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A Study On The Histopathological Analysis Of Nasal Masses Among Patients Attending The Ent Department Of Pakistan Institute Of Medical Sciences, Islamabad

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Abstract

Objective: The study was conducted to understand the different histopathological patterns, the classification of nasal tumours, and the relative distribution of the various lesions by age and sex.
Method: In this study, 80 patients admitted to our hospital with nasal weights and numerous clinical presentations were selected. The study period is 2 years. This study was conducted in the Department of Otorhinolaryngology/ ENT and Histopathology department of the Pakistan Institute of Medical Sciences and AFIP for a two-year duration from April 2019 to April 2021.
Results: The most numerous groups of changes were non-cancerous nasal growth; 55 cases (68.25%), then 25 cases (32.25%) of nasal tumours, 16 benign, and 9 malignant cases in cancerous tumours.
Conclusion: Nasal obstruction and rhinorrhea are the most commonly encountered symptoms in our community, with simple inflammatory nasal polyps being the predominant histological pattern. Surgical intervention is considered the optimal treatment modality.
Keywords: histopathology, neoplastic, non-neoplastic.

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1. Introduction

From the time of Hippocrates; The father of medicine, nasal masses are known to be a common human disease.[1-2] They are round, swollen appendages of the membrane that lie on the surface of the mucosa and protrude into the nasal cavity. It is usually bilateral and multiple and causes visible enlargement of the nose. Simple nasal polyps are round, smooth, soft, translucent, yellow or pale, shiny structures that are attached to the nasal mucosa or sinuses by a relatively narrow peduncle or stem. They are not painful and move posteriorly toward the nasopharynx when manipulated.[3] The most commonplace of origin is in the ethmoid labyrinths, especially in the mucosa of the middle meatus. Nasal polyps are most common in middle-aged men.[4-5] Changes in the nasal cavity, nasopharynx, and paranasal sinuses create problems in diagnosis, prognosis, and treatment due to unusual clinical-pathological features. Nasal tumors are generally rare.[6] Malignant tumors account for 0.2% to 0.8% of all malignancies and only 3% of all malignant tumors of the upper airway. Any type of tumor can occur in this area, so it is important to know the overall pathology of the tumors. Features, symptoms, and improved imaging help to make a possible diagnosis, but histopathological examination remains the basis for a definitive diagnosis[7]. Microscopically, sinus papillomas consist of proliferating cells of the cylindrical and/or squamous epithelium with a mixture of mucin-containing cells and multiple microcysts. Some tumors consist of swollen granular eosinophilic cells with the properties of fully or partially oncocytes.[8-9] Basal mitosis occurs sporadically. We had two cases of paranasal sinus papilloma with oncocytic epithelium; here the tumors consisted of swollen granular eosinophilic cells that are fully or partially characteristic of oncocytes. Peripheral nerve tumors around the sinuses and nose are extremely rare.[10] They are likely to arise from the ophthalmic and maxillary branches of the trigeminal nerve and branches of the autonomic nervous system. The most common type is neurilemoma, which is usually not encapsulated, unlike the more common soft tissue equivalent which can cause diagnostic problems due to hypercellularity.[11-]

2. Materials & Methods

This study was conducted at the Department of Otorhinolaryngology/ ENT and Histopathology department of Pakistan Institute of Medical Sciences and AFIP for two-years duration from April 2019 to April 2020. The study included patients who reported to the outpatient clinic (OPD) with symptoms such as a mass

in the nose, nasal obstruction, and/or nasal discharge. Eighty patients of all ages and genders were enrolled in this two-year follow-up study. We obtained prior approval from our Corporate Ethics Committee to conduct this study. After arriving at OPD, each patient is thoroughly examined, and after this routine haematological examination, appropriate radiological examinations (USG, X-ray, and CT) are performed according to individual needs. After patients' informed consent was obtained for incision or excision, biopsies were performed and the tissues were sent for histopathological examination. All tissues were fixed in 10% formalin and processed routinely. 4-5 µm thick sections were cut and stained with hematoxylin and eosin (H and E). Special stains such as Periodic Acid Schiff and Giemsa were made if necessary. Histologically, nasal tumours were classified as non-cancerous and cancerous. Non-cancerous masses were divided into allergic and non-allergic types, and cancerous tumors into benign and malignant changes.

3. Results

In our study, a total of 80 patients were examined, and non-cancerous nose tumors constituted the largest group of lesions in 55 cases (68.75%), followed by nasal cancer in 25 cases (32.25%).

Table 1a: Gender distribution of nonneoplastic nasal masses (*n* = 55)

Type of lesions	Number of cases (%)	Male	Female
Allergic polyps	17 (31)	12	5
Nonallergic polyps	38 (69)	29	9
Nonspecific polyps	30 (55)	25	5
Rhinosporidiosis	05 (09)	3	2
Mucormycosis	03 (05)	3	0
Aspergillosis	04 (07)	2	2
Rhinoscleroma	06 (11)	3	3
Total number of cases	55	41	14

Nonneoplastic nasal masses were more common in the fourth and fifth decades, and neoplastic tumours in the fifth and sixth decades. The age of patients with non-allergic polyps ranges from 11 to 70 years, with the highest incidence occurring between the second and fourth decades of life.

Statistical analyses are performed in the SPSS 20.0 software. Tables 1a and b show the sex distribution of various nasal tumours.

Table 1b: Gender distribution of neoplastic nasal masses (*n* = 25)

Type of lesions	Number of cases (%)	Male	Female
Benign	16 (64)	11	5
Inverted nasal papilloma	05 (20)	5	0
Sinonasal papilloma with oncocytic epithelium	04 (16)	2	2
Everted papilloma	04 (16)	2	2
Pleomorphic adenoma	02 (8)	2	0
Nasopharyngeal angiofibroma	04 (16)	2	2
Neurilemoma (schwannoma)	04 (16)	2	2
Meningothelial meningioma	02 (8)	2	0
Malignant	09 (36)	7	2
NK/T cell lymphoma	02 (8)	2	0
Embryonal RMS	02 (8)	0	2
Alveolar RMS	02 (8)	0	2
Olfactory neuroblastoma	02 (8)	0	2
Nasopharyngeal carcinoma	04 (16)	2	2
Total number of cases	25	18	7

Statistical analyses are performed in the SPSS 20.0 software. Tables 1a and b show the sex distribution of various nasal tumors.

Table 2: Age-wise distribution of neoplastic nasal masses (*n* = 25)

Age (years)	Benign (16)	Malignant (09)
0-10	0	0
11-20	2	0
21-30	7	0
31-40	4	0
41-50	1	2
51-60	2	3
61-70	0	4

Table 3: Clinical presentation of various nasal masses

Lesions	Presentation of patients
Rhinoscleroma	Foul-smelling purulent nasal discharge and crusting
Allergic polyp	Paroxysmal sneezing, nasal obstruction, watery discharge from the nose, and itching
Aspergillosis	Mass with black or greyish membrane with nasal obstruction
Rhinosporidiosis	Leafy, polypoidal, pink to purple coloured mass with complaints of discharge and sometimes frank epistaxis
Angiofibroma	Progressive nasal obstruction with recurrent epistaxis
Mucormycosis	Black necrotic mass filling the nasal cavity
RMS	Nasal obstruction
Sinonasal lymphoma	Nasal obstruction, rhinorrhea, fever weight loss, cervical lymphadenopathy, palatal ulceration, and periorbital cellulitis
Nasopharyngeal carcinoma	Nasal obstruction, discharge, recurrent epistaxis with progressive hearing loss

Table 2 shows the age distribution of various nasal tumours. In our study, we recorded six cases of malignant tumors in the nose. The clinical picture of

patients with various nasal tumors is presented in Table 3.

4. Discussion

Nasal tumors are not true cancers, their pathophysiology is associated with inflammation, allergies, infection, and/or cystic fibrosis. While non-cancerous nasal tumors were more common in the fourth and fifth decades, cancerous tumors were more common in the fifth and sixth decades.[12] Clinically, nasal tumors appear as soft exophytic lesions extending laterally from the mucosa to the anterior part of the nasal cavity. Under the microscope, the epithelial lining of nasal tumors is respiratory, unless squamous metaplasia is present.[13] While the interface between them is sharp in some regions, there is an intermediate (middle) epithelial area in other regions. Most nasal inflammatory lesions appear as soft, pale, light grey to pink nodules and are usually bilateral and multiple.

Allergic masses are associated with more eosinophils, while non-allergic masses contain more plasma cells, lymphocytes, and neutrophils.[14] The basement membrane is sometimes very thickened, especially in allergic polyps. The stroma is swollen with a mixture of acute and chronic inflammatory cells, and there are very few fibroblasts and small vessels; sometimes it looks much more important. Vascularity is variable and blood vessels often contain smooth muscle.[15] Rhinosporidiosis is an endemic inflammatory disease found in India but has also been reported in other parts of the world. The causative organism is Rhinosporidium seeberi. It is characterised by hyperplastic polypoid lesions in the nasal cavity and rarely in other mucous membranes. Diagnosis is made easy by identifying multiple globular cysts up to 200 nm in diameter.

Each of these cysts represents a thick-walled sporangium containing many spores. The microscopically dominant cells are foam macrophages (Mikulicz cells) and plasma cells[16]. Vasculitis, ulceration, and pseudomembranous hyperplasia may occur. Papillomas of the sinuses and nose are benign neoplasms of the respiratory mucosa that most often occur in cases of nasal congestion or nosebleeds. Most cases occur in adult males, but can also be seen in children[17]. Unlike inflammatory polyps, sinus papillomas are mostly unilateral. Nasal septal warts are usually exophytic and fungal ("fungus-like" or "inverted"), containing a thin central core of connective tissue. Those on the lateral wall (middle duct or middle or lower conch) are inverted type and the epithelium grows inside the stroma. Our study describes four cases of inverted papilloma and all lesions showed an endophytic growth pattern. Most cases occur in adult males, usually in their 60s, but can also occur in children[18]. We found a case of neurilemma. Histology revealed homogeneous fusiform cells arranged in a loose stroma. The cores are arranged in the shape of a curtain (Antonio A and B).

Extracranial meningioma can occur around the skull base, scalp, eyeball, nasal cavity, paranasal sinuses, and middle ear. This is possibly caused by arachnoid cells that become trapped in or around the bone as the skull bone grows together. We had a case of meningothelioma in a 23-year-old woman. Histology reveals the meningeal epithelium and cells forming a spiral pattern of clusters and a small number of psammoma bodies.

Rhabdomyosarcoma (RMS) is a skeletal muscle sarcoma commonly found in the head and neck region, with the nasopharynx being the second most common region after the orbit. We found two RMS cases with histological explanations, the tumor cells are small and spindle-shaped. Some of them have deep eosinophilic cytoplasm. Often the presence of high cellular areas alternates with accessory areas surrounding blood vessels that have abundant mucoid intercellular material.

Sino-nasal lymphoma is more common in Asian populations than in Western populations, where it is the second most common group of extra-nodal lymphomas after gastrointestinal lymphomas. In our study, we found a case of lymphoma, small round blue cells were found on histopathology.[19-20] Nasopharyngeal carcinoma (NPC) is a different clinicopathological entity than other squamous cell carcinomas in the head and neck region. It is distinguished by special histology, geographic distribution, and affinity with the Ebstien-Barr virus, and is not related to smoking.[21-22] Occurrence in the fourth and fifth decades is at its peak and has a significant male dominance. We found two cases of NPCs; both are male six to ten years of age and present as moderately differentiated keratinized squamous cell carcinoma.

In our study, when we had concerns about the histopathological diagnosis, we sent the tissue blocks to another pathology lab for confirmation by immunohistochemistry (IHC); The diagnosis of meningioma, lymphoma, RMS, and neuroblastoma is made after confirmation by IHC.

5. Conclusion

Although most nasal tumors referred to histopathology are secondary to inflammation, infection, or allergy, various benign and malignant changes in the nose may present as nasal tumors, and therefore all nasal lesions should require histopathological examination

INSTITUTIONAL REVIEW BOARD

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M.J.F, A.H.A - Conception of study
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M.J.F, M.A, M.Z, S.F.S -
Analysis/Interpretation/Discussion
M.J.F, M.A, A.H.A - Manuscript Writing
M.J.F, M.Z, S.F.S - Critical Review
- Facilitation and Material analysis

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

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