North Clin Istanb 2018;5(2):139–143
doi: 10.14744/nci.2017.57984

Original Article EAR, NOSE, THROAT DISEASES

Single-sided sinonasal mass: A retrospective study

Seyda Belli,[1] Metin Yildirim,[1] Sinan Eroglu,[1] Funda Kaya Emre[2]

[1]Department of Nose and Throat Diseases Clinic,Health Sciences University Bağcılar Education and Research Hospital Ear, Istanbul, Turkey
[2]Department of Pathology Clinic, Health Sciences University Bağcılar Training and Research Hospital, Istanbul, Turkey

ABSTRACT

OBJECTIVE: A unilateral sinonasal mass is a common pathology in ear, nose, and throat clinical practice. However, it may be confused with early stage inflammatory pathologies. The aim of this study was to examine the diagnostic histopathological, clinical, and radiological criteria for a unilateral nasal mass.

METHODS: The present study examined the clinical and pathological profiles of unilateral sinonasal masses observed in patients at an ear, nose, and throat clinic in Istanbul between January 2008 and January 2016. During the period of this retrospective study, 195 patients presented with a single-sided sinonasal mass (males: 130, females: 65; age range: 9-93 years). The data analyzed were obtained from patient records.

RESULTS: The single-sided sinonasal mass was benign in 187 (95.9%) cases and malignant in 8 (4.1%) cases. Inflammatory polyps (81.03%) were the most frequent benign finding. Squamous cell carcinoma (1.54%) was the most commonly diagnosed malignant lesion.

CONCLUSION: A single-sided sinonasal mass is commonly detected by otorhinolaryngologists. Although most often the diagnosis is inflammatory nasal polyposis, the risk of malignancy should not be overlooked. For this reason, careful endoscopic examination should be performed, all lesions should undergo a pathological examination, and it should be kept in mind that neoplastic disease can occur at any age and may be associated with many symptoms.

Keywords: Benign; malignant; nasal polyp; single-sided sinonasal mass

Cite this article as: *Belli S., Yildirim M., Eroglu S., Kaya Emre F. Single-sided sinonasal mass: A retrospective study. North Clin Istanb 2018;5(2):139–143.*

Single-sided sinonasal mass is a frequently seen entity. Nasal congestion, unilateral nasal discharge, and bleeding, migraine, and dysosmia, and facial swelling are most frequent complaints. [1, 2, 3]. The patients presenting with these symptoms undergo rhinoscopic, and concurrent endoscopic examinations. Frequently inflammatory etiology is found. This entity can be treated conservatively, and very few patients require surgical treatment [1]. In a study by Lee et al. unilateral sinusitis was found in 23% of the patients who applied with complaints of single- sided nasal complaints [4, 5]. Presence of unilateral symptoms, and nasal mass may imitate inflammatory pathology during early phase. Therefore clinician evaluates the patient together with radiological findings, and priorly plans pathological examination [1]. Early diagnosis plays an important role in the establishment of early diagnosis, and faster planning of the treatment.

Though single-sided nasal mass is frequently face us in the clinical practice of ENT diseases, very few studies have investigated this entity in the literature [6]. We retrospectively investigated the files of the patients presented to our clinic with single-sided sinonasal symp-

Received: June 09, 2017 *Accepted:* September 21, 2017 *Online:* April 12, 2018

Correspondence: Dr. Seyda BELLI. Department of Nose and Throat Diseases Clinic, Health Sciences University Bağcılar Training and Research Hospital Ear, Istanbul, Turkey
Phone: +90 212 440 40 00 e-mail: drseydabelli@gmail.com

toms, and diagnosed as single-sided nasal mass lesion, and evaluated their histopathological diagnosis in the light of the literature.

MATERIALS AND METHODS

Before proceeding with the study, ethics committee approval was obtained from the ethics committee of noninvasive investigations. The files of the patients diagnosed as single-sided sinonasal mass between January 2008, and January 2017 were retrospectively analyzed. Medical records, results of histopathological analyses, and computed tomographic images of a total of 195 patients could be obtained.

The patients were divided into two groups, as those with diagnosis of benign, or malignant lesions. The frequency of lesions was investigated. Demographic characteristics of the groups as age, and gender, and also histopathological examination results were compared. In the study statistical analyses were performed using NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA) package program. Data were evaluated using descriptive statistical methods (mean, standard deviation, distributions of frequencies, and proportions) and also independent t-test was used for intergroup comparisons. Results were evaluated at $p<0.05$ which was accepted as the level of significance.

RESULTS

Punch biopsy was performed for all patients with single-sided nasal mass. Based on the results of histopathological tests, and radiological examinations various treatment modalities as conservative treatment, chemoradiotherapy or singlesided functional/advanced endoscopic sinus surgery were performed.

A total of 195 (male, n=130, and female, =65) patients were included in the study. Median age of biopsized patients was 42 (9-93) years. (Table 1). Histopathological examination of biopsy materials revealed the presence of 7 benign, and 6 malignant diseases. A 95.9 % of the lesions had benign, and 4.1 % of them malignant characteristics (Table 2). Benign lesions included nasal polyps, hemangiomas, chondromesenchymal hamartoma, schneiderian papilloma (oncocytic type, fungiform type, and inverted type), fungal rhinosinusitis (Table 3). A hundred and eighty-seven benign lesions were detected with a male/female ratio of 1:2. (Table 2).

Table 1. Sociodemographic data

	N	Mean (range)	%
Age (years)	195	42.43 (9-93)	
Male	130		66.67 %
Female	65		33.3%

Table 2. Distribution of benign, and malignant entities

	N	Female	Male	Age (years)
Benign	187 (95.90%)	62 (33.16%)	125 (66.84%)	41.50±17.99
Malign	8 (4.10%)	3 (37.50%)	5 (62.50%)	64.25±17.04

Among all lesions, and also benign lesions most frequently nasal polyp was seen. Nasal polyps were seen more frequently in adults rather than children, and men rather than women. Nasal polyp was diagnosed in 158 patients (81.03%) (Table 3).

Schneiderian papilloma was the second most frequently seen tumor. Schneiderian papilloma has inverted, fungiform, and oncocytic types. In this study we detected inverted (92.31%), fungiform (3.85%), and oncocytic (3.85%) types in respective percentages of patients with schneiderian papillomas (Table 4).

As malignant lesions we encountered high-grade dysplasia, squamous cell carcinoma developed on the background of inverted papilloma, squamous cell carcinoma, adenoid cystic carcinoma, malignant melanoma, β-cell non-Hodgkin lymphoma. We detected malignant lesions in 5 male, and 3 female patients (Table 2). Most frequently seen malignant lesion was squamous cell carcinoma (SCC). In 2 out of 3 patients with SCC, the disease developed in the presence of inverted papilloma. Among our patients malignant melanoma (n=2), adenoid cystic adenoma (n=1), β-cell non-Hodgkin lymphoma (n=1), and high grade dysplasia (n=1) were detected. (Table 3)

Median ages of the patients with benign and malignant lesions were 41.50, and 64.25 years, respectively Mean age of the patients with malignant lesions was statistically significantly higher relative to that with benign lesions ($p=0.001$) (Table 2).

TABLE 3. Histopathological diagnoses, and their distribution

	N	%	Mean	SS	Minimum	Maximum
Nasal Polyp	158	81.03	39.80	17.70	10	93
Schnederian papilloma, Inverted type	24	12.31	50.71	15.06	13	92
Schneiderian papilloma, Fungiform type	1	0.51	43.00	.	43	43
Schneiderian papilloma, Oncocytic type	1	0.51	60.00	.	60	60
Malignant Melanoma	2	1.03	73.50	7.78	68	79
Squamous cell carcinoma developed on the background of inverted papilloma	2	1.03	69.00	7.07	64	74
Squamous cell carcinoma	1	0.51	67.00	.	67	67
Chondromesenchymal hamartoma	1	0.51	9.00	.	9	9
Adenoid cystic carcinoma	1	0.51	43.00	.	43	43
B-cell non-Hodgkin lymphoma	1	0.51	84.00	.	84	84
Fungal rhinosinusitis	1	0.51	61.00	.	61	61
Hemangioma	1	0.51	81.00	.	81	81
Tumoral proliferation with papillary demonstrating dysplastic changes	1	0.51	35.00	.	35	35
Total	195	100.00	42.43	18.48	9	93

TABLE 4. Types of Schnederian papillomas

Diagnosis	N	%
Schnederian papilloma, Inverted type	24	92.31
Schneiderian papilloma, Fungiform type	1	3.85
Schneiderian papilloma, Oncocytic type	1	3.85

DISCUSSION

Clinical diagnosis of a patient presented with single-sided sinonasal mass is an important clinically challenging issue because of multifactorial underlying etiologies [1, 3]. Comprehensive evaluation of the patient requires investigation of patient's age, symptoms, nasal endoscopic examination, and computed tomographic findings [1].

In our study most frequently seen nasal mass lesion was nasal polyp (81.03%), followed by schnederian papilloma (13.33%). These results of our study were also in compliance with those of the studies performed by Nair et al., and Habeşoğlu et al. [1, 3]. However in a study realized by Erkul et al. contrary to our results most frequently antrochoanal polyp was detected [7].

Nasal polyps are abnormal protrusions of nasal or paranasal mucosa into nasal cavity. Nasal polyps develop as a result of chronic inflammation, allergy, infectious agents, and cystic fibrosis, and they are seen in 1-4% of the overall population. They are more frequently seen in adults rather than children, and in men rather than women [2]. The results of our study were also in accordance with the literature findings (81.03%).

Although bilateral sinonasal disease is more frequently diagnosed in clinical practice, in the presence of single—sided malignancy clinician should suspect malignancy, and examine the patient accordingly [2, 7]. Squamous cell carcinoma is the most frequently seen neoplastic lesion in sinonasal cavity. Frequently it gives symptoms as a unilateral nasal mass, and at early stages of the disease they appear like benign nasal polyps [6]. Neoplastic diseases of nose, and paranasal sinus frequently become manifest during 5.7. decades with a female/male ratio of 2:1. [5, 7, 8]. Also in our study, in compliance with the literature, malignant sinonasal disease is more frequently seen during 5. and 6. decades (median age 64.25 years), and in men, rather than women (men, 62.5% vs women, 37.50%).

Typically inverted papilloma is seen on computed tomography as a mass starting from middle mea, and extending up to maxillary antrum, and nasal cavity [9, 10]. In our study most frequently, maxillary sinus, and then ethmoidal cells were affected. The characteristic features of inverted papillomas include their capability to cause bone erosion,

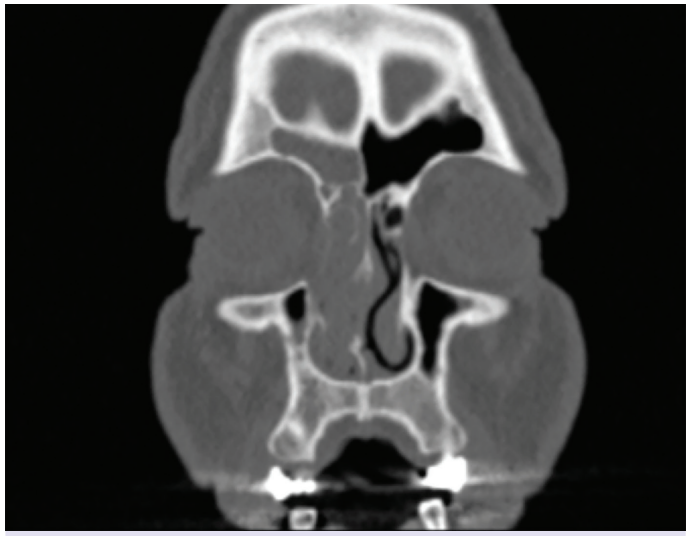

Figure 1. Coronal section computed tomographic (CT) imaging of inverted papilloma.

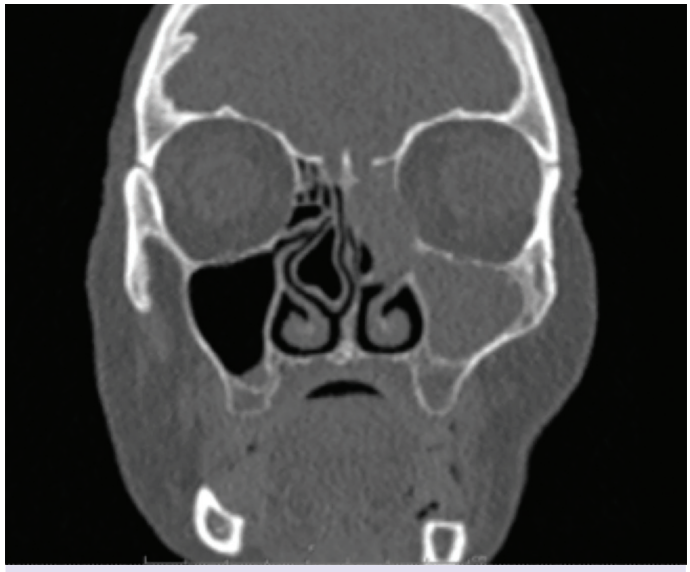

Figure 2. Coronal section computed tomographic (CT) imaging of B-cell non-Hodgkin lymphoma.

postoperative recurrences, and malignant transformation [9, 10]. Malignant transformation is seen in 5-20% of the patients with inverted papillomas. [11, 12]. Also in our study, malignant transformation was seen in 7.69% of the patients, and we observed squamous cell carcinoma on the background of inverted papilloma in 2 cases.

In a study performed by Lee, and Rudralingam, the authors asserted that CT is a helpful method in demonstrating bone erosion, and determination of the etiology of fungal diseases [3, 4, 13]. In patients with inverted papilloma bone erosion may be seen. In this study in a patient with inverted papilloma we observed defect on anterior wall of maxillary sinus in one, and also a defect on lamina papyracea of another patient (Fig. 1).

In non- Hodgkin lymphomas, most frequent extranodal location is head and neck region, this malignancy is rarely seen in sinonasal cavity. The incidence of all malignant lesions in sinonasal cavity is reported as 0.3-2 percent [14]. In our study, we detected β-cell non-Hodgkin lymphoma in an 84-year-old woman. In this patient lamina papyracea, and skull base defects striked our attention. (Fig. 2)

In a systematic review performed by Mason et al. in 2015, the authors demonstrated that chondromesenchymal hamartoma is seen between 1, and 69 years of age with a median age of 9 years [15]. Chondromesenchymal hamartoma has mesenchymal, and cartilaginous components and it is a mixed tumor seen more frequently in infants, and small children which leads to nasal congestion, face, and tooth pain. In our study we saw this entity in a 9-year-old male child. Computed tomographic images of his lesion is shown in Figure 3.

CONCLUSION

Establishment of diagnosis, and treatment planning are very challenging issues for clinicians. Indeed, it may be confused with benign lesions, and it may become symp-

Figure 3. Coronal section computed tomographic (CT) imaging of chondromesenchymal hamartoma.

tomatic at a later stage of the disease. Nasal endoscopy-guided biopsy, plays a very important role in the establishment of early diagnosis, and treatment planning.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

Authorship contributions: Concept – S.B.; Design – M.Y.; Supervision – S.B.; Materials – M.Y., S.E.; Data collection &/or processing – F.E.K.; Analysis and/or interpretation – S.B.; Writing – S.B.; Critical review – S.B., M.Y.

REFERENCES

1. Nair S, James E, Awasthi S, Nambiar S, Goyal S. A review of the clinicopathological and radiological features of unilateral nasal mass. Indian J Otolaryngol Head Neck Surg 2013;65:199–204. [CrossRef]
2. Paz Silva M, Pinto JM, Corey JP, Mhoon EE, Baroody FM, Naclerio RM. Diagnostic algorithm for unilateral sinus disease: a 15-year retrospective review. Int Forum Allergy Rhinol 2015;5:590–6. [CrossRef]
3. Habeşoğlu TE, Habeşoğlu M, Toros SZ, Naiboğlu B, Sürmeli M, Egeli E. Tek taraflı sinonazal polipoid kitlelerde histopatoloji ve neoplastik için risk faktörleri. Göztepe Tıp Dergisi 2010;25:78–81.
4. Lee JY. Unilateral paranasal sinus diseases: analysis of the clinical characteristics, diagnosis, pathology, and computed tomography findings. Acta Otolaryngol 2008;128:621–6. [CrossRef]
5. Sökmen MF, Özer F, Özer C, Canbolat ET, Yılmazer C. Clinicopathological analysis in unilateral endoscopic sinus surgery. KBB Uygulamaları 2015;3:13–9. [CrossRef]
6. Chung HK, Tai CJ, Wang PC, Lin CD, Tsai MH. Analysis of disease patterns in patients with unilateral sinonasal diseases. Mid-Taiwan Journal of Medicine 2008;13:82–8.
7. Erkul E, Çekin İE, Kurt O, Güngor A, Babayiğit MA. Evaluation of patients with unilateral endoscopic sinus surgery. Turk Arch Otolaryngol 2012;50:41–5. [CrossRef]
8. Zbären P, Richard JM, Schwaab G, Mamelle G. Malignant neoplasms of the nasal cavity and paranasal sinuses. Analysis of 216 cases of malignant neoplasms of nasal cavity and paranasal sinuses. HNO 1987;35:246–9.
9. Ikeda K, Tanno N, Suzuki H, Oshima T, Kano S, Takasaka T. Unilateral sinonasal disease without bone destruction. Differential diagnosis using diagnostic imaging and endonasal endoscopic biopsy. Arch Otolaryngol Head Neck Surg 1997;123:198–200. [CrossRef]
10. Savy L, Lloyd G, Lund VJ, Howard D. Optimum imaging for inverted papilloma. J Laryngol Otol 2000;114:891–3. [CrossRef]
11. Mansell NJ, Bates GJ. The inverted Schneiderian papilloma: a review and literature report of 43 new cases. Rhinology 2000;38:97–101.
12. Al-Mujaini A, Wali U, Alkhabori M. Functional endoscopic sinus surgery: indications and complications in the ophthalmic field. Oman Med J 2009;24:70–80.
13. Rudralingam M, Jones K, Woolford TJ. The unilateral opaque maxillary sinus on computed tomography. Br J Oral Maxillofac Surg 2002;40:504–7. [CrossRef]
14. Chalastras T, Elefteriadou A, Giotakis J, Soulandikas K, Korres S, Ferekidis E, et al. Non-Hodgkin's lymphoma of nasal cavity and paranasal sinuses. A clinicopathological and immunohistochemical study. Acta Otorhinolaryngol Ital 2007;27:6–9.
15. Mason KA, Navaratnam A, Theodorakopoulou E, Chokkalingam PG. Nasal Chondromesenchymal Hamartoma (NCMH): a systematic review of the literature with a new case report. J Otolaryngol Head Neck Surg 2015;44:28. [CrossRef]