

# Nasal Polyps :An Etiological Analysis

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## Abstract

Nasal polyps, the prolapsed linings of nasal mucosa are one of the commonly encountered conditions in the outpatient department of otolaryngology, The aim of this study is to study the etiology of nasal polyps and also to compare between the different methods used for diagnosis of nasal polyps.

This study was submitted prospectively on 100 patients diagnosed with nasal polyps (diagnosed either clinically or radiologically) with evidence of nasal obstruction, rhinorrhoea and headache. from April 2015 till April 2017. All patients had been selected from the outpatient clinics of Al-Zahraa University Hospital and Kobry El Koppa military hospital. The study was approved by the ethics committee of Al Azhar Faculty of Medicine.

A total of 100 patients were analyzed, age range 18 to 56 yrs with a mean age of 38.5 yrs. There were 83 male and 17 female. The main presenting symptoms are nasal obstruction and rhinorrhoea. Most of the cases was bilateral nasal polyps. The commonest clinical diagnoses were non-neoplastic simple nasal polyps 84% and about 13% were benign neoplastic, 3% were malignant. The commonest histological diagnosis among non-neoplastic nasal polyps was simple allergic nasal polyp, among benign neoplastic was inverted papilloma. Most of neoplastic lesions were presented by unilateral nasal polyps, where epistaxis was noticed mostly with vascular tumour and malignant ones. The results show that most of nasal polyps were simple non-neoplastic lesions especially bilateral ones, also for proper evaluation of nasal polyps clinical, radiological and histopathological evaluation should be done in all patients.

**Keywords:** nasal polyps, histopathology, inverted papilloma.

## Introduction

Nasal polyps, the prolapsed linings of nasal mucosa are one of the commonly encountered conditions in the outpatient department of otorhinolaryngology.

They are a common cause of nasal obstruction in the adult, while the diagnosis in children is so rare (0.1%). In the general population, the prevalence of NP is considered to be around 4%. It predominantly affects adults usually those older than 20. Cancers of the nose and paranasal sinuses account for less than 1% of all malignancies and about 3% of all head and neck cancers. It has a geographic tendency to affect the African, the Japanese, and the Arab. It is rarer in Western Europe and America <sup>(1)</sup>. There are a variety of conditions ranging from benign lesions to malignant nasal tumors which may mimic simple nasal polyps.

It is impossible to determine clinically what pathology lies underneath. Therefore, nasal endoscopy, radiology and histopathology are employed to help us reaching the diagnosis.

The histopathological examination of the removed tissue helps to determine the actual pathology of the varied conditions labelled as nasal polyps <sup>(2)</sup>.

### **The aim of the work:**

The aim of this work was To study the etiology of nasal polyps and This will be reached by performing full nasal polyps examination pre and postoperative.

### **Patients and methods :**

The study was approved by the ethics committee of Al Azhar faculty of medicine. The study was submitted

prospectively on 100 patients during the period from April 2015 till April 2018. All patients had been selected from the outpatient clinics of Al -Zahraa University Hospital and Kobri-El kobba military hospital. All patients underwent complete ear, nose and throat examination. Using the headlight and nasal endoscope, the nasal cavity was carefully examined for presence of nasal polyps

The preoperative evaluation had included history with inquiry about the main complaint (nasal obstruction) and other nasal symptoms, (sneezing, rhinorrhea , Post-nasal drip, Headache and nasal itching). Diagnostic nasal endoscopy was done.

CT Scan nose and paranasal sinuses and MRI was done in selected cases.. Each patient had been managed by functional endoscopic sinus surgery. The

procedure was done under general anesthesia followed by histopathology of the removed polyps.

### Data management and Analysis

- Quantitative data were shown as mean, SD, minimum and maximum. Qualitative data were expressed as frequency and percent. Chi- square test and Fisher exact test were used to measure association between qualitative variables as appropriate. P (probability) value was considered to be of statistical significance if it is less than 0.05.

### Results

One hundred patients were included in the study, there were 83 males and 17 females, ranged in age between 18 and 56 years with a mean age of 38.5 years

**(Table 1). Gender and age distribution of the studied group**

	Studied group N=100	
	No	%
Sex		
Female	17	17.0%
Male	83	83.0%
Age (years)		
Min-max	18-56	
Mean ±SD	38.5±8	

Nasal obstruction was the commonest symptom(100%) followed by nasal obstruction with rhinorrhoea(90%), smell disorder in 63%, headache was found in 82% and proptosis in 4% of cases.

**Table 2: clinical presentation and examination of the studied group**

		Studied group N=100	
		NO	%
Clinical pictures	nasal obstruction	100	100%
	bilateral	69	69%
	unilateral	31	31%
	Rhinorrhoe	90	90%
	bilateral	69	69%
	unilateral	21	21%
	itching	71	71.0%
	smell disorder	63	63%
	epistaxis	20	20%
	headache	82	82%
bilateral	63	63%	
unilateral	19	19%	
Mouth breathing	24	24%	
Change of voice	4	4%	
proptosis	4	4.0%	
left side	2	2.0%	
rt side	2	2%	
EXamination	unilateral nasal polyp	31	31%
	bilateral nasal polyp	69	69%

As regard the clinical diagnosis of the studied group ,84 cases were non-neoplastic (35 fungal,45 non-specific and 4 antrochoanal),13 were benign neoplastic ( 5 angiofibroma,7 inverted papilloma and 1 haemangioma) and 3 cases were malignant.(table 3).

**Table 3: Clinical diagnosis of the studied group.**

		Studied group N=100	
		NO	%
Clinical diagnosis	Fungal nasal polyp	35	35.0%
	Non specific	45	45%
	Antrochoanal	4	4%
	benign tumour	13	13.0%
	angiofibroma	5	5.0%
	hemangioma	1	1.0%
	inverted papilloma	7	7.0%
	malignant tumour	3	3.0%

The histopathological diagnosis of the studied group, were 84 cases (84%) non-neoplastic lesions, 44 cases allergic nasal polyps (eosinophil rich infiltrate), 24 cases were fungal polyps, 12 cases were non-specific inflammatory polyps, 4 cases were antrochoanal polyps, 12 cases were benign neoplastic lesions, 6 was inverted papilloma, 5 angiofibroma, only one case was hemangiomas malformation. As regard malignant neoplastic lesion there was 4 cases. (table 4).

**Table 4: Histopathological findings among the cases (N=100).**

pathological diagnosis			Studied group N=100	
			NO	%
Non-neoplastic (n=84)	Allergic (n=68)	allergic nasal polyp (eosinophil rich infiltrate)	44	44%
		fungal nasal polyp	24	24%
Inflammatory (n=16)		Antrochoanal Polyps	4	4%
		Non specific inflammatory nasal polyp	12	12%
neoplastic (n=16)	Benign tumor (n=12)	inverted papilloma	6	6%
		nasal angiofibroma	5	5.0%
		hemangiomas malformation	1	1.0%
	Malignant tumor (n=4)	Malignant melanoma	1	1.0%
adenoid cystic carcinoma		1	1.0%	
squamous cell carcinoma		2	2%	

Comparison of Clinically diagnosed cases with Histopathological diagnosis in Non-neoplastic cases (N=84), in 35 cases diagnosed clinically as fungal polyp, histopathological diagnosis was consistent with fungal polyp in 24 cases (68.6%) with significant p value ( $p < 0.0001$ ), 11 cases (31.4%) were diagnosed as allergic nasal polyp (eosinophil rich infiltrate) with non significant p value ( $p = 0.063$ ). In 45 cases diagnosed clinically as non-specific nasal polyps, histopathological

diagnosis was consistent with non-specific inflammatory nasal polyps in 12 cases (26.7%) with significant p value ( $p < 0.0001$ ), 33 cases (73.3%) was diagnosed histopathologically as allergic nasal polyp (eosinophil rich infiltrate) with significant p value ( $p < 0.0001$ ). In 4 cases diagnosed clinically as antrochoanal polyps, histopathological diagnosis was consistent with antrochoanal polyp in 4 cases (100%) with significant p value ( $p < 0.0001$ ). (table 5).

**Table (5): Comparison of Clinically diagnosed cases with Histopathological diagnosis in Non-neoplastic cases (N=84).**

Clinical diagnosis	Histopathological diagnosis	No.of patients	%	P-value
fungal polyp (N=35)	Consistent with fungal polyp.	24	68.6%	<0.0001
	Allergic(Eosinophil rich infiltrate)	11	31.4%	0.063
Non-specific nasal polyp (N=45)	Consistent with Non-specific inflammatory	12	26.7%	<0.0001
	Allergic(Eosinophil rich infiltrate)	33	73.3%	<0.0001
Antrochoanal polyps (N=4)	Non-specific inflammatory	4	100%	<0.0001

Comparison of Clinically diagnosed cases with histopathological diagnosis in neoplastic cases.(N=16), in 7 cases diagnosed clinically as inverted papilloma, histopathological diagnosis was consistent with inverted papilloma in 6 cases (85.7%) with significant p value(p<0.0001), 1 case(14.3%) diagnosed histopathologically as adenoid cystic carcinoma with non significant p value(p=0.129). in 5 cases diagnosed clinically as angiofibroma, histopathological diagnosis was consistent with angiofibroma in 5 cases (100%) with significant p value (p<0.0001).in one case diagnosed clinically as hemangioma, histopathological diagnosis was consistent with hemangioma in also one case (100%) with significant p value (p<0.001).in 3 cases diagnosed clinically as malignant lesion of nose and paranasal sinuses, histopathological diagnosis was consistent with malignant lesion in also 3 cases with significant p value (p<0.0001).(table 6).

**Table (6): Comparison of Clinically diagnosed cases with Histopathological diagnosis in neoplastic cases(N=16).**

Clinical diagnosis	Histopathological diagnosis	No.of patients	%	P-value
Inverted Papilloma (N=7)	Consistent with inverted papilloma.			
	Adenoid cystic carcinoma	6	85.7%	<0.0001
Angiofibroma (N=5)	Consistent with Angiofibroma	1	14.3%	0.129
	Consistent with Hemangioma	5	100%	<0.0001
Haemangima (N=1)	Consistent with Hemangioma	1	100%	<0.0001
Malignancy of Nose & PNS (N=3)	Consistent with malignancy	3	100%	<0.0001
	Malignant melanoma	1	33.3%	
	Squamous cell carcinoma	2	66.7%	

## Discussion

Nasal polyposis is a relatively common condition found in 1-4% of the general population <sup>(3)</sup>. Our 100 patients of non-neoplastic and neoplastic lesions of the nose presenting as nasal polyps were studied in relation to the age-sex distribution, presenting symptoms, nasal endoscopy, radiological and histopathological findings. Mean age was  $38.5 \pm 8$  years and more common in male than females. This was found to be similar to the study done by Larsen et al <sup>(4)</sup> whom study was conducted on 252 patients, they observed NP was more common in patients who were 40–60 years and more common in males than females (1.68 male and 0.82 female). In another study done by Bakari et al <sup>(1)</sup> whom study was conducted on 76 patients, they found female preponderance (M:F ratio of 1:1.2). In our study the most frequent symptom was nasal obstruction (100%) and rhinorrhea (90%), followed by 71% with itching, 63% with smell disorders, 20% with epistaxis, 82% with headache and 4% with proptosis, 24% with mouth breathing and 4% with change of voice. Thahim et al <sup>(5)</sup> also found nasal obstruction in their 100% of cases, while nasal discharge was present in 90% of their patients. Bakari et al <sup>(1)</sup> whom study was conducted on 76 patients with sinonasal polyps, the main presenting symptoms were nasal obstruction (97.4%), rhinorrhoea (94.7%). Out of 100 cases studied, 84 (84%) were non-neoplastic and 16 (16%) were neoplastic. Among the non-neoplastic conditions, allergic nasal polyps was the most common. Among the neoplastic lesions, 12 (12%) were benign and 4 (4%) were malignant. Among the benign neoplastic lesions, inverted papilloma was the most common, so non-neoplastic lesions was more common than neoplastic ones. This finding was similar to the study done by Lathi et al <sup>(6)</sup> whom study was conducted on 112 patients, they found that non-neoplastic was in 80 cases (71.4%) of the study subjects and neoplastic in 32 (28.6%) patients. In our study inverted papilloma was more common than angiofibroma then hemangioma.

Our results also coincided with the results of Sharma et al <sup>(7)</sup> whom study was done on 50 cases with sinonasal polyps, they found that non-neoplastic lesions was more common (86%) of cases, Among benign neoplastic sinonasal masses, inverted papilloma was more common, it was found in 4% of cases then nasopharyngeal angiofibroma in 2% cases. malignancy

was found in 3 cases (6%).

Also the results coincided with a study done by Rawat et al <sup>(8)</sup>, they found that found 68.56% of histopathological diagnosis as non-neoplastic, 22.72% as benign and 8.71% as malignant.

As regard Comparison of Clinically diagnosed cases with Histopathological diagnosis in Non-neoplastic cases (N=84), in 35 cases diagnosed clinically as fungal polyp, histopathological diagnosis was consistent with fungal polyp in 24 cases (68.6%) with significant p value ( $p < 0.0001$ ), 11 cases (31.4%) were diagnosed as allergic nasal polyp (eosinophil rich infiltrate) with non-significant p value ( $p = 0.063$ ). In 45 cases diagnosed clinically as non-specific nasal polyps, histopathological diagnosis was consistent with non-specific inflammatory nasal polyps in 12 cases (26.7%) with significant p value ( $p < 0.0001$ ), 33 cases (73.3%) was diagnosed histopathologically as allergic nasal polyp (eosinophil rich infiltrate) with significant p value ( $p < 0.0001$ ), in 4 cases diagnosed clinically as antrochoanal polyps, histopathological diagnosis was consistent with antrochoanal polyp in 4 cases (100%) with significant value ( $p < 0.0001$ ).

As regard comparison of Clinically diagnosed cases with histopathological diagnosis in neoplastic cases. (N=16), in 7 cases diagnosed clinically as inverted papilloma, histopathological diagnosis was consistent with inverted papilloma in 6 cases (85.7%) with significant p value ( $p < 0.0001$ ), 1 case (14.3%) diagnosed histopathologically as adenoid cystic carcinoma. In 5 cases diagnosed clinically as angiofibroma, histopathological diagnosis was consistent with angiofibroma in 5 cases (100%). In one case diagnosed clinically as hemangioma, histopathological diagnosis was consistent with hemangioma in also one case. In 3 cases diagnosed clinically as malignant lesion of nose and paranasal sinuses, histopathological diagnosis was consistent with malignant lesion in also 3 cases.

These results matched with results of a study done by Vaishali et al <sup>(9)</sup> histopathological diagnosis in Non-specific polyps was consistent with clinical diagnosis in 12 (80%) cases while inconsistent in 3 (20%). In Allergic fungal polyps histopathological diagnosis was consistent in 7 (58.3%) and inconsistent in 3 (41.7%).



In diffuse polyposis with chronic rhinosinusitis 5(62. %) and 3(43. 5%) were found consistent and inconsistent respectively with the histopathological diagnosis. All the clinically diagnosed cases of antrochoanal showed consistent reports with the histopathological diagnosis.

Comparison of Clinically diagnosed cases with Histopathological diagnosis in Neoplastic cases (n=6) showed only a single case clinically diagnosed of having malignancy of nose and PNS, histopathologically proved as cementoossifying fibroma of the nose and PNS. Rest all the diagnostic consistency were the same as the clinical diagnosis. Further, it was analyzed that in Non-neoplastic cases(n=44) the Histopathological consistency was in 33(75%) and inconsistency in 11(25%) This difference was statistically not significant.

The histopathological diagnosis correlated with clinical diagnosis in the present study in 55 cases(55%), in study done by *Vaishali et al*<sup>(9)</sup>. the histopathological diagnosis correlated with clinical diagnosis in the present study in 38(76%) patients. In the study by Kale et al and Diamantopoulos II et al<sup>(10)</sup> the clinico – histopathological correlation was in 99. 7% and 98. 8% respectively. In our study the relatively lower clinico-pathological correlation, when compared to the other studies can be attributable to the lesser number of cases included in the study.

### Conclusion

Non-neoplastic lesions was more common than neoplastic lesions, they are also more common in young ages and also are bilateral but neoplastic lesions are more common in the elderly and mostly unilateral. Sinonasal polyps are more common in males than females. because a lesion in the nasal cavity clinically presented as nasal polyp can either be neoplastic or non neoplastic and a significant lesions can be missed on either clinical or radiological evaluation ,so a thorough histopathological evaluation should be done in all cases of nasal polypoidal lesions for accurate diagnosis and management.

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