] and Zafar et al[12].

Exophytic papillomas almost exclusively arise from the nasal septum[13] as seen in our study. Barnes L et al[8] and Anari S et al–[14] stated that IP and OSP generally originate from the lateral nasal wall, ethmoid sinus, maxillary sinus, and, less commonly, from the frontal and sphenoid sinuses or nasal septum which was also observed in our study. OSP formation is not related to the human papilloma virus (HPV) although HPV types 6, 11, 16, and 18 are supposed to play a leading role in the development of IP and exophytic papillomas[1].

CT scan usually shows a mass in the nasal cavity in continuation with the sinus and characterised by a heterogenous contrast enhancement and unilateral sinus opacification which point towards a diagnosis of papilloma[8–14]. Progressive enlargement of this tumor results in thinning or bowing of adjacent bone. MRI is useful in defining the extent of the tumour and for detecting the extension of tumor.

Grossly, IP usually appears large, firm, and gray in colour with a multinodular, polypoid, uneven surface. Histologically, IP shows inverted or endophytic growth of non-keratinizing transitional cells. The thick epithelium undergoes squamous maturation and inverts into the stroma with a distinct basement membrane that separates the epithelium from the underlying connective tissue stroma. Surface keratinisation and a granular cell layer are uncommon. Numerous intraepithelial microcysts containing cell debris, macrophages, and mucin are present[5].

Oncocytic papillomas on the other hand appear grossly as soft, fleshy papillary tissue. Histologically, these papillomas exhibit both exophytic and endophytic patterns with pseudostratified columnar cell epithelium. Individual cells appear oncocytic with uniform small dark round nuclei and eosinophilic cytoplasm[8]. The oncocytic epithelium differentiates OSP from other sinonasal papillomas.

Exophytic papillomas grossly appear as gray–tan, exophytic, papillary proliferations attached to the underlying mucosa by a narrow stalk. Histologically, these papillomas have exophytic proliferations having a well differentiated stratified squamous epithelium lining with associated fibrovascular cores. Keratin formation can be present in the surface epithelium in the form of hyper- and parakeratosis. Koilocytosis may be seen in the superficial cells.

Perez-Ordonez B et al[15] had stated that transformation of sinonasal papillomas into malignancy is described in inverted papilloma and oncocytic papillomas but not in exophytic papillomas with 5-15% of cases of inverted papillomas and 10–17% of cases of oncocytic papillomas being associated with malignancy[7–16]. Our study showed 11.11% of cases with malignant transformation, all of them being inverted papilloma cases. Malignant transformation

can also develop later at the site of previous resection. Squamous cell carcinoma is the predominant malignancy associated with IP and oncocytic papillomas–[14].

The differential diagnosis for inverted papilloma includes nasal polyp with squamous metaplasia, respiratory epithelial adenomatoid hamartoma (REAH) and invasive carcinoma. Oncocytic papilloma is occasionally confused with low grade papillary adenocarcinoma. Also the mucin filled cysts of oncocytic papilloma are often mistaken for rhinosporidiosis.

Complete surgical excision is the mainstay of treatment for all sinonasal papillomas. Although endoscopic approach is preferred nowadays but the type of approach is ultimately decided by the site of tumor attachment and extension[1]. Incomplete surgical resection usually results in recurrence[7]. IP cases are the most to recur with an incidence of 5-60% of cases recurring whereas about 25–35% of OSP cases recur within 5 years of resection. Recurrences can occur in up to 22% of exophytic papilloma cases[1].

CONCLUSION

Schneiderian papillomas are benign tumours which need complete clinical, radiological and histopathological evidences to rule out rare transformation into malignant tumours.

REFERENCES

1. Vorasubin N, Vira D, Suh JD, Bhuta S, Wang MB. Schneiderian papillomas: Comparative review of exophytic, oncocytic, and inverted types. *Am J Rhinol Allergy*. 2013;27(4):287-292. doi:10.2500/ajra.2013.27.3904
2. Bishop JA. OSPs and ESPs and ISPs, Oh My! An Update on Sinonasal (Schneiderian) Papillomas. *Head Neck Pathol*. 2017;11(3):269-277. doi:10.1007/s12105-017-0799-9
3. Brown, B. (1964). The Papillomatous Tumours of the Nose. The Journal of Laryngology & Otology, 78(10), 889-905. doi:10.1017/S0022215100062952.
4. Ringertz N. The pathology of the malignant tumours which arise in the nasal and the paranasal cavities and the maxilla. Acta Otolaryngol. 1938;27:31-42.
5. Barnes L, Eveson JW, Reichart P, Sidransky D E. Pathology and Genetics of Head and Neck Tumours. Kleihues P, Sobin LH, series cds. World Health Organization Classification of Tumours. *Lyon, Fr IARC Press*. 2005.
6. Woodruff WW, Varbae DP . Inverted papilloma of the nasal vault and the paranasal sinuses. Am J Roentgenolo. 1994;162(2):419-23.
7. Cheng T-Y, Ueng S-H, Chen Y-L, Chang K-P, Chen T-M. Oncocytic schneiderian papilloma found in a recurrent chronic paranasal sinusitis. *Chang Gung Med J*. 2006;29(3):336-341.
8. Barnes L BC. Oncocytic Schneiderian papilloma: a reappraisal of cylindrical cell papilloma of the sinonasal tract. *Hum Pathol 1984 Apr;15(4)344-51*. 15(4):344-351.
9. VJ H. Papillomas of the nasal cavity and paranasal sinuses. A clinicopathological study of 315 cases. *Ann Otol Rhinol Laryngol 1971 Apr;80(2)192-206*. 80(2):192-206.
10. Snyder RN PK. Papillomatosis of nasal cavity and paranasal sinuses (inverted papilloma, squamous papilloma). A clinicopathologic study. *Cancer 1972 Sep;30(3)668-90*. 30(3):668-690.
11. Dasgupta A, Ghosh RN, Mukherjee C. Nasal polyps - histopathologic spectrum. *Indian J Otolaryngol Head Neck Surg Off Publ Assoc Otolaryngol India*. 1997;49(1):32-37. doi:10.1007/BF02991708
12. U. Zafar, N. Khan, N. Afroz SAH. Clinicopathological study of non-neoplastic lesions of nasal cavity and paranasal sinuses. *Indian J Pathol Microbiol*. 2008;51:26-29. doi:10.1038/139022d0
13. Orland RR, Rubin A, Terrell JE, Anzai Y, Bugdaj M, Lanza DC. Sinus inflammation associated with contralateral inverted papilloma. *Am J Rhinol*. 2002;16(2):91-95. doi:10.1177/194589240201600204
14. Anari S, and Carrie S. Sinonasal inverted papilloma: Narrative review. J Laryngol Otol 124:705–715, 2010.
15. Perez-Ordoñez B. Hamartomas, papillomas and adenocarcinomas of the sinonasal tract and nasopharynx. J Clin Pathol. 2009 Dec;62(12):1085-95. doi: 10.1136/jcp.2007.053702. PMID: 19946095.
16. Kaufman MR, Brandwein MS LW. Sinonasal papillomas: Clinicopathologic review of 40 patients with inverted and oncocytic Schneiderian papillomas. *Laryngoscope:*. 2002;112:1372–1377.