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Sinonasal neoplasms: A tertiar center experience

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ABSTRACT

Primary tumors of the nasal cavity can be classified as benign or malignant. Patients with tumors of the nose and paranasal sinuses are usually diagnosed in the advanced stages of the disease. The aim of this study was to evaluate the data of patients who were operated for sinonasal masses in our clinic in light of the literature. Between January 2016 and December 2018, 357 cases of sinonasal masses presenting to the Otorhinolaryngology Department of the Health Science University at the Samsun Training and Research Hospital were retrospectively screened and included in the study. Of the 357 patients included in the study, 256 (72%) were male, and 101 (28%) were female. The most common symptom was nasal obstruction (90%). Most of the benign cases were nasal polyps (90.2%), while the next most frequent diagnosis was inverted papilloma (4.7%). Malign neoplasms were found in 11 cases, and five were found to be squamous cell carcinomas (SCC). All benign cases were treated surgically, and the malignant cases were treated according to the diagnosis. In conclusion, although the symptoms of the 357 patients with sinonasal mass were similar, histopathological evaluation revealed 96.9% benign and 3.1% malign pathologies. The malign/benign ratio was 3.08. Malignancy should therefore be considered as a possibility in patients with nasal bleeding and facial swelling.

1. Introduction

Primary tumors of the nasal cavity can be classified as benign or malignant, and epithelial ornon-epithelial (including soft tissue tumors, bone and cartilage-derived tumors, neuroectodermal tumors, germ cell tumors, and hematolymphogenic tumors) (Thompson and Franchi, 2017). Nasal and paranasal sinus tumors are very rare. Malignant tumors of the sinonasal tract comprise 0.2% to 0.8% of all malignant tumors, and only 3% of head and neck malignancies (Frierson, 1986; Maniglia and David, 1995).

Patients with tumors of the nose and paranasal sinuses are usually diagnosed in the advanced stages of the disease. Because sinonasal symptoms such as nasal congestion, toothaches, and nosebleeds are primarily caused by simple diseases, a tumor can grow in the closed cavity for a while after initiation, and can usually only be diagnosed when it reaches the bone. The time between the onset of the initial symptoms and the diagnosis has been determined to be six to eight months, and it has been reported that only 25% of maxillary sinus tumors could be diagnosed while the

tumor was still in the sinus (Frierson, 1986).

Smoking, exposure to wood dust, nickel, or formaldehyde, rhinitis, and sinoanasal diseases such as nasal polyps are among the predisposing factors of sinonasal cancer. More specifically, there is a direct relationship between chronic sinusitis and sinonasal cancers (Lund, 1983; Brinton et al., 1994).

The aim of this study was to evaluate the data of patients who were operated on for sinonasal masses in our clinic in light of the literature.

2. Materials and methods

A total of 357 patients who were treated for sinonasal pathology between January 2016 and December 2018 at the Otorhinolaryngology Department of the Health Sciences University at the Samsun Training and Research Hospital were included in the study. The study was approved by the local ethics committee (protocol number 31-2019BADK / 7-61). Demographic characteristics, complaints, operations, and histopathological findings of the patients were evaluated. Radiological evaluations (CT and/or MRI) were performed following the ENT examination (including endoscopic examination) of the patients who presented to the clinic. The patients who had malignant findings had first received biopsies, and the patients with benign masses were operated on without preoperative biopsies. The patients with malignant masses according to histopathological evaluation had surgery, surgery + radiotherapy (RT), or RT alone.

3. Results

Of the 357 patients included in the study, 256 (72%) were male, and 101 (28%) were female. The ages of the patients ranged from six to 83 years. The mean age was 43.2 for males and 38.5 for females. A total of 346 patients presented with benign neoplasm, 315 (91.0%) had nasal obstruction, 21 (6.06%) reported that they had been snoring, six (1.73%) had epistaxis, three (0.86%) had nasal mass prolapsus, and one (0.3%) had a nasal dorsum enlargement complaint. Of the 11 patients who had been diagnosed with malignant neoplasm, five (45.4%) presented with nasal obstruction, three (27%) had epistaxis, two (18%) had facial swelling, and one (9%) had nasal mass prolapsus (Table 1).

Table 1. Reasons of pediatric cardiology consultation.

Complaints	Benign neoplasm (n=346)	Malignant neoplasm (n = 11)	Total (n = 357)
Nasal obstruction	315	5	320
Nasal mass prolapsus	3	1	4
Epistaxis	6	3	9
Snoring	21	-	21
Facial swelling	1	2	3

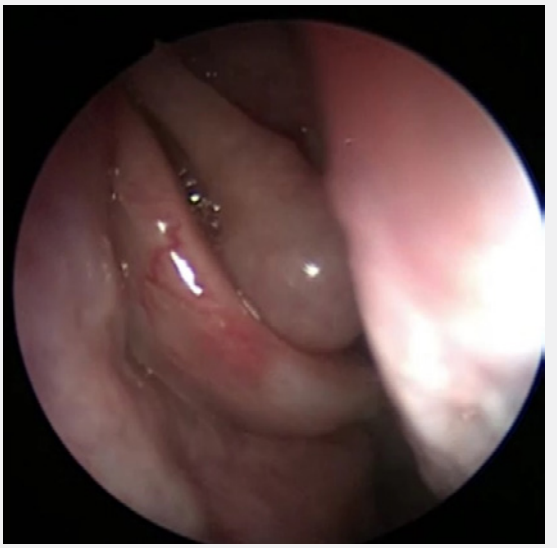

Fig. 1. Nasal polyp in right middle meatus.

According to histopathological evaluation, the most common benign neoplasm in 322 patients (90.2%) was nasal polyposis (Fig. 1). The second most common benign neoplasm was inverted papilloma, which had been diagnosed in 17 patients (4.7%). Other benign neoplasms included ameloblastoma (3), osteoid osteoma (2), hemangioma (1), and angiofibroma (1).

The most common malignant neoplasm was SCC (5%, 1.4%) (Fig. 2). Other malignant neoplasms included lymphoma (3), carcinoma ex pleomorphicadenoma (1), esthesioneuroblastoma (1), and hemangiopericytoma (1) (Table 2).

Fig. 2. Squamous cell carcinoma in left nasal vestibule.

Functional endoscopic sinus surgery (FESS) was performed in 322 patients with nasal polyposis. Transnasal endoscopic resection (TNER) was performed in 11 of 17 patients with inverted papilloma, while transnasal endoscopic medial maxillectomy was performed in five patients, and medial maxillectomy with lateral rhinotomy in one patient. In ameloblastoma cases, open surgery was performed, and transnasal endoscopic resection was performed in all other benign cases.

Table 2. Histopathologic diagnosis

Benign neoplasm		**(n=346)**
	Nasal polyposis	322
	Inverted papilloma	17
	Ameloblastoma	3
	Angiofibroma	1
	Hemangioma	1
	Osteoid osteoma	2
Malignant neoplasm		**(n=11)**
	Squamous cell carcinoma	5
	Lymphoma	3
	Carcinoma ex pleomorphic adenoma	1
	Esthesioneuroblastoma	1
	Hemangiopercytoma	1

The squamous cell carcinomas (SCC) originated from the vestibule in two cases, the maxillary sinus in two cases, and the lateral nasal wall in one case. The complaints of the patients with maxillary sinus-induced SCC were swelling on the face and eye. One of the patients with vestibule-originated tumors was treated only with surgery, and the other was treated with surgery and RT. Two cases that originated in the maxillary sinus were treated with RT only (the patients did not accept surgical treatment). The case originating from the nasal passage was treated with RT. Lymphoma cases received RT (Table 3).

Table 3. Treatment modalities

Histopathologic diagnosis	**Treatment**
Benign neoplasm	
Nasal polyposis	Functional endoscopic sinus surgery (FESS)
Inverted papilloma	Transnasal endoscopic resection (TNER) / endoscopic medial maxillectomy
Ameloblastoma	TNER + open surgery
Angiofibroma	TNER
Hemangioma	TNER
Osteoid Osteoma	TNER
Malignant neoplasm	
Squamous cell carcinoma	1 case surgery 2 cases surgery + radiotherapy (RT) 2 cases RT
Lymphoma	RT
Carcinoma ex pleomorphic adenoma	Resection with lateral rhinotomy
Esthesioneuroblastoma	Surgery + RT
Hemangiopericytoma	Endoscopic surgery

4. Discussion

Benign and malignant diseases of the paranasal sinuses may cause similar complaints among patients. The most common complaints are nasal obstruction, facial pain, headache, and intermittent epistaxis. Although patients may have one or more of these symptoms at the beginning stages of the disease, the time between the first symptom and the diagnosis varies between three and 14 months due to physician or patient reasons (Lund, 1983). Tritt et al. reported that they observed epistaxis in malignant diseases at a higher rate, whereas nasal obstruction, nasal congestion, and non-olfactory symptoms did not differ (Tritt et al., 2008). In our study, it was observed that the patients were admitted to our clinic with complaints of snoring, epistaxis, nasal mass prolapsus, and facial swelling. Intermittent epistaxis and facial swelling were common symptoms of malignant neoplasms.

In a study evaluating the histopathology of 44 patients with unilateral nasal pathology, 32 patients had polyposis, seven had inverted papillomas, two had SCC, one had mucocele, and one had esthesioneuroblastoma (Tritt et al., 2008). In our study, the most common benign neoplasm was nasal polyposis in 322 (90.2%) cases. The second most common was inverted papilloma in 17 (4.7%) cases. Other benign neoplasms included ameloblastoma (3), osteoid osteoma (2), hemangioma (1), and angiofibroma (1). The most common malignant neoplasm was SCC (5-1.4%). Other malignant neoplasms were lymphoma (3-0.9%), carcinoma ex pleomorphic adenoma (1-0.3%), esthesioneuroblastoma (1-0.3%), and hemangiopericytoma (1-0.3%).

The incidence of nasal polyposis in the population varies between 1% and 4%. Polyposis is four times more common in males than females, and it is usually seen at the age of 40 (Kitapçı et al., 2005). Sinonasal polyps are caused by an inflammatory condition. However, in most studies in the literature, they have been classified as the most common benign sinonasal tumors (Headman et al., 1999; Shirazi et al., 2015). In our study, the most common nasal pathology was nasal polyposis (90%), and these patients were frequently admitted to our clinic with the complaint of nasal obstruction. The mean age of the patients with nasal pathology was 40.8± 2.4, and the female/male ratio was approximately 1/3. FESS was performed in all nasal polyposis patients.

Inverted papilloma is a benign epithelial tumor characterized by invagination of the epithelium originating from the sinonasal mucosa toward the stroma. They constitute 0.5-4% of all nasal tumors (Constantino et al., 2007; Zhao et al., 2016). In our study, inverted papilloma was detected in 17 (4.7%) of the cases of sinonasal masses. TNER was applied in 11 of these cases, and TNER with medial maxillectomy

was applied in five. One patient underwent medial maxillectomy with lateral rhinotomy.

Nasal and paranasal sinus tumors are very rare. Malignant tumors of the sinonasal tract comprise 0.2% to 0.8% of all malignant tumors and only 3% of head and neck malignancies. Surgical planning should be done according to the stage of the disease. Surgical resection is applied in stage 1 tumors. If there is doubt in the surgical margins, RT should be administered. In stage 2 and 3 tumors, surgery is performed after primary RT. Propagation of the skull base and nasopharynx in stage 4 tumors is relatively contraindicated for surgery. In this situation, high-dose RT is applied (Frierson, 1986; Maniglia and David, 1995).

SCC is the most common malignancy of the sinonasal region (Lee et al., 2007). In our study, the most common malignant neoplasm (five cases) was SCC. Two of these cases were caused by the maxillary sinus and invaded the orbita, and these patients did not accept the proposed surgery and received RT. The other two cases originated from the nasal vestibule, and surgery was performed, with RT administered to one patient after surgery. In one case, the tumor originated from the lateral nasal wall, and endoscopic transnasal medial maxillectomy was performed.

In conclusion, the diversity of the masses in the sinonasal region, the similarity of their symptoms, and the advent of mostly benign neoplasms delay the diagnosis and treatment of rare malignant neoplasm. Patients with epistaxis and facial swelling should be evaluated with caution for malignant neoplasm. Further, patients with sinonasal masses should undergo endoscopic examination and radiological screening, and biopsies must be taken in cases of malignancy suspicion. Detailed information should be provided to the patient and their relatives in the selection of the treatment method for malignant neoplasms.

REFERENCES

Brinton, L.A., Blot, W.J., Becker, J.A., 1994. A case-control study of cancers of the nasal cavity and paranasal sinuses. Am. J. Epidemiol. 6, 896-906.

Constantino, G., T., Abdo, T.T., Romano, F.R., Voegels, R.L., Butugan, O., 2007. The role of endoscopic surgery in the treatment of nasal inverted papilloma. Braz. J. Otorhinolaryngol. 73, 65-68.

Frierson, H.F., 1986. Pathologic quiz, case. I. Arch. Otolaryngol. Head Neck Surg. 112, 568-570.

Kitapçı, F., Muluk, N.B., Atasoy, P., Koç, C., 2005. Nazalpolipler. Van Tıp Dergisi. 2, 212-222.

Headman, J., Kaprio, J., Poussa, T., Nieminen, M.M., 1999. Prevalence of asthma, aspirin intolerance, nasal polyposis and chronic obstructive pulmonary disease in a population-based study. Int. J. Epidemiol. 28, 717-722.

Lee, C.H., Hur, D.G., Roh, H.J., Rha, K.S., Jin, H.R., Rhee, C.S., Min, Y.G., 2007. Survival rotes of sinonasal squamous cell carcinoma with the new AJCC staging system. Arch. Otolaryngol. Head Neck Surg. 133, 131-134.

Lund, V., 1983. Malignant tumors of the nasal cavity and paranasal sinuses. ORL. 45, 1-12.

Maniglia, A.J., David, P.A.,1995. Midfacial degloving for the management of nasal sinus and skull-base neoplam-paranasal sinus tumors. Otolaryngol. Clin. North Am. 28, 1127.

Shirazi, N., Bist, S.S., Selvi, T.N., Harsh, M., 2015. Spectrum of sinonasal tumors: A 10-year experience at a Tertiary Care Hospital in North India. Oman Med. J. 30, 435-440.

Thompson, L.D.R., Franchi, A., 2017. New tumor entities in the 4th edition of the World Health Organization classification of head and neck tumors: Nasal cavity, paranasal sinuses and skull base. Virchows Archiv. 472, 315–330.

Tritt, S., Mc Mains, K.C., Kountakis, S.E., 2008. Unilateral nasal polyposis: Clinical presentation and pathology. Am. J. Otolaryngol. 29, 230-232.

Zhao, R.W., Guo, Z.Q., Zhang, R.X., 2016. Human papillomavirus infection and the malinant transformation of sinonasal inverted papilloma: A meta-analysis. J. Clin. Virol. 79, 36-43.