Nasal polyps: a clinical, histopathological and radiological profile

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Abstract

Objective Comparison of clinical, radiological & histopathological profile in nasal polyps.

Material & method A prospective randomized study conducted on 50 patients of nasal polyps (diagnosed clinically or radiologically) from July 2003 to December 2005 selected from the inpatient department of Otorhinolaryngology, Dayanand Medical College & Hospital, Ludhiana.

Results: The results show that 70% of the clinical findings were consistent with radiological findings. However in rest 30% of cases, a difference of opinion was seen in non neoplastic and neoplastic lesions. The diagnosis of allergic fungal or allergic non fungal can only be established on histopathology.

Conclusion It is concluded that for proper evaluation of nasal polyps clinical, radiological and histopathological evaluation should be done in all the patients, where radiology provides a road map to the endoscopic surgeons and warns of any existing or impending complications. Histopathology always gives a confirmatory diagnosis.

Keywords Nasal polyps · Clinical findings · Histopathology · Radiology.

Introduction

Nasal polyps, the prolapsed linings of nasal mucosa are one of the commonly encountered conditions in the out patient department of otorhinolaryngology. There are a variety of conditions ranging from benign lesions to malignant nasal tumour 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 reach the diagnosis. Radiographic evidence of thickened mucosa, sinus opacification and bone erosion helps us to diagnose different diseases. The histopathological examination of the removed tissue helps to determine the actual pathology of the varied conditions labelled as nasal polyps.

With this background, we carried out a prospective randomized study to classify various types of neoplastic and non neoplastic lesions, presenting as nasal polyps and compared their intraoperative endoscopic findings with radiological and histopathological findings.

Materials and methods

The prospective randomized study was conducted on 50 patients of nasal polyps (diagnosed clinically or radiologically) from the inpatient department of Otorhinolaryngology, Dayanand Medical College and Hospital, Ludhiana. Patients who had developed any complication due to sinonasal polypoidal pathology were also included in the study.

Apart from routine work-up and investigations CT Scan nose and paranasal sinuses (axial and coronal cuts) or MRI nose and paranasal sinus (wherever required) was done. It helped to see the extent and type of pathology, expansion and destruction of sinuses and to look for the presence of any complications (orbital or intracranial extension). Functional endoscopic sinus surgery was done in all cases followed by histopathology of the removed polyps.

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Observations

A total of 50 cases of nasal polyps were taken up for the study. The male to female ratio was 3:2. The mean age was 38.08 years.

A diagnostic nasal endoscopy was performed on all patients before embarking on endoscopic sinus surgery. Most of our patients (76%) had ethmoidal polyps. Eight percent were suspected to have an antrochoanal polyp and 14% presented with a non-specific polypoidal nasal mass. Additional information acquired on endoscopy was the finding of cheesy debris in 32% of patients (Table 1).

Comparison of clinical and radiological findings in our study showed that there were 35 patients (70%) in whom the radiological findings were consistent with that of clinical suspicion. However in 30%, there was a difference in

opinion. Of the 41 patients with clinically non-neoplastic benign polyps, consistent radiological findings were given in 33 patients (80.5%). Of the 9 patients with clinically neoplastic lesions, similar radiological opinion was given in only 2 patients (22.2%). Anatomic variations like the presence of agger nasi cells, onodi cells, haller cells, concha bullosa and any other anatomic abnormalities could also be identified. (Table 2)

Comparison of clinical and histopathological findings showed that of the 41 patients with clinically non-neoplastic benign polyps, 25 patients had allergic while 16 had infective nasal polypi. But the clinical presentation was same in both the cases. Of the 9 patients with clinically neoplastic lesions, similar histopathology opinion was given in 7 patients (77.7%) and in a significant 22% of cases the diagnostic results varied. One case of inverted papilloma

Table 1 Nasal Endoscopic Findings (At the time of surgery) (n=50)

Clinical Findings	U/L		B/L		Total	%age
	Pts	%age	Pts	%age		
Ethmoidal Polyp	16	32%	22	44%	38	76%
Maxillary Polyp/ mass	09	18%	—	—	09	18%
Posterior Choanae Polyp/Mass	07	14%	01	02%	08	16%
Antrochoanal polyp	04	08%	—	—	04	08%
Cheesy Debris	10	20%	6	12%	16	32%
Mucopurulent discharge	5	10%	01	02%	06	12%
Concha Bullosa	02	04%	—	—	02	04%
Synaechiae	01	02%	01	02%	02	04%
Non-specific Nasal Mass	07	14%	—	—	07	14%
Septal Deviation	—	—	—	—	12	24%

Table 2 Comparison of clinical and radiological findings (n = 50)

Clinical Diagnosis	No. of patients	Radiological diagnosis	No. Of Patients
Non-neoplastic(n=41)			
Ethmoidal polyps			
Allergic fungal polyp	16	Consistent with fungal polyp	14(87.5%)
		Non fungal polyp	1
		Other diagnosis (Sinusitis)	1
Sinonasal polyp	20	Non specific polyp	15(75%)
		Fungal polyp	0
		Other diagnosis (sinusitis)	5
Antrochoanal polyps	4	Antrochoanal polyp	4(100%)
Mucormycosis	1	Mucosal hypertrophy	1(100%)
Total consistent			33(80.5%)
Neoplastic(n=9)			
Benign			
Inverted papilloma	2	Inverted papilloma	0
		Other diagnosis	2
Hemangioma	2	Hemangioma	0
		Others diagnosis	2
Angiofibroma	2	Angiofibroma	2(100%)
Malignant			
Lymphoma	2	Lymphoma	0
Nasal cavity carcinoma	1	Nasal mass	1
Total consistent			2(100%)

turned out to be adenoid cystic carcinoma on biopsy report. (Table 3)

Discussion

In our study of 50 patients of nasal polyps, the radiological findings matched with clinical suspicion in only 70% cases. The allergic fungal polyps were the most correctly diagnosed radiological condition. This was due to the high percentage of hyperdense signal in the sinus cavities (caused by calcium salts) detected on CT scan PNS. The diagnosis of non-specific sinonasal polyps, antrochoanal polyp and mucormycosis was correctly established in most of the cases. There was a difference of opinion between the clinician and the radiologist in about 20% of non-neoplastic lesions.

According to Cody et al [1], the clinical presentation of allergic fungal sinusitis is not diagnostic. There are two ways to diagnose allergic fungal sinusitis(AFS) – one to have the presence of characteristic allergic mucin and the other to have evidence of fungal etiology. The evidence of fungal etiology can be in the form of demonstration of noninvasive fungal hyphae in the surgical specimen or by recovery of the fungus in culture of the sinus contents or by demonstration of specific Ig G and Ig E levels. Patients who

have allergic mucin without documentation of the presence of fungus are identified as having AFS-like syndrome.

On CT, a polyp appears as a well circumscribed, rounded soft tissue lesion that indents the airway and its walls without deep extension. Widespread polyposis may be difficult to differentiate from a tumor.

Nose & PNS malignancies have irregular margins with evidence of thickened mucosa and a mass exhibiting variable enhancement following contrast infusions. Disruption of fascial planes beyond the sinus walls is the most characteristic CT sign for the identification of malignancy [2].

Clinically neoplasia was suspected in patients with persistent sinonasal complaints who presented with recurrent epistaxis / dentition problems / facial deformity / trismus / cranial neuropathies or orbital extension.

But the correct diagnosis of neoplastic lesions was established in only 22% of cases (2 out of 9 patients). In most cases it was inadequate to predict the histological subtype and to differentiate non-neoplastic versus neoplastic and benign versus malignant lesions. This was most probably due to the fact that there was no evidence of bone erosion or extra sinus mucosa involvement in these cases. They were reported as non-specific nasal masses.

Several studies have provided evidence that CT and symptoms do not necessarily correlate. In a study by Bolger [3] 42% of asymptomatic patients had mucosal changes on

Table 3 Comparison of clinical and histopathological findings in patients included in our study (n = 50)

Clinical Diagnosis	No. of patients	Histopathology	No. of Patients
Non-neoplastic(n=41)			
Ethmoidal polyps			
Allergic fungal polyp	16	Positive fungal hyphae	3(18.75%)
		Eosinophil rich infiltrate	8
		Non specific/fungus negative	5
Non-specific sinonasal polyps	20	Eosinophil rich infiltrate	14
		Non specific inflammatory	4(20%)
		Other diagnosis (one inverted papilloma, one granulomatous TB)	2
Antrochoanal polyp	4	Non specific inflammatory	4(100%)
Mucormycosis	1	Mucormycosis	1(100%)
Total consistent			12(29.3%)
Neoplastic lesions(n=9)			
Benign			
Inverted papilloma	2	Inverted papilloma	1(50%)
		Adenoid cystic carcinoma	1
Hemangioma	2	Hemangioma	2(100%)
Angiofibroma	2	Angiofibroma	2(100%)
Malignant			
Lymphoma	2	Lymphoma	1(50%)
		Others (aspergillosis)	1
Nasal cavity carcinoma	1	Adenocarcinoma	1(100%)
Total consistent			7(77.78%)

CT scan. One study examined 78 patients meeting chronic rhinosinusitis symptom criteria of which only 47% had evidence of chronic rhinosinusitis on CT [4]. A prospective study of patients without chronic rhinosinusitis found that 27% had mucosal changes suggestive of chronic rhinosinusitis⁵.

In our study of 50 cases, 41(82%) had non-neoplastic polyps and 9 (18%) had neoplastic lesions. The clinical diagnosis matched with histopathological cases in most of the cases. But biopsy report significantly altered the clinical diagnosis and management in only 8% of our patients.

There was a discrepancy in diagnosing allergic fungal polypi in most of the cases. They were mainly reported as eosinophil rich polypi (Allergic fungal sinusitis-like syndrome). But the management still remained the same as earlier i.e. complete removal of fungus and polypi. This difference could partially be attributed to lack of special stains for fungal hyphae in our centre, which markedly impaired the ability to recognize fungal elements on histopathology [6]. A previous study by Diamantopoulos et al [7] on 2021 patients reported that 1.1% of their patients had histopatho-

logical findings which were different from their clinical diagnosis and led to alteration in management.

However, histopathology still remains the gold standard for diagnosis in most cases.

Conclusion

Both nasal endoscopy and CT are objective measures that can increase accuracy of diagnosis in nasal pathologies. For areas that are not accessible to nasal endoscopy, CT can be useful in identifying disease and its extension.

It is concluded that significant lesions can be missed on either clinical or radiological evaluation and a thorough histopathological evaluation should be done in all cases of nasal polypoidal lesions for accurate diagnosis and management. Radiology proves to be indispensable in cases of nasal polyps as it provides a road map to the endoscopic surgeon and warns one of any existing or impending complications. Histopathology gives a confirmatory diagnosis in all our cases and so is the gold standard investigation in all cases of nasal polyps.

We had a few drawbacks in our study like the inability to use special fungal stains and to check Ig E levels and skin test reports in most of our patients due to lack of affordability. But we think that these drawbacks have not significantly affected our results.

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