



Difference of antrochoanal polyp between children and adults



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ARTICLE INFO

Article history:

Received 28 December 2015
Received in revised form 3 March 2016
Accepted 4 March 2016
Available online 12 March 2016

Keywords:

Antrochoanal polyp
Child
Adult
Endoscopic surgery
Computed tomography

ABSTRACT

Objective: The purpose of this study was to review the clinical characteristics of the antrochoanal polyp (ACP) and to compare the differences between children and adults.

Patients and methods: This study was performed in 56 patients who underwent endoscopic surgery for ACP between 2004 and 2014. The study population was subdivided into children (≤ 18 years old) and adults (> 18 years old). Clinical findings of ACP, including symptoms, CT stages, and surgical outcomes were retrospectively analyzed.

Results: CT Stage II and III lesions were more common than CT stage I lesions in children ($p < 0.001$). Accompanying maxillary sinus diseases were more common in adults ($p < 0.005$). Purely endoscopic surgery for ACPs was performed in all children and 25 (86.2%) adults. The combined approach, endoscopic and canine fossa approach, was applied in 4 (13.8%) adults. The success rate was 88.9% in children and 93.1% in adults. According to the approach method, the success rate was 90.4% for the purely endoscopic approach and 100% for the combined approach.

Conclusion: High incidence of CT stage II and III lesions in the child group with ACP in our study suggests that children with ACP present at a more advanced state because of late diagnosis. Accompanying maxillary sinus diseases can be present in patients with ACP, especially adults, which should be considered preoperatively and treated appropriately.

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1. Introduction

Antrochoanal polyps (ACPs) are benign polypoid lesions arising from the mucosa of the maxillary sinus, through the maxillary sinus ostium with extension into the choana [1–3]. ACPs represent approximately 4–6% of all nasal polyps in the general population; however, the incidence is increased to 35% in children [1,4]. ACPs are almost always unilateral, although there are few cases of bilateral ACPs in the literature, mainly in children [1–3].

The pathogenesis and etiology of ACPs are still unknown [2]. Nasal endoscopy and computed tomography (CT) are the gold standard for determining the diagnosis and the treatment plan [1,5]. Surgical removal of ACPs is the treatment of choice [1–4].

The purpose of this study was to review the clinical characteristics of the ACPs, and to compare the differences between the child and adult groups.

2. Patients and methods

After obtaining approval from the Institutional Review Board of Chonnam National University Hwasun Hospital (CNUHH-2015-145), this study was performed in 56 patients who underwent endoscopic surgery for ACP between 2004 and 2014. This study population was subdivided into children (≤ 18 years old) and adults (> 18 years old).

Demographic characteristics, sinonasal complaints, localization of ACPs, imaging findings, accompanying maxillary sinus diseases, histopathologic results, treatment outcomes, and postoperative complications were reviewed. We classified ACPs into 3 patterns according to the CT findings [6]: Stage I (antronal polyp), Stage II (ACP extended to the nasopharynx and the ostium of the maxillary sinus was occluded fully by the neck of the ACP), and Stage III (ACP extended to the nasopharynx and the ostium of the maxillary sinus was occluded partially by the neck of the ACP).

The type of surgical approach was determined by endoscopic accessibility for the antral portion of ACPs. The antral portion of ACPs was removed via endoscopic approach through the natural maxillary ostium after it was adequately widened. However, in some cases, it was difficult to access the antral portion of ACPs endoscopically, and additional access was obtained through the

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canine fossa. A 5 mm diameter window was created 1 cm above the canine fossa by trocar puncture. A powered instrumentation was inserted into the maxillary sinus through the canine fossa puncture, and removed the antral portion of ACPs. Fisher's exact test was used for the statistical analysis with SPSS version 14.0. Statistical significance was defined as a p -value <0.05 .

3. Results

Fifty-six patients with ACPs were identified. There were 27 (48.2%) patients in children and 29 (51.8%) patients in adults. Clinical findings in children and adults are summarized in Table 1. In children, there were 16 males and 11 females; the mean age was 15.5 ± 1.5 years, with a range of 4 to 17 years. In adults, there were 19 males and 10 females; the mean age was 49.0 ± 3.0 years, with a range of 19 to 65 years.

The sinonasal complaints in both groups were nasal obstruction, followed by nasal discharge. Nasal obstruction prevalence is similar in adults (79.3%) and children (66.7%). Of the 56 lesions, 30 ACPs (53.6%) were located in the left maxillary sinus and 25 ACPs (44.6%) were located in the right maxillary sinus. Bilateral ACP was detected in 1 case (1.8%, Fig. 1). There was a slight predominance of the left maxillary sinus in both the child (15/26, 57.7%) and adult (15/29, 51.7%) groups.

On CT classification of the ACPs, there was a significant difference between children and adults. In children, the majority of patients were stage II (22/27, 81.5%), followed by stage III (4/27, 14.8%) and stage I (1/27, 3.7%). However, in adults, the majority of patients were stage I (13/29, 44.8%), followed by stage II (12/29, 41.4%) and stage III (4/29, 13.8%). In this study, stage II and III lesions were more common than stage I lesions in children ($p < 0.001$).

We reviewed accompanying maxillary sinus diseases of ACPs, excluding chronic sinusitis. There were no accompanying maxillary sinus diseases in children. However, in adults, accompanying maxillary sinus diseases included fungus ball in 4 patients, inverted papilloma in 2 patients, and odontogenic sinusitis in 2 patients. All fungus balls were present in the ipsilateral maxillary sinus. Two inverted papillomas were detected in the ipsilateral maxillary sinus and ipsilateral ethmoid sinus. In this study, accompanying maxillary sinus diseases were more common in adults than in children ($p < 0.005$). No one needed additional endoscopic sinus surgery for other sinuses, except ACPs.

In all patients, histopathological findings of the resected specimens were consistent with ACPs. In particular, two patients in children were diagnosed as having angiomatous polyps, the rare variant of sinonasal polyp. These patients included 1 male (14 years old) and 1 female (17 years old, Fig. 2). Both patients presented with nasal obstruction. After endoscopic surgery, the patients were followed up with endoscopic examination and recurrence was not observed in any patient. The mean follow-up period after surgery was 60.7 ± 35.7 months (mean follow-up \pm standard deviation), with a range of 8 to 120 months in children. In adults the mean

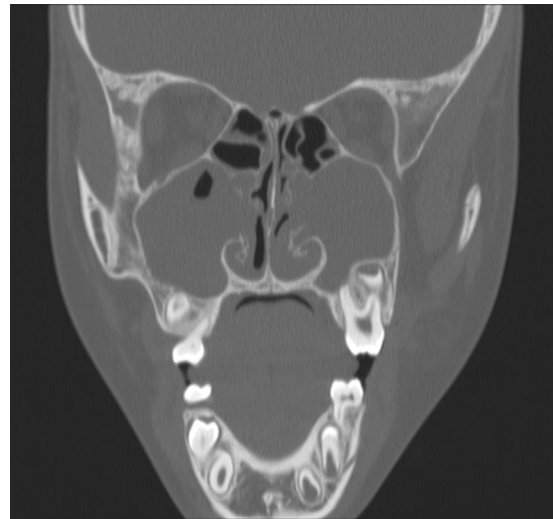


Fig. 1. In a 9-year-old male patient, coronal CT scans show a soft tissue mass in bilateral maxillary sinus, extending to the nasopharynx.

follow-up period after surgery was 55.4 ± 29.8 months, with a range of 11 to 122 months.

Purely endoscopic surgery for ACPs was performed in all (100%) children and 25 (86.2%) adults. The combined approach, endoscopic and canine fossa approach, was applied in 4 (13.8%) adults in whom it was difficult to access the antral portion of ACPs endoscopically. The success rate was 88.9% in children and 93.1% in adults. According to the approach method, the success rate was 90.4% (47/52 patients) for the purely endoscopic approach and 100% (4/4 patients) for the combined approach.

Recurrence of ACPs was identified in 3 (11.1%) children and 2 (6.9%) adults. The recurrence of ACPs did not differ significantly between the two groups. All five cases with recurrence were previously treated by the purely endoscopic approach. Among the three children, two patients were disease-free after re-operation through endoscopic approach. One patient was regularly followed up without surgery because she had intermittent and mild symptoms. In the two adults, one patient had been disease-free after re-operation through endoscopic approach, and the other patient had been on regular follow-up without surgery.

There were no major complications resulting from surgical intervention. Middle turbinate synechiae occurred in 1 child patient and septal perforation was noted in 1 adult patient.

4. Discussion

It is known that ACPs most commonly occur in children and young adults [1,4]. However, only 48.2% of all cases occurred among children in this study. In addition, approximately 40% of the patients were between 30 and 65 years. Therefore, the findings in

Table 1
Clinical findings of antrochoanal polyps in child and adult groups.

	Children (N=27)	Adults (N=29)
Age (years)	4–17 (15.5 ± 1.5)	19–65 (49.0 ± 3.0)
Sex (M:F)	16:11	19:10
Main sinonasal complain	Nasal obstruction (66.7%)	Nasal obstruction (79.3%)
Location (R:L:B)	11:15:1	14:15:0
CT classification (I:II:III)	1:22:4	13:12:4
Surgery	Purely endoscopic (100%)	Purely endoscopic (86.2%) Combined approach (13.8%)
Accompanying maxillary sinus diseases	None	FB (n=4), IP (n=2), Odontogenic sinusitis (n=2)
Recurrence	3 (11.1%)	2 (6.9%)

M, male; F, female; R, right; L, left; B, both; FB, fungus ball; IP, inverted papilloma.

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