ABSTRACT

Objective: They were assessed the experience with Schneiderian papillomas of the nasal and paranasal sinuses and their treatment results.

Material and Method: A retrospective chart review of 37 patients presenting with Schneiderian papillomas of the nasal and paranasal sinuses was performed from January 2000 to April 2012. Patients' charts were reviewed for age, extent of tumor, location(s), computed tomography, magnetic resonance imaging, surgical technique, histopathological diagnosis and follow-up.

Results: The most common symptom was unilateral nasal obstruction in 75.7% of cases, followed by epistaxis in 32.4%. The most common location was the maxillary sinus, followed by the ethmoid sinus and nasal cavity. Tumors were classified with the Krouse staging system at the time of diagnosis as follows: T1, 12 patients (32%); T2, 17 (46%); T3, 7 (19%); T4, 1 (3%). A total of 23 (62.17%) patients underwent endoscopic nasal surgery, 8 (21.63%) underwent a combined approach, 2 (5.40%) had lateral rhinotomy and external maxillectomy, and 4 (10.80%) were treated using only the Caldwell-Luc approach. Pathological assessment revealed 27 (72.97%) inverted papillomas, 7 (18.91%) fungiform papillomas, and 3 (8.10%) oncocytic Schneiderian papillomas. Among the 37 cases, only 3 patients with inverted papillomas were found to have recurrence and were treated with open and endoscopic approaches.

Conclusion: Oncocytic Schneiderian papilloma is uncommon compared to inverted and fungiform papilloma. Complete removal of the lesion is required. Close long-term follow-up is necessary for early recurrence and to allow for surgical salvage.

Keywords: Schneiderian membrane papilloma, endoscopic surgery, inverted papilloma, paranasal sinuses.

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SCHNEIDERIAN PAPILLOMALAR: 12 YILLIK DENEYİMLERİMİZ

ÖZET

Amaç: Çalışmada burun ve paranazal sinüslerin Schneiderian papillomaları ve tedavi sonuçları ile ilgili deneyimlerimiz değerlendirildi.


Bulgular: Olguların %75,7’sinde en sık görülen semptom tek tarafı burun tıkanıklığı iken, 2. sıkılıkla görülen semptom %32,4 oranında burun kanama idi. En sık yerleşim yerı etmoid sinus, ardından maksiller sinus ve burun boşluğu oldu. Tümörler, tanı arzında Krouse staging sistemine göre sınıflandırıldı: 12 hasta (%32) T1, 17 (%46) T2, 7 (%19) T3 ve 1 (%3) T4. Tümörlerin 23 (%62,17)’inde kombine yaklaşım, 2 (%5,40)’ünde endoskopik yöntemle, 8 (%21,63)’inde lateral rinotomi ve eksternal medial maxillectomi prosedürü ile, 4 (%10,80)’ünde Caldwell-Luc yaklaşımı ile rezekte edildi. Patolojik inceleme sonucunda, olguların 27 (%72,97)’si inverted papilloma, 7 (%18,91)’si fungiform papilloma ve 3 (%8,10)’ü onkositik Schneiderian papilloma olarak değerlendirildi. 37 hasta arasındaki sadece inverted papilloma tanısı almış 3 hasta nüks etti ve açık ve endoskopik yaklaşımı çıkartıldı.


INTRODUCTION

Schneiderian papillomas (SPs) are benign epithelial tumors of the sinonasal mucosa, which account for 0.5–7% of all nasal neoplasms found in the sinonasal tract.1-3 SPs arise from a unique area of the respiratory epithelium, termed the Schneiderian mucosa.2 They tend to originate from the lateral nasal wall or sinuses, although they may also arise at the nasal septum, lacrimal system, middle ear, and nasopharynx.4-6

SPs are classified as fungiform papilloma (exophytic papilloma), inverted papilloma, and oncocytic papilloma (cylindrical cell papilloma or columnar cell papilloma).2

The etiology of SPs is still unknown, but smoking, allergens, chemical pollutants, chronic sinusitis, and human papilloma virus and Epstein-Barr virus (EBV) infection, have been suggested as possible predisposing causes.7 SPs are benign neoplasms with three key characteristics: a tendency to recur, capacity for local destruction, and association with squamous cell carcinoma. SPs can be locally aggressive and have the potential to destroy surrounding anatomical structures, in particular bone, through constant erosion.8

Clinically, patients present most commonly with unilateral nasal obstruction. Other signs and symptoms include epistaxis, rhinorrhea, facial pressure, headaches, and polyps.4-6 Hyposmia and headache are uncommon symptoms.9

SPs should be managed as aggressive invasive lesions because of their tendency to recur and harbor coexisting carcinoma. SPs tend to be unilateral and to relapse, and are capable of becoming malignant and causing multicentric invasion.1 Here, we analyzed our experience with SPs of the nasal and paranasal sinuses and their treatment results.

MATERIAL AND METHOD

The study was approved by the Local Ethics Committee of Okmeydani Training and Research Hospital (Assigned no. 48670771-514.10-2933). A retrospective chart review was performed on patients presenting with SPs of the paranasal sinuses diagnosed and treated in our hospital over the 12-years period from January 2000 to April 2012. A total of 37 patients with sinonasal papillomas were included in the study. The data collected included the age at diagnosis, sex, site, stage, histology, treatment modalities used, and survival outcome. All patients were examined endoscopically and radiologically for at least 1 year. The average follow-up period was 21 months (range: 12-120 months).

The extent of SPs were evaluated preoperatively by clinical anterior rhinoscopy, nasal endoscopy, and radiological examination. All of the patients were suspected to have SPs based on preoperative intranasal and image findings, and a confirmed diagnosis was made by tissue biopsy performed on an outpatient basis.

Assessments were made using the Krouse staging system: T1, disease confined to the nose; T4, disease outside the nose or paranasal sinuses.10 Intermediate levels were classified as T2 or T3 based on the involvement of paranasal sinuses.

RESULTS

The 37 SPs treated in our hospital were primary cases. The patients were predominantly male (30 male patients, 81.1%). The average age at diagnosis was 54 years (range: 38-74), and 16 (43%) of the patients had papillomas in the right nostril. The most common symptoms were unilateral nasal obstruction (73.7% of cases), epistaxis (32.4%), headache (29.7%), rhinorrhea (8.1%), and anosmia (2.7%) (Figure 1). The average time from the onset of symptoms to diagnosis was 21 months.

Imaging studies were performed on all patients: computed tomography (CT) was performed on all patients, while magnetic resonance imaging (MRI) was performed on 4 patients due to cranial and orbital invasion suspected. According to the Krouse classification, 12 patients (32%) were T1, 17 (46%) were T2, 7 (19%) were T3, and 1 (3%) was T4 at the time of diagnosis (Figure 2).

A total of 23 (62.17%) patients underwent endoscopic nasal surgery (ENS), 8 (21.63%) patients underwent combination procedure (ENS and Caldwell-Luc surgery in 3, ENS+external medial maxillectomy in 5), 2 (5.40%) underwent lateral rhinotomy and external medial maxillectomy (total sphenoethmoidectomy combined with frontal sinusotomy, medial maxillectomy, and middle turbinectomy), and 4 (10.80%) patients were treated with only the Caldwell-Luc approach.

The following surgical procedures were performed depending on the extent of the disease: lateral rhinotomy plus medial maxillectomy in one case of inverted papilloma and one case of fungiform papilloma. One septal inverted papilloma required local resection, with no subsequent recurrence (Tables 1, 2). In all cases, wide resection margins were made to prevent postoperative recurrence.

Our study population included 27 (72.97%) cases diagnosed as inverted papilloma, 3 (8.11%) cases...
of oncocytic papilloma, and 7 (18.92%) cases of fungiform papilloma (Table 3).

The overall recurrence rate in this series was 8.1% (3 cases). Three recurrences were observed after transnasal endoscopic resection and were treated by medial maxillectomy using lateral rhinotomy in two cases and the Caldwell-Luc procedure in the remaining one case. These patients were free of any recurrence after a mean follow-up of 21 months.

Postoperative complications were characterized by epistaxis, which occurred in four patients (two endoscopically treated patients and two treated with the Caldwell-Luc procedure). In one case, epistaxis was associated with hypertensive crisis. None of the patients required blood transfusion.

The mean hospital stay of endoscopically treated patients was 2 days (1-4 days) compared to 5 days (2-10 days) for patients who underwent traditional treatment with the open technique.

DISCUSSION

SPs are benign rhinosinusal neoplasms. There is still some controversy in the classification of sinonasal papillomas. Some groups have suggested that all papillomas in the sinonasal tract are inverted papillomas, while others have used various synonyms such as SP, transitional (cell) papilloma, inverted papilloma, and endophytic papilloma.1,2,3,11

The inverted and fungiform varieties are the most common, with inverted papilloma representing 47-73% of the tumors, fungiform representing 19-50%, and oncocytic cell representing 3-8%.2 The findings in our series were similar to those reported in the literature. And the inverted and oncocytic varieties are classically found on the lateral nasal wall with extension into the adjacent sinuses, fungiform lesions are typically found on the nasal septum, and the inverted variety has the highest rate of association with malignancy.2,12 The locations of SPs were consistent with those reported by other authors.13

SPs are usually found in adult males, and can be diagnosed at any age but especially in the fifth to seventh decades of life.14,15 The findings in our series were consistent with these data, as 81% of the patients in our series were male and the average age was 54.02 years.

The symptoms of our patients were consistent with those described by other authors.14 The most common presenting symptom is unilateral nasal obstruction and epistaxis. Other signs and symptoms include epistaxis, rhinorrhea, facial pressure, headaches, and polyps.6,6 Hyposmia and headache are uncommon symptoms.6 The poor specificity of these symptoms makes it difficult to distinguish between SPs and other pathologies and delays diagnosis in many cases. It should be noted that most of the signs and symptoms are usually unilateral (81%), which should alert the clinician to tumor pathology.

A definitive diagnosis is made by biopsy, although in some cases false negatives may occur because these lesions may coincide with benign polyps.13
None of the patients in our series had false-negative preoperative biopsies.

Preoperative imaging studies are considered important, in particular CT, through which it is possible to locate lesions, assess their extent, and determine whether the frontal sinus, orbit, or anterior cranial fossa are affected. The occupation of the sinuses is usually secondary to blockage of the drainage ostium, with MRI being useful to differentiate the tumor from retained secretions in the paranasal sinuses. In our department, pre-surgery CT was performed in all patients with suspected inverted papilloma. In cases with suspected extension to extranasal locations, additional MRI was performed.

Treatment has evolved from limited intranasal excision to aggressive lateral rhinotomy and medial maxillectomy allowing en bloc removal. The ideal approach is frequently determined intraoperatively based on the SP attachment sites. Complete removal of the lesion and bone peripheral border filling are essential for definitive treatment. With the rapid development of endoscopic surgical and advanced imaging techniques of CT and MRI, many surgeons have begun to treat inverted papilloma endoscopically, and there have been many reports indicating the effectiveness and advantages of endoscopic treatment. According to their extent and location, lesions of the ethmoidal-maxillary complex require different types of resection, which can vary from simple ethmoidectomy with middle antrostomy, sphenoidotomy, and frontal sinusotomy, to medial maxillectomy, up to the Sturmann-Canfield approach, which provides excellent visualization of the entire maxillary sinus. The recurrence rate after incomplete tumor resection is high. The best opportunity for control is the initial surgical procedure. Adequate exposure is needed for complete removal as well as for postoperative examination. Various systems of staging for SPs have been described to better evaluate the extents of tumors to determine the most appropriate surgical treatment. In fact, Krouse pointed out that the staging system can be useful for determining an appropriate surgical treatment. We used the Krouse staging system for surgical treatment in our study.

Traditionally, open methods were considered, such as ethmoidectomy and medial maxillectomy, with the disadvantage of aesthetic consequences and greater morbidity associated with open procedures. In recent years, there has been a growing trend toward endoscopic removal as a less invasive approach as the method of choice for SP resection. In our series, we used the endoscopic sinus approach more than open methods for treatment. The better exposure achieved with the endoscopic approach allows more accurate resection of SPs by experienced surgeons. One limitation of this method is the technical difficulty involved in accessing lesions in the frontal sinus and anterior and inferior wall of the maxillary sinus, thus making it necessary to use an open approach via Caldwell-Luc in 15-30% of cases. Better visualization can be obtained by combining endonasal operations with an external procedure. In this series, we used...

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the combined endoscopic approach via Caldwell-Luc in three patients, and obtained good results in all cases. Lateral rhinotomy associated with medial maxillectomy has been successfully used because it can achieve radical resection of SPs especially when the lateral nasal wall and maxillary sinus are involved in cases of malignant tumors associated with SPs and extensive or multifocal tumors of the lateral nasal wall. In this series, medial maxillectomy was performed in four cases with successful results.

As relapse can occur even several years after the primary tumors are treated, we recommend long-term monitoring of these patients. Note that the average time from intervention to recurrence in our series was 21 months. Recurrences during the first year should be considered residual tumors due to incomplete resection. Malignancy (toward SCC) of inverted papilloma occurs in 5-15% of cases. In this series, none of the patients had malignant inverted papillomas.

**CONCLUSION**

SPs are benign neoplasms of the nasal passages and paranasal sinuses characterized by an ability to recur and the potential to transform into malignancy. Complete tumor resection at the site of attachment, preserving healthy tissue, is the key to successful treatment of patients with these neoplasms. Close monitoring is needed to detect and treat tumor recurrence at an early stage.

* The authors declare that there are no conflicts of interest.

**REFERENCES**