*Original Article*

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# Histopathological Spectrum of Nasal Polyps: A Sixteen Months Study

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**Abstract**

*Introduction:* Nasal polyps are polypoidal masses arising from the nasal cavity and paranasal sinuses. They can be non-neoplastic, can have an infective etiology, or they can be benign or malignant. *Aim of the Study:* To study the histopathological spectrum of nasal polyps. *Materials and Methods:* This was a prospective study done over a period of 16 months. The study group consisted of 93 individuals from 10 years to 69 years in whom excised nasal polyps were studied histopathologically. These cases were classified into non neoplastic, benign and malignant lesions. *Observations and Results:* The male to female ratio was 1.73:1. The non-neoplastic lesions were more common (67.74%) than the malignant lesions (5.38%). Allergic morphology was more common. Rhinosporidiosis was a frequent infective etiology. Among benign lesions, hemangioma and among malignant lesions, squamous cell carcinoma were more common. *Conclusion:* Nasal polyps most commonly show allergic and inflammatory morphology. Rhinosporidiosis presents as nasal polyps in endemic coastal areas. Overall the study has found 5.38% malignant cases, so thorough sampling and study is recommended for all nasal polyps.

**Keywords:** Nasal polyps; Rhinosporidiosis; Hemangioma; Lesions.

## Introduction

True nasal polyps [1] are tumor like non-neoplastic polypoidal masses arising from nasal cavity and sinuses. They arebroadly classified as allergic nasal polypsand constitute 85-90% of overall nasal polyps and as fibro-inflammatory polyps which are characterized by chronic inflammation and metaplastic changes in the epithelium [2,3].

### *Aims and Objectives*

To study the histopathological spectrum of nasal polyps.

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## Material and Methods

The present study was a prospective study carried out in the department of Pathology at Great Eastern Medical School, Srikakulam, Andhra Pradesh, over a period of 16 months. A total of 93 excised nasal polyp specimens were studied histopathologically. Brief clinical details, examination findings, investigations and intraoperative details were noted. The study group consisted of a total 93 individuals. There were 59 male and 34 female patients, the male to female ratio being 1.73:1. The patient age ranged from 10 years to 69 years. The cases were classified into non neoplastic and neoplastic lesions. Neoplastic lesions were further classified and studied.

### *Specimen Handling*

The nasal polyp specimens were fixed in 10% formalin and were submitted for routine histopathological processing. Sections were cut at five

microns for routine hematoxylin and eosin staining (H and E) and were examined under the microscope and the findings were noted.Special stains to demonstrate acid fast bacilli and fungal elements were performedwherever required.The cases were classified into non neoplastic and neoplastic lesions.

## Observations and Results

The results of the study are shown in the following tables. Table 1 shows the distribution of cases according to the age of the patients. Table 2 shows the gender wise distribution and broad categorization of the lesions on histopathology.

There was a male preponderance with 59 male and 34 female patients.

The non-neoplastic lesions were most common accounting to 67.74% of all cases and the malignant lesions were least common accounting to 5.38%.

**Table 1:** Age wise distribution of patients

| Age Groups | Non Neoplastic | Benign Neoplastic | Malignant Neoplastic |
|---|---|---|---|
| 10-20 years | 5 | 2 | 0 |
| 21-40 years | 37 | 8 | 1 |
| 41-60 years | 16 | 8 | 2 |
| > 61 years | 5 | 7 | 2 |
| Total | 63 | 25 | 5 |

**Table 2:** Gender and histopathology wise distribution of lesions

| Type of lesion | Males No. of cases and % | Females No. of cases and % | Total |
|---|---|---|---|
| Non neoplastic | 37 (60.32%) | 26 (39.68%) | 63 (67.74%) |
| Benign | 18 (72%) | 7 (28%) | 25 (26.88%) |
| Malignant | 4 (80%) | 1 (20%) | 5 (5.38%) |

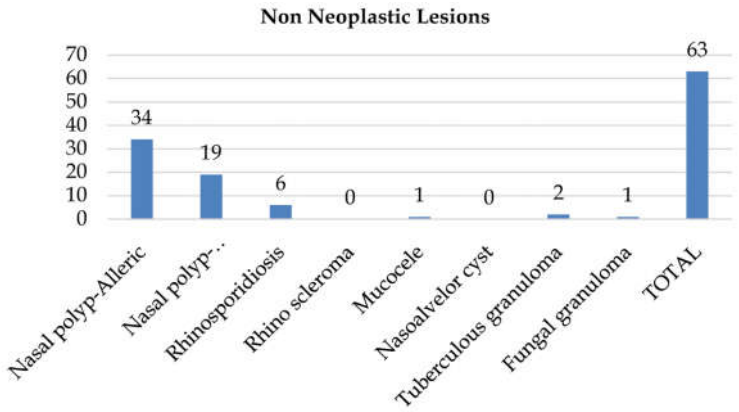


**Fig. 1:** Non-neoplastic lesions

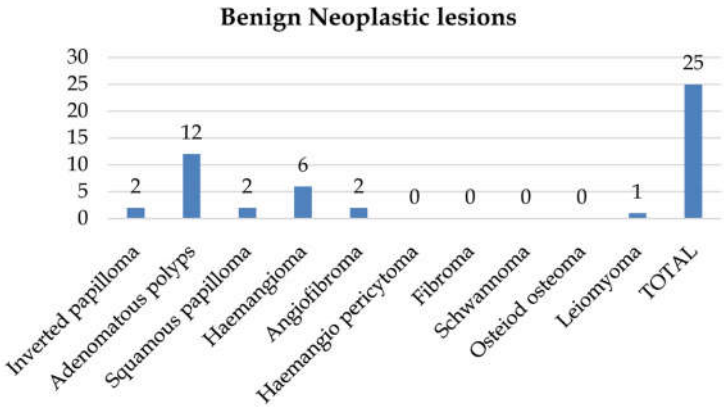


**Fig. 2:** Benign neoplastic lesions

Among the non-neoplastic lesions, nasal polyps of allergic etiology were more common (34 cases) accounting to 53.96%, followed by nasal polyps of inflammatory etiology, (19 cases) accounting to 30.15%. Rhinosporidiosis accounted for 9.52% (6 cases). Tuberculous granulomas were seen in 3.17% and fungal granulomas in 1.58%. Both the patients having tuberculous granulomas were negative for HIV test.

Among the benign neoplastic lesions, adenomatous polyps were most common 12 cases (48%), followed by 6 cases (24%) of hemangiomas.

### *Malignant Lesions*

Among the five malignant lesions studied, there were 3 cases (60%) of squamous cell carcinoma and 2 cases (40%) of adenocarcinoma. All the five cases were reported as primary carcinomas.

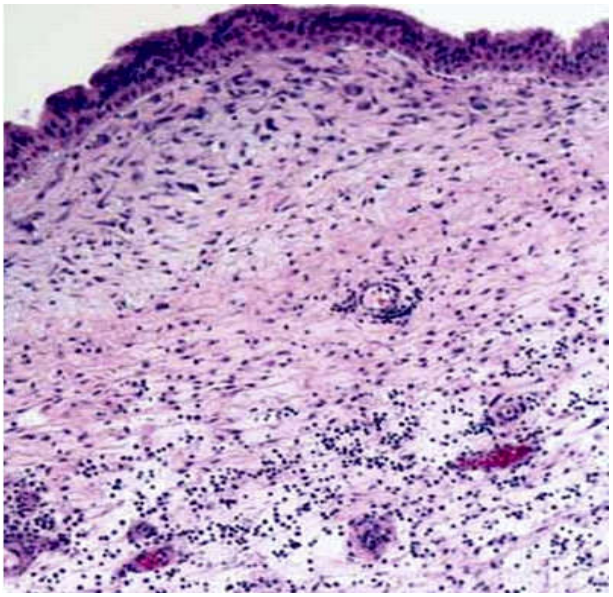

**Fig. 3:** Inflammatory Polyp

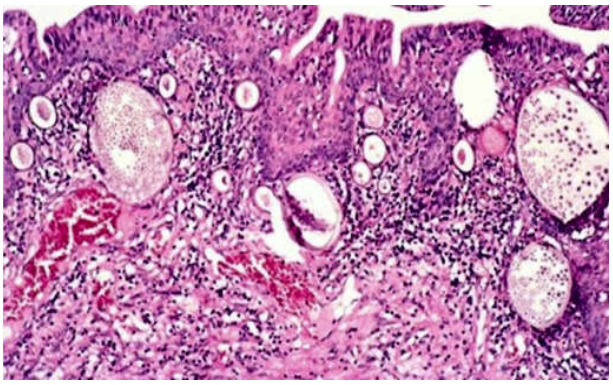

**Fig. 4:** Rhinosporidiosis

## Discussion

Polyps of the nasal cavity are common inflammatory lesions and their etiology is not exactly known [4]. There are various theories for the formation of nasal polyps including adenoma and fibroma theory, mucosal exudate theory, cystic dilatation of the excretory duct, obstruction of vascular supply, inflammation of the veins and lymphatics, hyperplasia of the mucosal glands, formation of new glands, etc [5].

Bernstein et al [4] have proposed a role of inflammation and allergies in nasal polyps and approximately 30% of patients with nasal polyps give positive results when tested for environmental allergens.

The general prevalence of nasal polyposis has been reported as 1% to 4.5% in European population [6]. Klossek et al [7] have observed a prevalence of 2.11 % in French general population between the ages of 49.4 ± 17.6 years. They didn't find any gender preponderance in their study, but observed increasing prevalence with increasing age.

Larsen et al [8] observed a definite male preponderance of nasal polyposis. In the present study, we also observed a definite male predominance and more number of cases with increasing age.

In the present study, more of allergic and inflammatory polyps were observed. This finding compares well with the study of Busuttil et al [3] who found allergic polyps to constitute 85-90% of overall nasal polyps.

Our study had more of allergic polyps rich in eosinophils. Tikaram et al [9] have observed more of neutrophil-rich polyps in their study carried out in Malaysia. According to them the etiology of nasal polyposis in Caucasians and Asians may be different and hence, may require different treatment strategies.They recommended long term antibiotic treatment for nasal polyposis in Asian population.

In our study, Rhinosporidiosis in nasal polyps was seen in 6 cases. Rhinosporidiosis commonly affects the nose and nasopharyngeal areas and these areas are affected in almost 70% of persons while the palpebral conjunctivae and the lacrimal apparatus can be affected in 15% cases [10]. The disease is endemic in some parts of India and Sri Lanka. In India,the highest number of cases are reported from Kerala and Tamil Nadu [11]. KrishnaKumari et al [11] reported 23 cases of Rhinosporidiosis in Srikakulam area in a three year study. The present study was also carried out in the same geographic area. They observed a history of taking bath in ponds as a common factor for many of their cases. Our findings are similar to their study as many of our patients belonged to nearby villages and had a history of exposure to pond water.

In our study, tuberculous granulomas were reported in 2/93 cases. Granulomas could be of sarcoidosis or due to rupture of mucous glands as reported by Busutill [12].

Primary nasal tuberculosis is a rare disease caused by inhalation of the bacilli or due to direct innoculation. Nasal tuberculosis usually occurs due to a pulmonary infection or as an extension of cutaneous tuberculosis. The nasal mucosa is thought to have inherent resistance to the TB bacilli which may contribute to the rarity of primary tuberculosis of nasal region [13].

In the present study, fungal granuloma was reported in a single case.Taimoor et al [14] found 35 positive fungal cultures in 50 cases of nasal polyposis. Fungal granulomas are mostly associated with poor

living conditions, over-crowding and unhygienic environment.

In the present study, there were 6/93 cases of nasal hemangiomas. Hemangiomas are benign tumors of the vascular endothelial cells and account for approximately 20% of all benign nasal cavity tumors [15]. They are more common in the head and neck regions than in the nasal cavities or paranasal sinuses. They commonly arise from the nasal septum and the lateral vestibular walls [15,16].

In our study, there were two cases each of inverted papilloma and squamous cell papilloma. Inverted papilloma is a benign but locally aggressive neoplasm in the nasal cavity. Approximately 5% patients of nasal inverted papilloma can have foci of squamous cell carcinoma [17]. None of our patients showed any foci of squamous cell carcinoma.

In our study, there were two cases of angiofibromas both occuring in young males. Juvenile nasopharyngeal angiofibromasare known to occur almost exclusively in adolescent males around 15 year age. Their incidence is rare and account for only 0.5% of all head and neck tumours [18].

In the present study, there were five malignant lesions of which 60% were squamous cell carcinomas and 40% were adenocarcinomas.Malignant tumors in the sinonasal locations are rare and constitute about 3% of tumors in the upper respiratory tract [19].

These tumors are more common in white people, and males are twice more commonly affected than females [20]. Epithelial tumors commonly affect the 50 to 60 years age group.

Weymuller et al [21] observed squamous cell carcinoma to be the most common histologic type in about 70-80% cases. The next common types were adenoid cystic carcinoma and adenocarcinoma approximately 10% each. In our study also the squamous cell carcinoma was more common than adenocarcinoma.

Sinonasal malignancies can be sporadic or can be associated with some risk factors. The risk factors for sinonasal malignancies are thought to be various industrial fume inhalations, wood dust and leather tanning works [22].

Especially the intestinal-type adenocarcinoma of the nasal cavity is strongly associated with wood dust exposure [23]. See comment in PubMed Commons below None of our adenocarcinoma patients gave any positive history of exposure to industrial toxins or to wood dust.

About 5% of nasal polyps have angiectatic features and they are called asangiectatic nasal polyps (ANP) which can simulate malignancy. Awareness of this entity is important so as to avoid over-diagnosis or misdiagnosis with other vascular or spindle cell lesions [24].

Hippocrates [1] in 460 BC had devised a method to remove nasal polyps with the help of a string.

The present day practice is to treat first by medical management and if unresponsive then to perform endoscopic guided sinus surgery [25] forremoval of benign polyps and for malignancies standard treatment protocols are followed.

## Conclusions

Nasal polyps show most commonly allergic and inflammatory morphology. Rhinosporidiosishas to be kept in the differential diagnosis of nasal polyps especially when patients belong to endemic coastal areas. Overall the study has found 5.38% malignant cases, so thorough sampling and study is recommended for all nasal polyps.

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## References

1. Drake Lee AB, “Nasal polyps” Chapter 10 in Scott Browns Otolaryngology Rhinology 6th edn., Vol.4, Ian S Mackey and T.R. Bull, Heinemann, Butterworth, 1984.p.1-15.
2. Salvin, Raymond G, “Nasal polyps and sinusitis” Chapter 56 in Allergy Principles and practice- Vol-II, Ellot Middleton Jr. Charles E. Reed Elliot F Ellis Jungingler and William, New York, Mosby, 1993.p.1455-1459.
3. Busuttil A. “Simple nasal polyps and allergic manifestations” Journal of Laryngology and Otology 1992; 477-487.
4. Bernstein JM, Gorfien J, Noble B. Role of allergy in nasal polyposis: a review. Otolaryngol Head Neck Surg. 1995; 113(6):724-32.
5. Tos M. The pathogenic theories on the formation of nasal polyps.Am J Rhinol. 1990; 4:51-6.
6. Settipane GA, Chafee FH. Nasal polyps in asthma and rhinitis: a review of 6037 patients. J Allergy ClinImmunol 1977; 59:17-21.

7. Klossek JM, Neukirch, F, Pribil C, Jankowski, R, Serrano E, Chanal I et al. Prevalence of nasal polyposis in France: a cross-sectional, case–control study. Allergy 2005; 60:233–237.
8. Larsen K, Tos M. The estimated incidence of symptomatic nasal polyps.ActaOtolaryngol 2002; 122:179–182.
9. Tikaram A, Prepageran N. Asian Nasal Polyps: A Separate Entity? Med J Malaysia 2013; 68(6):445-47.
10. Pushker N, Kashyap S, Bajaj MS, Meel R, Sood A, Sharma S, et al. Primary lacrimal sac rhinosporidiosis with grossly dilated sac and nasolacrimal duct. OphthalPlastReconstr Surg. 2009 May-Jun; 25(3): 234-5.
11. Krishna Kumari, Prasad Uma, S. Ramesh, H. L. Vasavi, K. Rajani. "Prevalence of Rhinosporidiosis in Srikakulam District". Journal of Evolution of Medical and Dental Sciences 2015; 4(50):8685-8689.
12. Busuttil A. Granulomas in nasal polyps.J Laryngol Otol 1975; 89(11):1087-94.
13. Baruah B, Goyal A, Shunyu N B, Lynrah Z A, Raphael V. Tuberculosis of nose and palate with vanishing uvula. Indian J Med Microbiol 2011; 29:63-5.
14. Taimoor Latif Mailk, MansoorBasir Pal.Prevalence of Fungal Infection in Nasal Polyps. PJMHS 2014; 8 (4):1077-1080.
15. Takeda K,Takenaka Y, Hashimoto M. Intraosseous hemangioma of the inferior turbinate. Case Reports in Medicine 2010, Article ID 409429, 3 pages.
16. Iwata N, Hattori K, Nakagawa T, Tsujimura T. Hemangioma of the nasal cavity: a clinicopathologic study. AurisNasus Larynx 2002; 29(4):335–339.
17. Mendenhall WM, Hinerman RW, Malyapa RS, Werning JW, Amdur RJ, Villaret DB, Mendenhall NP.Inverted papilloma of the nasal cavity and paranasal sinuses. Am J ClinOncol 2007; 30(5):560-3.
18. Momeni AK, Roberts CC, Chew FS. Imaging of chronic and exotic sinonasal disease: review. AJR Am J Roentgenol. 2007; 189(6):S35-45.
19. Zimmer LA, Carrau RL. Neoplasms of the nose and paranasal sinuses.Bailey BJ, Johnson JT, Newland SD, eds. Head & Neck Surgery - Otolaryngology.4th. Lippincott, Williams & Wilkins; 2006.
20. Caplan LS, Hall I, Levine RS, Zhu K. Preventable risk factors for nasal cancer. Ann Epidemiol. 2000; 10: 186-91.
21. Weymuller EA, Gal TJ. Neoplasms of the nasal cavity. Cummings CW, Flint PW, Harker LA et al. eds. Otolaryngology - Head and Neck surgery. 4th. Mosby; 2005.
22. d'Errico A, Pasian S, Baratti A Zanelli R, Alfonzo S, Gilardi L et al. A case-controlled study on occupational risk factors for sino-nasal cancer.Occup Environ Med. 2009; 66:448.
23. Barnes L. Intestinal-type adenocarcinoma of the nasal cavity and paranasal sinuses. Am J SurgPathol 1986; 10(3):192-202.
24. Yfantis HG, Drachenberg CB, Gray W, Papadimitriou JC.Angiectatic Nasal Polyps That Clinically Simulate a Malignant Process. Archives of Pathology & Laboratory Medicine 2000; 124(3):406-410.
25. Nguyen DT, Felix-Ravelo M, Arous F, Nguyen-Thi PL, Jankowski R. Facial pain/headache before and after surgery in patients with nasal polyposis. ActaOtolaryngol 2015.p.1-6.