

Research Article

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Clinical Presentations, Surgical Management and Outcome of Sinonasal Inverted Papilloma

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Introduction

Sinonasal inverted papilloma (IP) also known as Schneiderian papilloma is one of the most intriguing pathology of nasal cavity and paranasal sinuses [1]. It is a benign epithelial neoplasm arising from the Schneiderian epithelium that lines the nose and paranasal sinuses [2]. Other names for this tumor include epithelial papilloma, Ringertz's tumour, transitional cell papilloma, villiform cancer and Ewing's papilloma [3]. It accounts for 70% of all sinonasal papillomas, remaining 30% are either exophytic papillomas or columnar cell papillomas despite that it is not very common diseases (0.5-4% of all nasal and sinus tumours). However, IP attracts considerable interest because it is locally aggressive, has a high propensity to recur, and is significantly associated with malignant transformation-most frequently to squamous cell carcinoma in about 10-15% cases [4,5].

Nonetheless, there is growing evidence that human papilloma virus and environmental pollutants like cigarette smoke are convincingly implicated in pathogenesis of the tumour, its precise aetiology is still poorly understood [6,7]. Allergy, chronic long-standing inflammatory diseases and certain occupational factors are also reported as associated risk factors but their exact role in aetiology of IP is not delineated [8]. The most common site of origin of IP include lateral nasal wall and middle meatus followed by adjacent paranasal sinuses and other nearby anatomical structures like the orbit or base of skull [9]. Mostly the IP arises as a single, unilateral lesion and present with unilateral nasal obstruction [10]. However, it can rarely be multicentric and bilateral. Clinical presentation depends on the site of origin and laterality of the tumour [11]. Regarding the demographic distribution, IP is three-folds commoner in men as compared to women and peak incidence has been claimed in the 5th to 7th decade though the tumour has also been reported in children, adolescents and elderly [12].

Because of the tendency to recur, the ability to erode adjoining structures and the association with malignancy, in past decades most surgeons recommend medial maxillectomy via lateral rhinotomy for the treatment of IP, especially those for advance cases [13,14]. However, the lateral rhinotomy approach leaves permanent facial scars, which is one of the reasons why many surgeons consider it to be too invasive for the treatment of benign neoplasm. Besides the lateral rhinotomy approach, the mid facial degloving approach is a relatively uncomplicated alternative option for managing IP even when it has presented at an advance stage [15,16]. Furthermore, in the early 1990s, the endoscopic surgical approach was introduced for the treatment of inverted papilloma which shown comparable or even superior outcome than the conventional external approaches [17-19].

Today, it is established that IP need complete resection which may be done by either open traditional approaches or modern endoscopic resection techniques [20]. There are many reports supporting the feasibility of endoscopic resection with long-term follow-up [11,21,22]. Whether traditional approaches provide any advantage over modern endoscopic techniques is a subject of controversy and beyond the scope of this manuscript. The current study was performed to find the outcome of surgical management of inverted papillomas of the nose and paranasal sinuses in local Saudi patients.

Methods

It was a retrospective study conducted in the department of Ear Nose Throat (ENT) and Head and Neck Surgery (HNS), Prince Sultan Military Hospital/Medical City, Riyadh, Kingdom of Saudi Arabia. The patients who were histopathologically diagnosed to have an inverted type of sinonasal papilloma were retrospectively

included in the study. All patients from any age group and gender were included in the study after obtaining informed consent, between January 1990 and March 2014. A total of 18 patients fulfilled the inclusion criteria. The clinical presentation (symptoms, signs), site, side of the lesion, duration of problem, assessment about destruction of adjacent structures, type of surgical approach performed, recurrence, association with smoking and cancer were recorded. All data was entered and analyzed with the help of SPSS version 17. Frequencies and percentages were given for qualitative/discrete variables like gender, side and recurrence. Means were calculated for continuous/quantitative variables like age of patients and duration of symptoms. No statistical test of significance was applied as the nature of study was purely descriptive.

Results

The mean age of the patients enrolled in the study was 48.3 years. 15 patients (83.3%) were male while 3 (16.7%) were female (Figure 1). Male to female ratio was 5:1. Presenting males had a mean age of 46.5 years and that of females was 57.3 years. Maximum cases were reported from the age group between 21-40 years (Figure 2). The mean duration of symptoms was 2 years and 9 months ranging from 6 months to 10 years. Most common chief complaint with which the patients presented was nasal obstruction which involved 14 cases (77.8%), followed by rhinorrhea 8 (44.4%), postnasal drip 6 (33.3%), headache 5 (27.8%), epistaxis 2 (11.1%) and Hyposmia 2 (11.1%) (Figure 3).

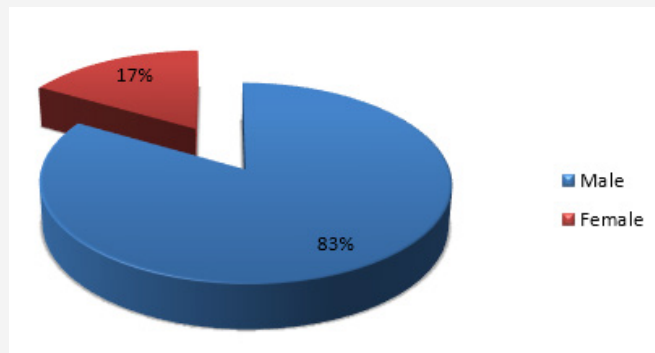


Figure 1: Gender distribution of the patients with sinonasal inverted papillomas.

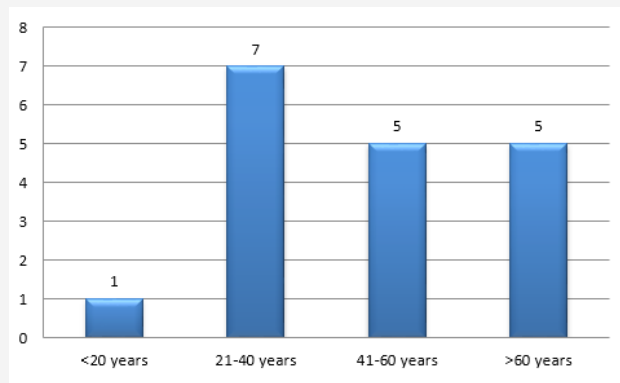


Figure 2: Age distribution of the patients with sinonasal inverted papillomas.

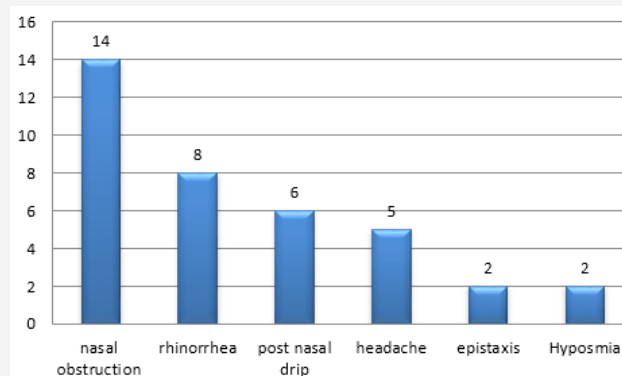


Figure 3: Presenting symptoms of sinonasal inverted papillomas.

7 cases (38.9%) were reported to be smokers. Sinonasal inverted papillomas involved left side in 11 cases (61.1%) and the right side in 7 cases (38.9%). The maxillary sinus was involved in 15 cases (83.3%), ethmoid sinus 5 (27.8%), sphenoid sinus 3 (16.7%), frontal sinus 2 (11.1%) and nasal septum 1 case (5.5%) (Figure 4). Orbital extension was seen in 1 case (5.5%) while no intracranial extension was observed. Bone erosion was observed on CT scan in 7 cases (38.9%) while Malignancy was only observed in 1 case (5.5%). Most commonly performed surgical procedure was

endoscopic medial maxillectomy done on 6 cases (33.3%). Other surgical procedures undertaken were lateral rhinotomy, medial maxillectomy using external approach, front ethmoidectomy, functional endoscopic sinus surgery (FESS), endoscopic excision of inverted papilloma sphenoid sinus, papilloma excision, trans-nasal resection of inverted papilloma, Caldwell-luc resection of papilloma and frontal sinusotomy with combined approach. The follow-up period ranged from 4 months to 18 years, with a mean of 6.2 years. Recurrence was observed in 3 cases (16.7%).

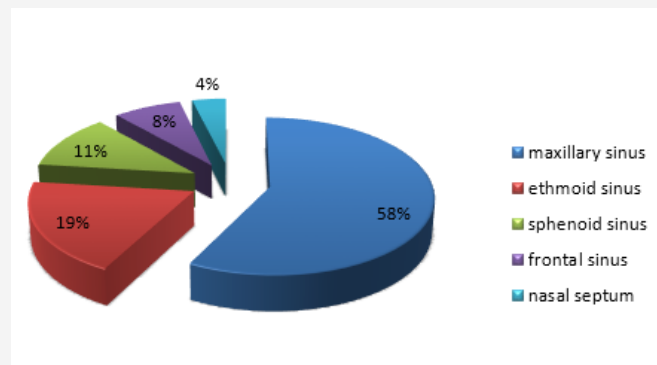


Figure 4: Anatomical location/site of origin of sinonasal inverted papillomas.

Discussion

The clinical appearance of IP has been well studied. It has been reported in all age groups but is known to have a peak incidence in 5th to 7th decades [22-24]. Age range in our study was from 21 to 490 years (mean 48.3 years) with maximum number in the 3rd and 4th decades, which is consistent with the study of Tomenzoli et al and Throp MA et al [3,7]. Our results showed Male to female ratio of 5:1 which is in accordance with most recorded series [23, 25].

Although the aetiology of IP is still unknown, recent studies using in situ hybridization and polymerase chain reaction have detected human papilloma virus in up to 86% of IP. In particular, viral subtypes 6, 11, 16, and 18 were most frequently found [22,26]. The other proposed etiology for the genesis of inverted papilloma would be smoking, allergy, chronic inflammation and occupational exposure. Recently, a number of studies have been done to make genetic predilection for the origin of inverted papilloma. Keles et al [27] revealed reduced level of p27 expression correlated with increased cell proliferation in sinonasal tumours. However, variable p21 and p53 expressions were detected in both benign and malignant tumours of sinonasal epithelium [28].

The clinical presentation of the IP is variable depending upon the extent of the involvement of the surrounding structures and the presence of other secondary pathology. However, the unilateral nasal obstruction is the commonest presenting symptom reported in most of the series (9, 23). Most common chief complaint with which the patients presented in our study was nasal obstruction

which involved 14 cases (77.8). Bilateral nasal obstruction may be due to the disease itself causing the pressure and deviation of the nasal septum towards the opposite side. In addition to that, it is due to compensatory hypertrophy of inferior turbinate of healthy side. The other presenting symptoms were rhinorrhea 8 (44.4%), postnasal drip 6 (33.3%), headache 5 (27.8%), epistaxis 2 (11.1%) and Hyposmia 2 (11.1%). These results are in accordance with the findings in the literature [7,9,10,15]. The duration of symptoms in our series was from 6 months to 10 years with mean duration of 2 years.

This may be due to the illiteracy, unawareness of health and health services and the poor economic condition. It is a common practice among the general population to choose the cheaper and readily available indigenous methods for treatment, before reporting to the higher center. Thorp et al [23] have reported the mean duration of symptoms of 7.2 months in their series. Vrabec [29] reported the duration of symptoms from 2 weeks to 45 years [16]. In our study Sinonasal inverted papillomas involved left side in 61.1% and the right side in 38.9% cases. The maxillary sinus was involved in 15 cases (83.3%), ethmoid sinus 5 (27.8%), sphenoid sinus 3 (16.7%), frontal sinus 2 (11.1%) and nasal septum 1 case (5.5%). Orbital extension was seen in 1 case (5.5%) while no intracranial extension was observed. Bone erosion was observed on CT scan in 7 cases (38.9%) while Malignancy was only observed in 1 case (5.5%). In no cases the contralateral nasal cavity was involved. Our study is in accordance with the several other studies in terms of sinus involvement [11,30,31]. However, ethmoid sinus was found to be

the commonest sinus involved followed by sphenoid and lastly the frontal sinus [32,33]. The higher occurrence of sinus engrossment in our series is because of the late presentation. Therefore, most of the cases presented in advanced stage of the disease.

The basic treatment of the tumour is regional resection of the mass leaving free healthy margins. This aim can be achieved more effectively with more aggressive surgery through external approach. Lateral rhinotomy and medial maxillectomy used to be the recommended surgical procedure in majority of the cases of inverted papilloma. However, more submissive endoscopic surgery is getting momentum now-a-days with controversial results. In spite of that, most authors agreed on the more subdued endoscopic surgery for very limited disease and aggressive external approach for extensive disease. Because we got cases in advanced stage, most commonly performed surgical procedure was endoscopic medial maxillectomy done on 6 cases (33.3%). Other surgical procedures undertaken were lateral rhinotomy, medial maxillectomy using external approach, fronto-ethmoidectomy, functional endoscopic sinus surgery (FESS), endoscopic excision of inverted papilloma sphenoid sinus, papilloma excision, trans-nasal resection of inverted papilloma, Caldwell-luc resection of papilloma and frontal sinusotomy with combined approach. Our treatment policies are well supported by several other studies [30, 33-35]. In our study follow up period ranged from 4 to 18 months and our study showed recurrence in 3 cases which is much less than other studies.

Conclusion

The present study specified that the inverted papilloma is a benign but a destructive tumour of sinonasal tract. Thus, the time of presentation and time of intervention are the two key factors that affect the outcome of the treatment. The patient of IP presented late in Saudi Arabia. Majority of the patients are at hand with the sinus involvement. More belligerent surgery is the only option left for the management of this disease; however, detection of disease in early stage may provide a chance to do conservative endoscopic surgery. Larger series and extended period of prospective study and follow up is vital to determine the histological classification, to determine relation with malignant transformation, to show relation with ethnicity, to equate efficacy of diverse surgical modalities and to determine the responsible etiological factors.

Acknowledgement

None.

Conflict of Interest

The authors declare no conflict of interests.

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