Original Article

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Clinicopathological and Radiological Features of Unilateral Nasal Mass in Adults - A Tertiary Care Hospital Experience

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ABSTRACT

Introduction*: Aim and objectives of the study were to analyze and study the diverse presentations of unilateral nasal mass and to identify the suggestive features of neoplastic pathology in adult's population at a tertiary referral hospital. Aim of the study: Aim and objectives of the study were to analyze and study the diverse presentations of unilateral nasal mass and to identify the suggestive features of neoplastic pathology in adult's population at a tertiary referral hospital.* ***Methods & Materials****: This prospective observational study was conducted in the Department of ENT, Khulna Medical College and Hospital, Khulna, Bangladesh. The study period was between January 2021 and December 2021. The parameters include patient history, clinical assessments and histopathological examinations, which were supplemented with radiological investigations. In addition, demographic information and histopathological examinations for patients, who underwent surgical excision was analyzed for correlation with clinical diagnosis.* ***Result****: The reported cases are 55 males and 35 females with a median follow-up period of 12 months, ranging from 2-72 months. Nasal obstruction is the major symptom 34 (38%), 25 (27.8%) cases were reported with nasal mass and clinical diagnosis indicates 18 (20%) cases of malignancy. Type of disease and gender demonstrates low significance (p=0.023), whereas the diagnosis with age is highly significant (p=0.005).* ***Conclusion****: Carcinoma, inflammatory polyposis, inverted papilloma and allergic fungal sinusitis were the highest histological diagnosis. The clinical diagnosis and the suggestive features of radiological findings mostly resembled the histological findings. In contrary to the resemblance, the histological finding reveals the general diagnosis of nasal mass to the precise diagnosis, especially the fatal conditions like carcinoma. The high rate of malignancy and its suggestive radiological findings indicates that the specialists should consider the cases with caution to carryout histological analysis to rule out the probability of neoplasm.*

Keywords: *Clinicopathological, Unilateral nasal mass, Neoplastic pathology.*

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INTRODUCTION

Nasal polyps or nasal masses are benign lesions of the nasal mucosa and paranasal sinuses with unidentified etiology causing local inflammation [1]. These polyps are associated with chronic inflammation, infections, recurrent allergies, and when enlarged, may obstruct the nasal passage and interfere with breathing [2]. Otolaryngologists frequently encounter cases with unilateral sinonasal symptoms, nasal polyps, or sinus opacity. A study reported the prevalence of nasal polyps to be 4% [3].A review indicates that nasal polyps are commonly seen in non-allergic asthma patients (13%) than allergic asthma (5%) cases [4]. The symptoms of nasal polyps include watery anterior rhinorrhea with or without mucous dripping. Hyposmia and or anosmia are yet another complication of sinonasal polyps. Pain is quite unusual, but may precipitate along dorsum of the nose, at the forehead and may spread the cheeks [5]. The symptoms may become further complicated based on the size and location of the polyp and it aggravates if the blockage become prominent and the sinuses gets infected [6]. The condition is uncommon in children and is observed commonly in adults, but its etiology is not known, but usually with allergic conditions [7]. The polyps are usually noticed on the middle meatus, which may have the influence of the anatomic factors. Further, chronic inflammations in the nasal cavity may also be a reason for the development of such polyps [5]. These nasal masses are edematous tissues, usually formed in the middle meatus, which then prolapses into the nasal cavity [8]. The cell structure of these polyps is characterized by ciliated columnar epithelium with thickened basement membrane, which will be infiltrated with plasma cells [9]. Clinical diagnosis of the condition is based on the symptoms and clinical examination of nose, but often uses diagnostic tests like, nasal endoscopy, imaging studies and allergy tests [10]. Histopathological investigations are uncommon if these tissues are bilateral in nature, but it requires histopathological examinations if it is presented unilaterally to rule out different types of malignancies. A retrospective review of histological findings of nasal polyp illustrates that 1.1% of the cases were with malignancy and concluded that all such specimens should undergo histological examination to confirm whether the growth is malignant[11]. A study describing the histopathological findings of a series of cases observed neoplasm of sinonasal polyps was 2.3%, which is higher than reported in literature and the observation was that the cases were inverted papilloma, whereas others were considered as incidental in bilateral nasal polyps [12]. Despite the low incidence, the study recommends histopathologic examinations in all cases to avoid missing fatal pathologies [12]. The literature highlights that unilateral sinonasal symptoms, though often treated as low risk, may indicate sinonasal neoplasms with subtle symptoms mimicking inflammatory pathology. Moreover, unattended benign lesions in the

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sinonasal vicinity may lead to frequent recurrence and radical surgeries [13]. Despite its significant morbidity and commonality, research on unilateral sinonasal conditions remains sparse, emphasizing the need for further research in this area.

METHODS & MATERIALS

This prospective observational study was conducted in the Department of ENT, Khulna Medical College and Hospital, Khulna, Bangladesh. The study period was between January 2021 and December 2021. The parameters include patient history, clinical assessments and histopathological examinations, radiological investigations (computed tomography and magnet resonance imaging). In addition, demographic information was obtained and the histopathological examinations of tissues for patients, who underwent surgical excision was analyzed for correlation with clinical diagnosis.

RESULT

A total of 34 patients reported to the rhinology clinic with unilateral sinonasal polyps consist of 21 (61.76%) males and 13 (38.24%) females with mean±SD age of 45.1±16.9, ranging from 19 to 78 years, of them 12 (35.29%) were smokers. The median follow-up period of patients was 12 months with minimum period of 2 months to a maximum period of 62 months (*Table I*).

Table I: Demography of study patients (*n*=34).

Variables	Frequency	Percentage(%)
Gender		
Male	21	61.76
Female	13	38.24
Age in Years		
Mean±(SD)	45.1±16.9	
Minimum- Maximum	19-78	
Follow-up in months		
Median(months)	12	
Minimum- Maximum	2.0-62.0	
Smoking		
Yes	12	35.29
No	22	64.71

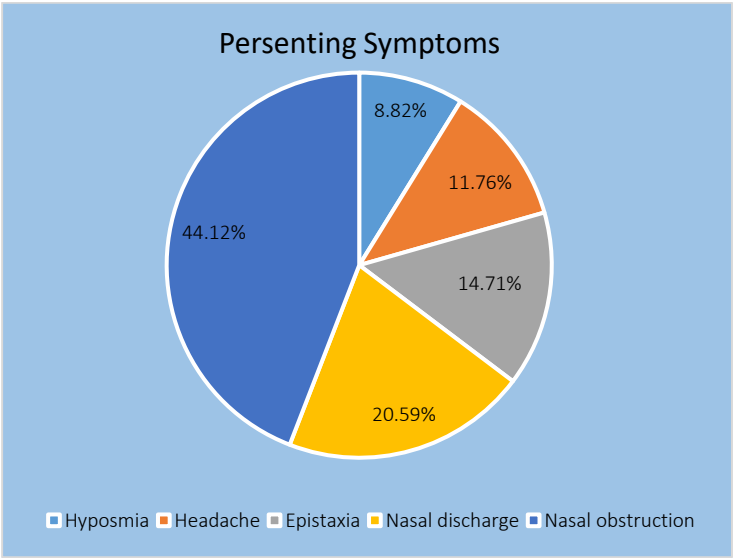

Figure 1: Presenting Symptoms of study patients (*n*=34).

The common presenting symptoms (*Figure 1*) were nasal obstruction 15 (44.12%), nasal discharge 7 (20.59%), epistaxis 5 (14.71%), headache 4 (11.76%) and hyposmia 3 (8.82%).

All surgical specimens were sent for histopathological examinations to confirm the final diagnosis (*Table II*) and carcinoma (n=5) is the most common condition, (2 squamous cell carcinoma (SCC), 2 adenoids cystic carcinoma and 1 adenocarcinoma). This was followed by inflammatory polyposis (n=5), inverted papilloma (n=3), inverted papilloma (n=3), allergic fungal sinusitis (n=2), mucocele (n=2), antrochoanal polyp (n=2). Meningocele/meningoencephalocele (n=2) and multiple myeloma (0) were observed. 10 other cases of different benign tumors were identified.

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Table II: Histopathological findings.

Histopathological findings	-	Frequency	Percentage (%)
Allergic fungal sinusitis	-	3	8.82
Invasive fungal sinusitis	-	2	5.88
Granulomatous sinusitis	Fungal granulomatous	1	2.94
	Rhinoscleroma	1	2.94
Inflammatory polyposis	-	5	14.71
Mucocele	-	2	5.88
Meningocele/ meningoencephalocele	-	2	5.88
Inverted papilloma	-	3	8.82
Fibrous dysplasia	-	1	2.94
Antrochoanal polyp	-	2	5.88
Carcinoma	SCC	2	5.88
	Adenoid cystic carcinoma	2	5.88
	Adenocarcinoma	1	2.94
Sarcoma	Pleomorphic sarcoma	1	2.94
	Ewings sarcoma	1	2.94
	Kaposi sarcoma	0	0.00
Multiple myeloma	-	0	0.00
Juvenile angiofibroma	-	1	2.94
Osteoma	-	1	2.94
Capillary hemangioma	-	0	0.00
Schwanoma	-	1	2.94
Craniopharyngoma	-	1	2.94
Giant cell tumor	-	0	0.00
Infratemporal Papilloma	-	1	2.94
Pyogenic granuloma	-	0	0.00

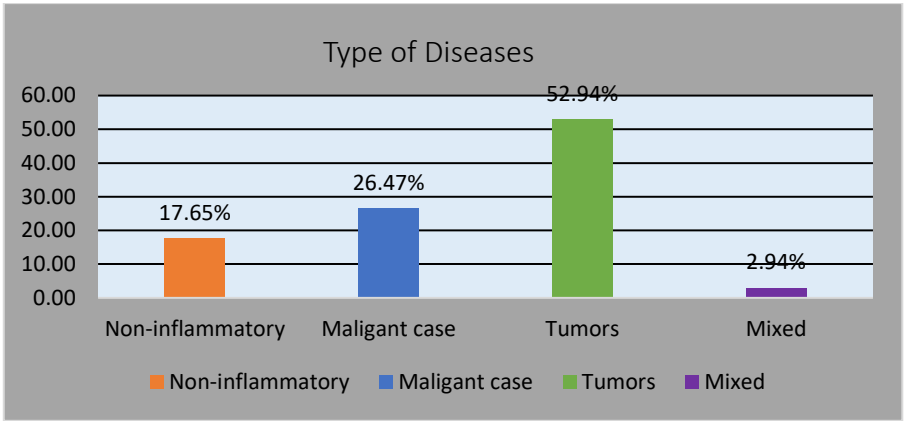

Figure 2: Type of disease (*n*=34).

The disease conditions were classified into different types (*Figure 2*) followed by benign tumors 18 (52.94%), 9 (26.47%) malignant cases, non-inflammatory 6 (17.65%) and mixed type 1 (2.94%).

It is observed that there is a statistically significant relation between the gender (p=0.023) and the different types of diseases diagnosed (*Table III*). The diagnosed malignant growth was high among males (n=21) when compared to females (n=13).

Table III: Type of disease and gender (*n*=34).

Type of the disease	Gender		P value
	Male (21)	Female (13)	
Inflammatory	8	5	0.023
Non-inflammatory	3	1	
Mixed	0	1	
Benign	6	3	
Malignant	4	3	

Statistical significance was observed between the disease and the reported age, but with high statistical significance of 0.005 (*Table IV*). 6 malignant cases observed at the mean age of 59, whereas benign growth was high (n=9) at the mean age of 44.3. However, inflammatory conditions were the highest among the diseases which accounted for 13 cases at a mean age of 42.5.

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Table IV: Disease and its relation with age.

Type of the disease	Number	Mean age	SD	P Value
Inflammatory	13	42.5	16.3	0.005
Non-inflammatory	5	39.8	19.6	
Mixed	1	56	-	
Benign	9	44.3	13.5	
Malignant	6	59	14.8	

The most common type of diseases was inflammatory (n=14), non-inflammatory (n=4), benign (n=9) and malignant (n=7), which are further correlated with the histological findings (*Table V*). Among the inflammatory type, histological findings demonstrate that 9 (26.47%) as allergic fungal sinusitis and 5 (14.71%) as antrochoanal polyp. The non-inflammatroy types were histologically classified into two namely, meningocele-meningoencephalocele 3 (8.82%), and frontal mucocele 1 (2.94%). In the tumor group, the benign and malignant tumors of which, inverted papilloma 7 (20.59%) and fibrous dysplasia 2 (5.88%) were the commonest benign type and adenoid cystic carcinoma 3 (8.82%), non-keratinizing poorly differentiated squamous cell carcinoma 4 (11.76%) were related with malignancy.

Table V: Most common type of diseases.

Type of the disease	Histology findings	Frequency	Percentage (%)
Inflammatory (n=14)	Allergic fungal sinusitis	9	26.47
	Antrochoanal polyp	5	14.71
Non-inflammatory (n=4)	Meningocelemeningoencephalocele	3	8.82
	Frontal mucocele	1	2.94
Benign (n=9)	Inverted papilloma	7	20.59
	Fibrous dysplasia	2	5.88
Malignant (n=7)	Adenoid cystic carcinoma	3	8.82
	Non keratinizing poorly differentiated squamous cell carcinoma	4	11.76

Correlation of clinical, radiological finding was analyzed (*Table VI*) which illustrates that for the first seven clinical diagnoses the radiological finding was suggestive of clinical findings, which means it is pointing out towards the clinical diagnosis. This was followed by clinical diagnosis of 9 nasal masses, of which 2 cases were radiologically identified as meningocele, but 6 cases were suggestive of other pathology. From clinical diagnosis inverted papilloma was 6 (17.65%) though under the radiological finding 5(14.71%) were suggestive. 5(14.71%) patients were from nasal polyposis and 4 (11.76%) patients were from both fungal sinusitis and neoplastic nasal mass.

Table VI: Correlation of clinical, radiological diagnosis (*n*=36).

Clinical diagnosis	Frequency	Percentage	Radiological findings	Frequency	Percentage
Angiofibroma	1	2.94	Suggestive	1	2.94
Antrochoanal polyp	2	5.88	Suggestive	2	5.88
Frontal mucocele	1	2.94	Suggestive	1	2.94
Fungal sinusitis	4	11.76	Suggestive	2	5.88
Granuloma	1	2.94	Suggestive	3	8.82
Hemangioma	0	0.00	Suggestive	1	2.94
Inverted papilloma	6	17.65	Suggestive	5	14.71
Nasal mass	9	26.47	Meningocele	2	5.88
			Meningoencephalocele	1	2.94
			Suggestive of other pathology	6	17.65
Nasal polyposis	5	14.71	Suggestive of other pathology	6	17.65
Neoplastic nasal mass	4	11.76	Suggestive	4	11.76
Septal mass	1	2.94	Suggestive	0	0.00

DISCUSSION

Nasal polyps are common diagnosis for the cases reported to the Ear Nose Throat (ENT) clinics, which are treated without much complication, but the unilateral sinonasal symptoms may be often a signal to sinonasal neoplasms with understated indications, mimicking inflammatory pathology. The prevalence of nasal polyposis in Saudi Arabia is not known well, however, a cross-sectional case control study in France indicates the prevalence as 2.11% [14]. Further, studies are sparse on the diverse presentations of unilateral nasal mass, if not diagnosed properly it may go unnoticed with probability of becoming a benign or malignant nasal mass. Hence, this study intended to identify the suggestive features of neoplastic pathology verifying the different diagnosis with radiological and histopathological findings. The presented symptoms of this study illustrate nasal obstruction as the predominant symptom, which is quiet common among cases with nasal mass and polyps. This may be because any sort of inflammation in the nasal mucosa, irrespective of its cause will lead to nasal obstruction. But, the feeling of nasal obstruction may vary from person to person, what one person feel may be of less importance to another patient with same level of obstruction [15]. It is reported that nasal mass and nasal polyps were the most common clinical diagnosis, which are the

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common diagnoses in the ENT clinics presented with nasal inflammations. Studies also indicate that chronic sinusitis with or without polyposis always prompt the clinicians to suspect potential presentation of cystic fibrosis [16]. However, radiological and histopathological investigations are necessary to rule out possible malignancies of the nasal mass and polyps [17]. The histopathological investigations demonstrated carcinoma, inflammatory polyposis and allergic sinusitis as the leading findings. Histological investigations provide with specific findings, which help to rule out the unclear diagnosis and unveil the hidden carcinomas as illustrated by a case study [18]. surprisingly, the percentage of malignancy (20%) and benign tumors (29%) were observed to be similar among both the genders. Literature is not sufficient to explore the difference in sinonasal malignancies between the two genders. But, a study on olfactory neuroblastoma indicated that the survival rate of male higher than that of female with treatment. Benign tumors were also the same between the genders with 29% cases in both the genders. As expected we also observed the number of malignancy at a higher median age. We also noticed the higher rate of inverted papilloma, a benign tumor, which can undergo aggressive malignant transformation into squamous cell carcinoma. This is clarified by a retrospective cohort study, which stated that it has the most severe degree of abnormal cells prior to neoplasmic transformation and with higher recurrence rate and multifocal involvement, but with low rate of conversion to invasive carcinoma [19]. Even though most of the clinical diagnosis correlates with radiological findings and histopathological findings, the diagnosis of nasal mass and nasal polyposis was not exactly matching with the histological findings. This was in particular for the diagnosis of nasal mass and polyposis, when the radiological investigations provided are suggestive of the condition, but the histopathological findings clarified specific conditions. Currently, there is no relevant literature available for comparing the clinical with radiological and histopathological findings in patients with nasal mass or nasal polyposis. The only study which titles the comparison between the investigations stated a positive correlation of radiological findings and concluded that there is no histopathological difference between polypoind infiltrations of sinuses. Hence, this study could not explore the literature to contrast with findings of this study with similar studies. However, the neoplastic pathology of the unilateral nasal masses was well clarified and confirmed by the histological investigations, which correlates with clinical diagnosis to a major extent.

CONCLUSION & RECOMMENDATIONS

Nasal obstruction is the major symptom of sinonasal mass with a high rate of malignancy. Carcinoma, inflammatory polyposis, inverted papilloma and allergic fungal sinusitis were among the highest histological diagnosis. The clinical diagnosis and the suggestive features of radiological findings mostly resemble the histological findings. However, in contrary to the resemblance, the histological finding reveals the general diagnosis of nasal mass to the precise diagnosis, especially the fatal conditions like carcinoma. The high rate of malignancy and suggestive radiological findings warrants histological analysis to rule out the probability of neoplasm.

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

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