ORIGINAL ARTICLE

# Morphological Spectrum of Intranasal Polyps

FARAH KALSOOM[1], MUNAZZA IQBAL[2], FARRUKH KAMAL[3]
*[1]Demonstrator, Department of Pathology, Fatima Jinnah Medical College/Sir Ganga Ram Hospital, Lahore. [2]Associate Professor of Pathology, Fatima Jinnah Medical College/Sir Ganga Ram Hospital, Lahore. [3]Professor Pathology Department, Fatima Jinnah Medical College/Sir Ganga Ram Hospital, Lahore*
*Correspondence Author: Dr. Munazza Iqbal, M.B.B.S, M.PHIL, Associate Professor of Pathology, Fatima Jinnah Medical College/Sir Ganga Ram Hospital, Lahore. Email:khalidmasoodgondal@yahoo.com*

## ABSTRACT
**Introduction:** Lesions of the sinonasal/intranasal region are commonly encountered in clinical practice and important from clinical and pathological perspectives as they have varieties of histological patterns. Despite its importance for an accurate diagnosis, histology differences among intranasal polyps and its clinical implications are rarely reported in the literature.
**Objective**: To determine the Morphological spectrum of intranasal polyps by histopathology in patients presenting in a tertiary care hospital.
**Study Design:** Descriptive cross sectional study.
**Setting:** Department of pathology Fatima Jinnah Medical College, Lahore.
**Duration:** Six months from 18-08-2012 till 18-02-2013.
**Methods:** 85 patients of all ages and both gender having intranasal polyp presented to the OPD & indoor of ENT department of Sir Ganga Ram Hospital, Lahore were included in the study. All the tissues were fixed in 10% buffered formalin, processed, stained with H & E and studied by the consultant for various histopathological patterns in the department of pathology Fatima Jinnah Medical College, Lahore. Demographic features and consent of the patients were noted.
**Results:** Out of 85 polyp samples, 49 (57.6%) had fibroinflammatory pattern, 25 (29.4%) had edematous/eosinophilic polyp, 8 (9.4%) had inverted papilloma, 2 (2.4%) had hemangioma, 1 (1.2%) had angiofibroma. Out of 85 cases, there were 74 cases (87.1%) with different types of non-neoplastic lesions among which inflammatory polyp (49 cases, 66.2%) was the commonest lesion observed in this region.
**Conclusions:** Categorizing the intranasal polyps according to histopathological features into varioustypes, helps us to determine the treatment modalities, clinical outcome and prognosis of the disease, so all intranasal polyp needs histological examination. Inflammatory pattern prevailed in the population studied.

**Key words:** Morphological spectrum, Intranasal polyps, Histopathology.

## INTRODUCTION
Sinonasal/intranasal lesions are commonly encountered in clinical practice and important from clinical and pathological perspectives as they give rise to a variety of histological patterns and grades of malignancies[1].Nasal polyp is a chronic non-neoplastic inflammatory disease that is commonly encountered in clinical otorhinolaryngology[2]. Its estimated incidence in the general population is 0.5 to 4%[3].Nasal polyps are defined as prolapsed lining of the nasal sinuses,essentially rounded projections of edematous membrane [4, 5]. They are often bilateral and multiple which lead to visible broadening of nose. The commonest site of origin is in the ethmoidal labyrinths, particularly from the mucosa of middle turbinate[5]. Nasal polyps most often occur in middle aged males. M: F ratio is 3:1 [6].

The etiology and pathogenesis of nasal polyposis has been studied since ancient times; [6] however, in spite of the current understanding of this condition, particularly the role of inflammation, the mechanisms that cause nasal polyps remain unknown[7]. However, they are known to have associations with allergy, asthma, infection, cystic fibrosis and aspirin sensitivity. About 10% patients are asthmatics and 25% have history of drug sensitivity[8].

Tos and Morgensen[9] described rhinosinusal polyps histologically as having an edematous, predominantly eosinophil-infiltrated myxoid stroma covered by respiratory epithelium, which frequently presents hyperplasia or squamous metaplasia.

In the literature, however, there have been few studies on the histological differences among nasal polyps and possible clinical implications of such differences, which may be important for a precise diagnosis[10]. The few existing papers on this topic have classified polyp samples collected in endoscopic surgery, but with little concern on the histopathology of these nasal polyps, which remains the mainstay of diagnosis[11,12,13]. Davidson and Hellquist[10] assessed 95 patients and found that an eosinophilic pattern was present in 83.6% of cases. In a study using optic and electronic microscopy in 2001, [13] however, no eosinophilic polyps were found in 17 nasal polyps collected during surgery. On the other hand, the fibroinflammatory pattern that was found in most cases may have been due to two reasons: a difference in the predominant histological type, as occurs in the Asian population, [14] or the influence of topical and systemic corticosteroids, which are routinely provided to patients before surgery.

This study has been undertaken to see structural alterations found in intranasal polyp, to classify these polyps histologically, and to correlate these findings with those encountered in the literature.

## PATIENTS AND METHODS

Descriptive cross sectional study was conducted on 85 patients at Pathology department of Fatima Jinnah medical college, Lahore, in six months duration from 18-08-2012 TO 18-02-2013. Non probability purposive sampling technique was used. Patients of all ages and both gender presented to the OPD/indoor of ENT department of Sir Ganga Ram Hospital, Lahore with intranasal polypswere biopsied by ENT surgeon after informed consent and referred to pathology department of Fatima Jinnah Medical College, Lahore for histopathology. The small tissue sections were subjected to routine histological processing and stained with hematoxylin and eosin stains. These were examined by consultant pathologist under microscope. Final diagnosis was made with histopathology.The classification of intranasal polyps were done under following histopathologic criteria.

1. Allergic or eosinophilic polyps: features stromal edema containing numerous eosinophils and mast cells, goblet cell hyperplasia in the respiratory epithelium and basal membrane thickening separating the epithelium from the edematous stroma.
2. Fibroinflammatory polyps: features a marked inflammatory infiltrate containing mostly lymphocytes. Other features include lack of stromal edema and goblet cell hyperplasia.
3. Inverted papilloma: Surface epithelial cells grow downward into the underlying connective tissue stroma.
4. Hemangioma: Are rounded masses of inflamed, highly vascular granulation tissue, frequently having an ulcerated surface.
5. Angiofibroma: A partially collagenized fibrous stroma containing numerous irregular vascular spaces that varies in size from small slits to dilated lumens.

All the information was noted on preformed proforma. The data was entered and analyzed using SPSS version 16. Quantitative variable like age recorded in the form of mean +/- SD. Qualitative variables like gender and morphological spectrums recorded in the form of frequency and percentages.

## RESULTS

Out of 85 patients, 10 (11.8%)were in age group 10 to 20 years. 36 (42.3%)in 21-40 years. 34 (40%) in 41-60 years. 5 (5.9%) of age above 60 years. All Patients were of age between 10 and 76 years, mean 43 years. (Table 1)

Out of 85 patients with a clinical and histological diagnosis of intranasal polyp, 50(58.8%)were males, 35(41.2%)were females. (Table 2)

**Table 1:** Age Distribution of Patients

| Characteristics age group | No. of Patients | Percentage % |
|---|---|---|
| 10 to 20 years | 10 | 11.8 % |
| 21 to 40 years | 36 | 42.3 % |
| 41 to 60 years | 34 | 40 % |
| >60 years | 5 | 5.9 % |
| **TOTAL** | **85** | **100 %** |

**Table 2:** Gender Distribution

| Gender | No. of Patients | Percentage |
|---|---|---|
| Male | 50 | 58.8 % |
| Female | 35 | 41.2 % |
| **Total** | **85** | **100 %** |

**Table 3:** Morphological Distribution of Intranasal Polyps

| Diagnosis | No. of Patients | Percentage Distribution |
|---|---|---|
| Fibroinflammatory pattern | 49 | 57.6 % |
| Edematous/eosinophilic polyps | 25 | 29.4 % |
| Inverted papilloma | 08 | 9.4 % |
| Hemangioma | 02 | 2.4% |
| Angiofibroma | 01 | 1.2 % |
| **TOTAL** | **85** | **100 %** |

**Table 4:** Neoplastic Distribution of Intranasal Polyps

| | No. of patients | Percentage |
|---|---|---|
| Non-neoplastic | 74 | 87.1 % |
| Neoplastic | 11 | 12.9 % |
| **TOTAL** | **85** | **100 %** |

Out of 85 polyp samples, 49 (57.6%) had fibroinflammatory pattern, 25 (29.4%) had edematous/eosinophilic polyp, 8 (9.4%) had inverted papilloma, 2 (2.4%) had hemangioma, 1 (1.2%) had angiofibroma. (Table 3)

Out of 85 cases, there were 74 cases (87.1%) with different types of non-neoplastic lesions among which inflammatory polyp (49 cases, 66.2%) was the commonest lesion observed in this region. (Table 4)

## DISCUSSION

Polypoidal masses in the nasal cavity form a complex group of lesions with a wide spectrum of histopathological features. While there are many non-neoplastic lesions including mainly the allergic and inflammatory one, there are also good numbers of neoplastic conditions in the nose and nasal sinuses. These lesions are often quite impossible to distinguish clinically and are labeled as nasal polyp [15]. Histopathological examination of such polypoidal masses shows a spectrum of lesions ranging from non-neoplastic ones to neoplastic tumors including benign and malignant neoplasm. [16]

In our study, we have observed 85 cases of nasal polyps. The incidence of non-neoplastic nasal polyps was slightly higher in this study (87.1%) compared to the observations by Tondon et al (64%) and Anjali et al (62.85%) [17]. The age range of the patients in our study was from 10 to 76 years. Most commonly patients were in age group 21-40 years which was comparable with Ghosh and Bhattacharya [18] and Zafar et al [19]. The mean age of presentation in our study was 43 years. In a study done by luciano n atilio et al [20], Patients were aged between 18 and 76 years, mean 48 years.

It was observed in most of the studies that mean age was least for non-neoplastic lesions; it increased for benign neoplastic lesions and was highest for malignant lesions[21,22].In our study, mean age for non-neoplastic lesions was more when compared with benign neoplastic lesions, as certain percentage of patients with benign lesions in our study were angiofibroma which was mostly seen in adolescent age group and this could be the reason for low mean age for benign lesions in our study.

In our study, there is male preponderance with male to female ratio of 1.43:1 which was same as that observed by Zafar et al [19] and Dasgupta et al [15].Similar findings were observed in one more study, where males accounted for 61.11% and females 38.88% [23].

Davidsson and Hellquist [24] analyzed 95 patients and classified polyps histologically into four categories:Edematous, eosinophilic or “allergic" polyps: 86.3%, Fibroinflammatory polyps: 7.3%, Polyps with seromucinous gland

hyperplasia: 5.3%, Polyps with stromal atypia: 1.1%. Kakoi and Hiraide [25], in a series of 175 patients, subdivided polyps into:Edematous polyps: 60%, Cystic or glandular polyps: 27%, Fibrous polyps: 13%.

Papillomas in the nose and nasal sinuses are stated to be commonly occurring benign epithelial neoplasm. This group includes squamous papilloma and inverted papillomas. We had 8 cases, all were of inverted papilloma and all the lesions showed endophytic pattern of growth. Another studyOberman[26], Tondon et al [27],Panchal et al [21],Maloney and Collins [28] and Fechner [29]noted similar findings in their study andsuch lesions were more common in adult males.

Hemangioma were second common benign neoplasm observed in the present study and constituted 2.35% of cases which was comparable with study conducted by Bjerregaard et al[30], Sayed and Al-Serhani et al[31]. These neoplasms presented as bleeding nasal polyp. This was observed in the young as well as elderly people. Willis has regarded this neoplasm as hamartoma or malformation rather than true neoplasm, but occurrence of such lesions in elderly people with a history of less than 6 months duration is against the theory of hamartomatous origin.

Angiofibroma is the least common benign tumor in our study constituting 1.17% of cases and occurred mainly in the young people.

According to our study, the non-neoplastic masses are 87.1% while neoplastic form 12.9% of total sample size. It is in comparison to the Indian studies, Somani et al [32] where the incidence of non neoplastic and neoplastic lesions are 76% and 15% respectively. Another study by Chopra et al, it is 84% and 15% [22] respectively.

All these studies point out to the common finding that histopathologic examination still remains the gold standard for diagnosis in most cases.

## CONCLUSION

Classifying the intranasal polyp according to histopathological features into various types helps us to determine the treatment modalities, clinical outcome and prognosis of the disease. Although most of nasal polyps sent for histopathology are inflammatory, secondary to infection or allergy, various benign and malignant lesions of nose may present as polypoidal masses. So, all polyps should be submitted for histopathological examination, so that a correct and timely intervention can be made.

## REFERENCES

1. Kumar V, Abbas AK, Fausto N. Robbin's and Cotran Pathologic Basis of Disease. 8th Ed; Elsevier inc. Philadelphia, 2010; 16:749.
2. Zafar U, Afroz N, Hasan SA. Clinicopathological study of non-neoplastic lesions of nasal cavity and paranasal sinuses. Indian J Pathol Microbiol 2008; 51(1):26-9.
3. Bakari A, Afolabi OA, Adoga AA, Kodiya AM, and Ahmad BM.Clinico-pathological profile of sinonasal masses: an experience in national ear care center Kaduna, Nigeria. BMC Res Notes 2010; 9(3):186.
4. Seema K. Modh, K.N. Delwadia, R. N. Gonsai.Histopathological spectrum of sinonasal masses –a study of 162 cases. Int J Cur Res Rev2012; 5(3).
5. Kale U, Mohite U, Rowlands D, Drake Lee AB. Clinical and histopathological correlation of nasal polyps: Are there any surprises? J Otolaryngol 2001; 26: 321-323.
6. Friedmann I, Bennett MH, Piris J. Inflammatory conditions of nose. In I Friedmann's systemic pathology, Vol.1 Nose, Throat and Ears. Edinburg London, Churchill Livingstone, 3rd edition; 1986:19-45.
7. Malik TL, Pal MB. Clinical presentation of ethmoidal nasal polyps. J Fatima Jinnah Med Coll Lahore 2008; 2(2):60-2.
8. Newton JR, Ah-See KW. A review of nasal polyposis. Ther Clin Risk Manag 2008; 4(2):507-12.
9. Tos M, Mogensen C, Thomsen J. Nasal polyps in cystic fibrosis. J Laryngol Otol 1977; 91: 827–35. (For prevalence purpose).
10. Hellquist HB. Nasal polyp update Histopathology. Allergy and Asthma Proc 1996; 17 (5): 237-42.
11. Davidson A, Hellquist HB. The So-Called "Allergic" Nasal Polyp. ORL J Relat Spec 1993; 55: 30-5.
12. Kakoi H, Hiraide F. A histological study of formation and growth of nasal polyps. Acta Otolaryngol (Stockh) 1987; 103: 137-44.
13. Souza BB, Serra MF, Dorgam JV, Sarreta SMC, Melo VR, Anselmo-Lima WT. Polipose Nasossinusal: Doença inflamatória Crônica Evolutiva. Rev Bras Otorrinolaringol 2003; 69 (3): 318-25.
14. Zhang N, Holtappels G, Claeys C, Huang G,

van Cauwenberge P, Bachert C. Pattern of Inflamation and Impact of Staphylococcus Aureus Enterotoxins in Nasal Polyps of Southern China. Am J Rhinol 2006; 20: 445-50.
15. Dasgupta A,Ghosh RN, Mukherje C. Nasal polyps,Histopathologic spectrum.Indian J Otolaryngol and Head and Neck Surg 1997; 49:32-36.
16. Seema K. Modh, K.N. Delwadia, R. N. Gonsai.Histopathological spectrum of sinonasal masses –a study of 162 cases. Int J Cur Res Rev2012; 5(3).
17. Tondon PI, Gulati PL, Mehta H. Histological study of polypoidal lesions in the nasal cavity. Ind J Otolaryngol 1971; 23(1):3.
18. Ghosh A, Bhattacharya K. Nasal and nasopharyngeal growth- A 10 year survey. J Ind Med Ass 1966; 47:13.
19. Zafar U, Khan N, Afroz N, Hasan SA. Clinopathological study of non-neoplastic lesions of nasal cavity and paranasal sinuses. Indian Journal of Pathology and Microbiology 2008; 5(1):26-29.
20. Histological aspects of rhinosinusal polyps Rev. Bras. Otorrinolaringol 2008; 74(2).
21. Panchal L, Vaideeswar p, et al. Sinonasal epithelial tumors: A pathological study of 69 cases. J Postgrad Med 2005; 1(1):30-34.
22. Chopra H, Dua K, Chopra N, Mittal V. Histopathology of nasal masses. Clin Rhinol Int J. 2010; 3:81–5.
23. Lumsden A, Wilson JA, McLaren K, and Maran A.G.D: Unusual polypoidal tumours of the nasal cavity: a clinicopathological review of 18 cases: Clinical Otolaryngology and Allied Sciences:1986; 11(1):31-6.
24. Hellquist HB. Histopathology. Allergy and Asthma Proc. 1996; 17(5):237-42.
25. Kakoi H, Hiraide F. A histological study of formation and growth of nasal polyps. Acta Otolaryngol (Stockh) 1987; 103:137-44.
26. Oberman, H.A. Papilloma of nose and paranasal sinuses. American Journal of Clinical Pathology 1964; 42:245.
27. Tondon PI, Gulati PL, Mehta H. Histological study of polypoidal lesions in the nasal cavity. Ind J Otolaryngol 1971; 23(1):3.
28. Maloney, J.R. and Collins, J. Nasal polyps and bronchial agthura. British Journal of Diseases of Chest 1997; 71:1.
29. Frankel SK, Cosgrove GP, Fischer A, Meehan RT, Brown KK. Update in the Diagnosis and Management of Pulmonary Vasculitis 2006; 129:452-465.
30. Bjerregaard B, Okoth- Olende, et al. Tumors of nose and maxillary sinus-10 years survey. J Layngol Otol 1992; 106:337.
31. Sayed YE, Al-Serhani A. Lobular capillary hemangioma (pyogenic granuloma) of nose. J Laryngol Otol 1997; 117: 941.
32. Somani S, Kamble P, Khadkear S. Mischievous presentation of nasal masses in rural areas. Asian J Ear Nose Throat. 2004; 2:9–17.