

Clinicopathological Characteristics of Nasal Polyps with Chronic Sinusitis

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ABSTRACT:

Objective: To evaluate the clinicopathological characteristics of nasal polyps associated with chronic sinusitis in polypectomy specimens.

Materials and Methods: A total of 78 cases clinically presenting with signs and symptoms of chronic sinusitis with nasal polyps were studied over a period of 2 years.

Results: Out of 78 cases 57 were non-neoplastic and 21 were neoplastic polyps, out of these only two cases were malignant. Non neoplastic polyps were bilateral in 37 cases and unilateral in 30. Majority among non neoplastic category were of inflammatory polyps (53.73%). Other types included allergic 26.86%, fungal infection with polyp 14.92% and lymphocytic category 4.47%. Majority of the cases that is 93.58%, including all types of polyps presented with nasal obstruction and signs and symptoms of chronic sinusitis.

Conclusion: Nasal polyps with chronic sinusitis diagnosed clinically are not always non-neoplastic in nature. Hence, histopathological evaluation in all such cases is essential to diagnose both benign and malignant masses.

Keywords: Nasal polyps, Chronic sinusitis, Neoplastic nasal masses, Histopathology, Differential diagnosis

INTRODUCTION:

The routine evaluation of nasal biopsy specimens obtained at polypectomy remains controversial.¹ Nasal polyps is not a disease, but a physical finding associated with a host of causes. It manifests as a benign, chronic inflammatory disease of sinonasal mucosa.² Clinical evaluation is considered sufficient to ascertain the nature of surgically removed specimens especially when they appear as simple nasal polyps. In clinical practice nasal surgery is not only done for nasal polyps, but for any growth or mass, mucosal abnormalities, ulcers etc.³ Most polyps originate from the clefts of osteomeatal complex and extend into the nasal cavity, leading to nasal obstruction, loss of smell, headache and secondary

chronic sinusitis.^{4,5} The pathogenesis of polyp formation is still unknown. Genetic predisposition has been suggested, but remains unproven. Activated epithelial cells may be a major source of inflammatory mediators. These cause migration of eosinophils with proliferation and activation of fibroblasts leading to polyp formation. In general population, the overall prevalence of nasal polyps in adults range from 1 to 4%. Nasal polyps usually present between ages 30 to 60 years with strong male predominance range between 2:1 and 4:1.⁶ Nasal polypectomy is a common operative procedure. It is debated whether all polyps should be sent for histopathological evaluation or not. Some studies have shown good clinical and histopathological correlation

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in determining the nature of polyps.⁴ Other observations have indicated that the polyp removed with the clinical diagnosis of inflammatory polyp turned out to be malignant on histological evaluation.⁷ The frequency of neoplastic benign lesions is also considered significant from management point of view. Considering the clinical importance of possible diverse nature of both benign and malignant lesions histopathological evaluation is considered mandatory. Unfortunately in developing countries like Pakistan, there is a trend that nasal polyps after being clinically diagnosed as of inflammatory or allergic etiology are discarded without being submitted for histopathological evaluation. It is observed in histopathology practice that a proportion of such polyps later yield a neoplastic process.⁸ The primary aim of this study is to evaluate the clinicopathological characteristics of nasal polypectomy specimens.⁹

MATERIAL AND METHODS:

The present observational study included all the nasal polypectomy specimens received at histopathology department of PNS Shifa, Karachi over a period of two years. After approval from hospital ethics committee following variables were recorded for each patient: age, gender, type of biopsy that is polypectomy, nasal biopsy not otherwise specified, removal of mass/growth and the histopathological diagnosis. Clinical history of nasal obstruction, rhinosinusitis or any change in smell was also recorded. Following fixation in formalin, biopsy specimens were examined for hard or solid foci before tissue section selection for processing. All tissue sections were processed according to standard biopsy processing protocol for paraffin embedded sections. After preparation of 3 to 5 micron thick sections Eosin Haematoxylin stains were used. PAS stain was used only when infection with fungus was suspected. Detailed evaluation of microscopic features and critical analysis

of relevant clinical features was carried out. All the data was entered and analyzed in SPSS version 18.0. Descriptive statistics were used. Frequencies and percentages were calculated for qualitative variables like gender, type of biopsy and histopathological diagnosis. Mean, mode and standard deviation were recorded for quantitative variables.

RESULTS:

During two years period 78 cases of nasal polypectomy were received. Out of these 78 cases, 91.02% (n=71) were of males and 8.98% (n=7) were of female patients. The mean age among male patients was 36.30 ± 8.73 and among female patients 36.43 ± 3.78. Out of 78 cases 67 were non neoplastic and 11 were neoplastic polyps out of these only two cases were malignant. Non neoplastic polyps were bilateral in 37 cases and unilateral in 30. Majority among non neoplastic category was of inflammatory polyps (53.73%). Other types included allergic 26.86%, fungal infection with polyp 14.92% and lymphocytic category 4.47%. Majority of the cases, 93.58% including all types of polyps presented with nasal obstruction and signs and symptoms of chronic sinusitis. Frequency of various types of polyps according to gender and clinical presentation is given in Table 1, clinicopathological characteristics are given in Table 2. The commonest symptom was nasal obstruction 93.58% followed by rhinitis in 76.92% cases. In 55.12% the nasal obstruction was bilateral and 33.33% had some complaint of perversion or loss of smell. The presence of squamous metaplasia was seen in only 25.64% of the biopsies. Variable number of eosinophils along with other inflammatory cells was seen in almost all the cases. Only allergic polyps showed sheets of eosinophils and mononuclear cells. Edema and marked change in vascularity was prominent feature in all the allergic and inflammatory polyps.

Table: 1
Incidence of Nasal polyps according to gender and presentation

Types of Polyps	Male	Female	Unilateral	Bilateral
Non-Neoplastic				
Inflammatory	31 (43.66%)	5 (71.42%)	18 (51.42%)	18 (41.86%)
Allergic	17 (23.94%)	1 (14.28%)	6 (17.14%)	12 (27.91%)
Fungal	10 (14.08%)	0	3 (8.57%)	7 (16.27%)
Lymphocytic	3 (4.22%)	0	3 (8.57%)	0
Neoplastic Benign				
Angiofibroma	2 (2.81%)	0	1 (2.85%)	1 (2.32%)
Haemangioma	5 (7.04%)	0	1 (2.85%)	4 (9.31%)
Papilloma	2 (2.81%)	0	1 (2.85%)	1 (2.32%)
Neoplastic Malignant				
Carcinoma	1 (1.41%)	1 (14.28%)	2 (5.71%)	0
Total	71 (91.02%)	7 (8.97%)	35 (44.87%)	43 (55.12%)

Table: 2
Clinicopathological Characteristics of Nasal Polyps

Characteristics	Male	Female
Age in years	36.30 ± 8.73	36.43 ± 3.78
Non neoplastic		
Inflammatory	31 (43.66%)	5 (71.42%)
Allergic Fungal	17 (23.94%)	1 (14.28%)
Lymphocytic	3 (4.22%)	0
Neoplastic Benign		
Angiofibroma	2 (2.81%)	0
Haemangioma	5 (7.04%)	0
Papilloma	2 (2.81%)	0
Neoplastic Malignant		
Carcinoma	1 (1.41%)	1 (14.28%)

DISCUSSION:

Chronic sinusitis, nasal obstruction and nasal polyps are common ENT problems. Clinically diagnosed nasal polyps are not always benign. Nasal polyps, is a gross morphological term for a common clinical presentation. The differential diagnosis is vast which includes inflammatory, neoplastic, granulomatous and mucociliary disorders.¹⁰ Inflammatory nasal polyps constitute the most commonly seen entity. These are typically characterized by failed medical treatment and multiple recurrences.¹¹ Detailed histological examination of surgically excised specimens is required to evaluate morphological features and underlying disease process. The classification of inflammatory nasal polyps into sub types such as eosinophil and neutrophil-dominant types and identification of etiology also requires histopathological examination.^{12,13} Most of the cases present with nasal obstruction and reduced and/or altered olfaction. In the present study 67 (85.9%) were non neoplastic and 11 cases (14.1%) were having neoplastic lesions. Dasgupta in his study has observed 130 non- neoplastic cases out of 344 cases.¹⁴ In our study among non neoplastic polyps inflammatory nasal polyp were the most frequent. He has reported inflammatory polyps as the frequent finding among non neoplastic polyps. Non neoplastic polyps can be seen in any age group. The mean age in our study was 36.30 year ± 8.73 with significant male predominance (Table 2). The results are also comparable to another study by Virat in which inflammatory nasal polyps commonly presented between 30 to 60 years with a strong male predominance.¹³ Histological evaluation of nasal polyps is also important as some of the benign lesions like inverted papilloma are associated with malignancy.¹⁵ The clinical diagnosis of non-neoplastic polyps may remain the same on histological evaluation of the specimen. In a study by Kale¹¹ a correlation up to 99.7% cases was seen between clinical diagnosis and histological diagnosis. Similarly 98.9% concordance was seen in a study by Loannis.⁴ All these studies highlighted the importance of modern imaging studies like Computed Tomography scan and Magnetic Resonance Imaging techniques in the clinical diagnosis. Other studies indicated unexpected detection of malignancies in nasal

polypectomy specimens.¹⁶ Association of nasal polyps with nasal obstruction and chronic sinusitis is frequently observed. The present study showed 55.12% bilateral polyps and 76.92 % of the cases had history of rhinitis.

As reported by Larsen, bilateralism of disease process has been observed in 41% of the cases.¹⁷

Identification of underlying etiological factors such as specific fungal infection as is important from management point of view. Some of the studies indicate significant number of polyps showing fungal etiology. As indicated by Pawliczak¹⁷, various infectious agents including fungi may play a major role in the pathogenesis of nasal polyps. These organisms may be the potential activating factor for the proliferation of nasal epithelium leading to the development of polyps. The role of fungal organisms is uncertain but is essential for treatment and identification of fungal organisms⁹. In our study 18 cases (14.08%) showed fungal organisms.^{18,19} Allergic polyps with history of chronic sinusitis are commonly reported. We observed 18 (26.86%) cases of allergic polyps among non neoplastic lesions. Even much proportions of allergic polyps (67.35 %) have also been reported.²⁰

Generally there is a good correlation between clinical and histopathological findings. However, incidental diagnosis of malignancy in routine biopsy specimens has enormous prognostic and medicolegal implications.

It has been recommended that histopathological evaluation of all the polypectomy specimens should be done.¹³ The cost benefit analysis of histological diagnosis from patient's perspective is clearly evident. In our study 14.1% (n-11) showed neoplastic lesions. Only 2 cases (2.56%) out of 78 were malignant lesions. The frequency of malignancy in nasal polyps has been reported to be as high as 36% of the specimens submitted.^{21,22} Significance of histopathological diagnosis is highlighted by the fact that early manifestations of these lesions closely mimic benign inflammatory lesions.²³ Due to relatively small sample size, a limited spectrum of benign neoplastic lesions was observed. Neoplastic benign lesions in our study included hemangioma (7.04%) and angiofibromas and papillomas (2.81%) each. Many investigators have reported a host of miscellaneous lesions which include fibroma, inverted papilloma, neurofibroma, fibrous histiocytoma, glioma, ossifying fibroma and others with varying frequencies.^{24,25}

CONCLUSION:

Non neoplastic lesions constitute the most common type of nasal polyps seen with chronic sinusitis. In majority of nasal polypectomy specimens, the clinical diagnosis of nasal polyps correlates well with histological diagnosis. Optimal post operative management requires a precise histopathological diagnosis of the underlying disease process. It should be remembered that apparently benign looking nasal polyps seen in chronic sinusitis occasionally turn out to be malignant. Hence, histopathological evaluation in all cases is essential to diagnose both non neoplastic and neoplastic pathologies.

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