

Inverted Papilloma: Our Clinical Experiences

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Abstract

Objective: Inverted papilloma is a benign mass that usually originates from the sinonasal region in unilateral polypoid appearance. There is no significant factor in etiology, but the recent studies showing that it is related to human papillomavirus (HPV). The aim of the present study was to investigate the relationship between inverted papilloma and HPV. At the same time, the localization, stage, and hyperostosis findings of the tumor were evaluated.

Material and Methods: A total of 24 patients who underwent surgery for intranasal mass at the Adnan Menderes University Medical Faculty Department of Otorhinolaryngology-Head and Neck Surgery between 2013 and 2016 and whose pathology specimen were inverted papilloma evaluated retrospectively. In these patients, HPV positivity that was previously studied by the DNA polymerase chain reaction (PCR) method was noted and paranasal sinus computed tomography (PNS CT) imaging was evaluated.

Results: CT evaluation revealed hyperostosis in 14 (58%) patients, but not in 10 (42%) patients. All patients were diagnosed with HPV by molecular DNA PCR method. None of the patients had HPV positivity.

Conclusion: While inverted papilloma is radiologically evaluated by PNS CT, focal hyperostosis foci are important for detection of the origin of the tumor and surgical planning. More extensive studies are needed to demonstrate the effect of HPV in the process of inverted papilloma formation.

Keywords: Inverted papilloma, human papilloma virus, HPV, endoscopic sinus surgery

INTRODUCTION

Inverted papilloma is a benign mass that usually originates from the sinonasal region in unilateral polypoid appearance. It develops from the lateral meatus in the lateral nasal wall (1). It is more vascular, harder, and transparent than nasal polyp that helps differentiate them from each other (2). It is 3.5 times more common in men than in women (3). There is no significant factor in etiology, but the recent studies showing that it is related to human papillomavirus (HPV) (4). Histopathologically, it can invert under the epithelium; malignant transformation can be seen in 5%-10% (5).

The first option in treatment is surgery. In conventional inverted papilloma surgery, radical excision of the region where the tumor was located was performed by different approaches, such as lateral rhinotomy or facial degloving. However, in recent years, if the tumor is not in the very advanced stage, endoscopic induction is required (6). Success rates have been reported to be high with appropriate endoscopic surgery. Recurrence may be observed due to insufficient surgery (7).

The aim of the present study was to investigate the relationship between inverted papilloma and HPV. At the same time, the localization, stage, and hyperostosis findings of the tumor were evaluated. Recurrence rates were noted.

MATERIAL AND METHODS

A total of 24 patients who underwent surgery for intranasal mass at the Adnan Menderes University School of Medicine Department of Otorhinolaryngology-Head and Neck Surgery between 2013 and 2016 and whose pathology specimen were inverted papilloma evaluated retrospectively. Socio-demographic data of the patients included in the study were collected through the hospital information management system. In these patients, HPV positivity

Cite this article as: Akar YC, Yıldırım FN, Kaçar Döğür F, Başak HS. Inverted Papilloma: Our Clinical Experiences. Eur J Rhinol Allergy 2018; 1: 67-9.

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Received: 09.10.2018

Accepted: 07.12.2018

DOI: 10.5152/ejra.2019.39

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that was previously studied by the DNA polymerase chain reaction (PCR) method was noted. The mean follow-up duration of the patients was 16 (between 6 and 40) months. Patients who did not develop relapse at the end of 24 months were considered to have no recurrence.

Paranasal sinus computed tomography (PNS CT) imaging was evaluated. During this evaluation, the disease was graded using the Krouse classification, and the characteristics of hyperostosis findings were recorded.

Endonasal endoscopic surgical techniques were applied in all patients.

All patients were informed about the study. The study has been approved by Ethics Committee of Adnan Menderes University School of Medicine.

RESULTS

A total of 24 patients who underwent surgery for intranasal mass and had an inverted papilloma were included in the study. Of the 24 patients, 19 (79.1%) were male and 5 (20.9%) were female. The mean age of the patients was 55.20±14.203 years. CT evaluation revealed hyperostosis in 14 (58%) patients, but not in 10 (42%) patients.

All patients were evaluated with HPV by molecular DNA PCR method. None of the patients had HPV positivity.

The localization of tumor were evaluated, lateral nasal wall in 13 (53.3%) patients, maxillary sinus in 4 (16.8%) patients, orbital medial wall in 2 (8.5%) patients, middle turbinate in 8 (8.5%) patients, septum in 1 (4.3%) patient, ethmoid sinus in 1 (4.3%) patient, and sphenoid sinus in 1 (4.3%) patient were found (Table 1).

Table 1. Localization of the tumor

Localization	n	%
Lateral nasal wall	13	53.3
Maxillary sinus	4	16.8
Anterior	1	4.3
Posterior	1	4.3
Medial	2	8.4
Lateral	0	0
Orbital medial wall	2	8.5
Middle Konka	2	8.5
Septum	1	4.3
Ethmoid sinus	1	4.3
Sphenoid sinus	1	4.3
Total	24	100

Table 2. Inverted papillom krouse staging system

T1	The tumor is completely limited in the nasal cavity. It does not extend into the nasal or extranasal structures.
T2	The tumor is limited to the ostiomeatal complex, the ethmoid sinus and the medial wall of the maxillary sinus. It may be with or isolated from nasal cavity involvement.
T3	The lateral, inferior, superior, anterior, and posterior wall of the tumor maxillary sinus and involvement in the sphenoid sinus or frontal sinuses are present.
T4	Tumor extended beyond the nasal cavity or sinus boundaries. Orbita, intracranial region or pterigomaxillar region invasion can be seen.

Patients were classified according to the Krouse staging system (Table 2). According to the Krouse staging system, 15 (62.5%) patients were classified as T3, 7 (29.1%) patients as T2, 1 (4.2%) patient as T1, and 1 (4.2%) patient as T4.

When recurrence rates were examined, 1 (4.2%) patient had recurrence of stage T3 tumor originating from the anterior wall of the maxillary sinus. A revision surgery was performed using an endonasal endoscopic procedure. No recurrence was observed in the follow-up of other patients. With regard to malignant transformation, only one patient had squamous cell carcinoma on the floor of inverted papilloma.

DISCUSSION

Inverted papilloma is a benign feature originating from the sinonasal region; it can show malignant transformation (1, 5). It is 3.5 times more common in men than in women (3). In accordance with the literature, in our study, the frequency in male was 3.8 times more than that in female patients, and the average age was 55.2 years. In the study by Bugter et al. (8) involving 245 patients, the mean age of patients with inverted papilloma was 55.8 years, which was consistent with our study.

PNS CT is of great importance in the diagnosis, evaluation, and surgical planning of inverted papilloma, similar to all endonasal surgeries. Focal hyperostosis foci and subsequent bone expansion can be seen as a PNS CT finding in inverted papilloma (9). This expansion in the sinus wall does not closely correspond to the primary localization of inverted papilloma because this is the result of greater bone compression than bone invasion by the increasing mass (9). On the contrary, the focal area of hyperostosis is closely related to the origin of inverted papilloma, and the relationship between the location of the focal hyperostosis and the location of the primary tumor can be used when surgery is planned for correct resection (9). During surgery, removal of the tumor by leaving a safe margin around the point where the tumor originates is sufficient to prevent recurrence (9, 10). In our study, when focal hyperostosis foci were evaluated, focal hyperostosis was observed in 14 (58%) of 24 patients, and tumors were shown to originate from these focal hyperostosis foci in all cases. In the study by Lee et al. (10), PNS CT examinations of patients with inverted papilloma revealed focal hyperostosis focus in 55 of 89 patients. In 49 of 55 patients with focal hyperostosis, primary tumor was observed to originate from these areas (10). The determination of the focal hyperostosis focus is an important finding in determining the origin of the tumor and also sheds light on surgical planning.

The relationship between inverted papilloma and HPV has been evaluated in many studies, and it has been suggested that HPV contributes to the formation and progression of inverted papilloma (4, 11). In our study, the relationship between inverted papilloma and HPV was investigated. Recently, in the study by Beigh et al., the effect of HPV on sinonasal neoplastic masses was investigated, and HPV positivity was found in five

patients with inverted papilloma (12). In our study, none of 24 patients with inverted papilloma had HPV positivity. Furthermore, in the study by Mohajeri et al. (13), 10 patients with HPV positivity were observed in 76 patients with inverted papilloma; the effect of HPV subtypes on malignant transformation was investigated, and it was reported that HPV was not likely to contribute to the etiology of inverted papilloma and to transformation to malignant transformation. This relationship shown in the previous literature was not detected in our study; this may be due to the limited number of cases in our study. The possibility of the role of HPV in inverted type of sinonasal papillomas is a less supported view in the literature, and it may be that the etiology of HPV is becoming more and more distant as stated in the study by Rooper et al. (14) and similar publications.

CONCLUSION

Inverted papilloma is a benign mass that occurs mainly in men between 50 and 60 years old and originating from the sinonasal region. It is usually originated by the lateral nasal wall. While inverted papilloma is radiologically evaluated by PNS CT, focal hyperostosis foci are important for detection of the origin of the tumor and surgical planning. The wide-ranging studies are needed to demonstrate the effect of HPV in the process of inverted papilloma formation.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of Adnan Menderes University School of Medicine.

Informed Consent: Written informed consent was obtained from the patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - Y.C.A.; Design - Y.C.A., F.N.Y.; Supervision - Y.C.A., H.S.B.; Materials - F.K.D., Y.C.A.; Data Collection and/or Processing - Y.C.A., F.K.D., F.N.Y.; Analysis and/or Interpretation - Y.C.A.; Literature Search - Y.C.A.; Writing Manuscript - Y.C.A., H.S.B.; Critical Review - Y.C.A., H.S.B.

Conflict of Interest: The authors have no conflicts of interest to declare.

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

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