Association of anatomic variations with antrochoanal polyps in paranasal sinus computed tomography scan

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Background: This study was designed to determine the prevalence of concomitant anatomic variation of paranasal sinuses in patients with antrochoanal polyp (ACP). Materials and Methods: Among patients referred by their clinicians for standard computed tomography scan of paranasal sinuses sepal deviation, concha bullosa, and retention cyst were evaluated in both patients with ACP as well as in a control group. Results: Of the 17 patients with ACP, fifteen patients (88.2%) had sepal deviation and two patients (11.8%) had concha bullosa. None of the patients with ACP had retention cyst or hypertrophic turbinate. Of the 78 patients in control group, twenty-nine (37.2%) had sepal deviation, six (7.7%) had concha bullosa, seven (8.9%) had retention cyst, and one (1.2%) had hypertrophic turbinate. Septal deviation in patients with ACP has higher incidence (P < 0.001). Conclusion: This study showed that sepal deviation is an anatomic variation which is significantly concomitant with ACP. Larger studies are needed to show the role of other anatomic variations in patients with ACP.

Key words: Antrochoanal polyp, computed tomography scan, paranasal sinus

INTRODUCTION

Antrochoanal polyps (ACPs) are benign lesions arising from the edematous mucosa of the maxillary sinus and extending into the choana. ACPs constitute 4%-6% of all nasal polyps. Despite nasal polyposis, ACPs are typically unilateral. They can occur in males and females at any age. However, most of the published studies have been unanimous about preponderance of males and also its peak in early decades of life.[1,2]

Chronic sinusitis and allergic rhinitis seem to play a major role in establishing the ACP. These inflammatory processes cause mucosal edema and also mucous retention cyst formation.[3,4] One of the suggested etiological theories for ACP described that inflammatory-related closure of osteomeatal complex and increase of pressure in maxillary sinus force mucous retention cysts to herniate into the nasal cavity.[2] Considering this theory, anatomic variations such as sepal deviation, hypertrophic turbinate, and concha bullosa also pave the way for increasing the pressure difference between the middle meatus and the maxillary sinus.

In this study, we examine this theory by comparing the coincidence of anatomic variation in patients with ACP with normal population.

MATERIALS AND METHODS

Between March 2014 and August 2015, among patients referred to Radiology Department, Kashani and Alzahra Hospitals (Isfahan University of Medical Sciences, Isfahan) by their clinicians for standard computed tomography (CT) scan of paranasal sinuses patients with the imaging diagnosis of ACP were enrolled to the study, consecutively. The patients were followed to confirm this is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

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the diagnosis of ACP through the surgery. Demographic features include sex and age were gathered.

In control group, seventy-eight patients with no evidence of polyposis were randomly selected and matched by sex and age with ACP cases. Septal deviation, unilateral or bilateral concha bullosa, and retention cyst in contralateral maxillary sinus were evaluated in both groups.

Data of both groups entered to (SPSS version 22, IBM corporation, Somers, NY, USA). Appropriate statistical tests were performed.

RESULTS

Of the 17 patients with ACP, 10 (58.8%) were males and 7 (41.2%) were females. Ages ranged from 18 to 67 years with a mean of 38.11 ± 11.06 years. Fifteen patients (88.2%) had septal deviation. Two patients (11.8%) had concha bullosa. None of the patients with ACP had retention cyst or hypertrophic turbinate.

Of the 78 patients in control group, 38 (48.7%) were males and 40 (51.3%) were females. Ages ranged from 20 to 66 years with a mean of 35.08 ± 10.45 years. Twenty-nine patients (37.2%) had septal deviation, 6 (7.7%) had concha bullosa, 7 (8.9%) had retention cyst, and 1 (1.2%) had hypertrophic turbinate.

Mann–Whitney U-test showed the higher coexistence of septal deviation in patients with ACP in comparison with control group, significantly \( P < 0.001 \). However, there was no significant difference in incidence of concha bullosa between two groups.

DISCUSSION

The etiopathogenesis of ACP’s has not been completely clarified and controversies are still present. Chronic sinusitis which has been introduced as an important factor in the etiology of ACP, instead could be the result of an obstruction of the maxillary sinus ostium caused by ACP. Allergic situation is another factor considered in etiology of ACP. While some studies have found significant association between ACP and allergy, others fail to detect this association.[1-4] A variety of inflammatory and allergic processes have been also suggested in ACP.[6]

The major imaging differential diagnoses for ACP are retention cysts, acute sinusitis with prolapsed mucosa, inverted papilloma, maxillary sinus mucocele, sinonasal organized hematoma, nasoethmoidal encephalocele, esthesioneuroblastoma, and juvenile nasopharyngeal angiofibroma.[8,9]

Treatment is surgery-based and preferred method is intranasal endoscopic polyectomy. Excision of ACP stalk is a key point to reduce the recurrence rate.[10,11]

CONCLUSION

This study showed that septal deviation is an anatomic variation which is significantly concomitant with ACP. Larger studies are needed to show the role of other anatomic variations in patients with ACP.

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Conflicts of interest
There are no conflicts of interest.

AUTHORS’ CONTRIBUTION

All authors contributed in the conception of the work, conducting the study, revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work.
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