Antrochoanal polyps in children

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Received 5 February 2002; received in revised form 16 May 2002; accepted 20 May 2002

Abstract

Objective: To evaluate the characteristics of antrochoanal polyps (ACPs) in children. Methods: 10 children operated for ACP were investigated retrospectively. Demographic characteristics, surgical and histopathological findings were evaluated. Results: The mean age was 10.2 years. The antral part of ACP was removed through middle meatal antrostomy in four patients, and transcaine sinuscopy was needed in six patients. It was found that the polyp passed through the main ostium in seven patients and accessory ostium in three patients. The antral part of the polyp was found to be cystic in six patients and polypoid in four patients. There was recurrence of polyps during follow-up period in two cases in which antral part of the polyp was seen to be removed through middle meatal antrostomy during primary surgery. In histologic examination, prominent eosinophilia was detected only in one patient and no mucous gland was detected in any patient. Conclusion: Endoscopic surgery through the middle meatal antrostomy combined with transcaine sinuscopy ensures the complete removal of the antral part of ACP in children. © 2002 Elsevier Science Ireland Ltd. All rights reserved.

Keywords: Antrochoanal polyp; Children; Endoscopic surgery; Transcaine sinuscopy

1. Introduction

Antrochoanal polyp (ACP) is a maxillary sinus polyp that originates in the maxillary sinus, passes through a sinus ostium and extends into the choana [1]. ACPs represent approximately 4–6% of all nasal polyps in the general population [2]. Although there are some bilateral ACP cases presented in the literature [3], ACP is almost always unilateral and occurs most commonly in children and young adults. Chen et al. found an incidence of 28% in their study of nasal polyps in children [4]. Nasal obstruction and nasal drainage are the most common presenting symptoms. But in severe cases the presentation may be more dramatic and confusing with symptoms of epistaxis, dyspnea, dysphagia and weight loss [5,6]. Juvenile angiofibroma, encephalocele, nasopharyngeal malignancies, grossly enlarged adenoids and turbinites and nasal polyposis should be kept in mind in differential diagnosis. The treatment of ACP is

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surgical, and most surgeons prefer being conservative in the surgery of ACP in children.

2. Patients and methods

This study involves children with ACP who were operated in Ministry of Health, Ankara Research and Training Hospital, Turkey, between March 1997 and August 2000. All the cases were primary cases, and the diagnosis was made by clinical and radiological examination (Fig. 1). They were operated under general anesthesia. Transnasal approach was preferred for the removal of nasal part of ACP. The antral part, on the other hand, was removed through maxillary sinus ostium by using 30° and 70° endoscopes and angled forceps. Transcanine sinuscopy was added to the procedure for the removal of the antral part when needed.

Hematoxylin- (H) and eosin (E)-stained histological preparations of the surgical specimens were reexamined to determine the histological characteristics of ACPs.

3. Results

Ten children, three boys and seven girls, aged between 5 and 13 (mean age of 10.2) years were operated and followed at least 15 months with a mean follow-up period of 33 months.

In all patients, the nasal part of ACP was removed transnasally. It was found that polyps were passing through the main ostium in seven patients and through an accessory ostium in three patients. During the surgery the main and accessory ostiums were connected to each other to create one large ostium. The antral part was removed through maxillary ostium in four cases, and transcanine sinuscopy was used in six cases. The antral part of the polyp was found to be cystic in six patients and polypoid in four patients.

During the follow-up period two patients showed recurrence. It was found that the antral part of the polyp was removed through middle meatal antrostomy in both patients. Revision surgery was performed, and transcanine sinuscopy was the preferred method to remove the antral part of the polyp in both cases.

The examination of H- and E-stained preparations revealed that the mucosal surface was respiratory epithelium, but squamous metaplasia was detected in two patients. Eosinophils were detected in only two cases, and they were the predominating inflammatory cells in only one of them. Lymphoplasmocytes were predominating in all the others. We did not detect mucous gland in any patient. Fibroblastic proliferation was detected in three patients (Figs. 2 and 3).

4. Discussion

ACPs usually have two components. One is cystic, which frequently completely fills the maxillary sinus, and the other a solid polypoid part, which extends into the middle meatus and the nasopharynx [7]. It has been suggested that the polyp arises from blocked and ruptured acinous mucous glands during the healing process of sinusitis, thus being an extension of a mucocele. The expanded intramural cyst enlarges to the point that it completely occupies the antrum, emerging through the maxillary ostium into the nasal cavity [8,9].

There is a controversy concerning the nature of the antral part of the polyp—whether it is cystic or polypoid. El-Guindy and Mansour reported that the antral part of ACP was cystic in all the cases in their study, including 24 patients [10]. But in Kamel’s study it was found to be cystic only in five of 22 cases [11]. In our study it was found to be cystic in six of 10 cases. There is another controversy concerning the exit of the polyp from the maxillary sinus—whether it is through the natural maxillary ostium or an accessory ostium [10–12]. In our study we found that polyps exited through the natural ostium in seven of 10 cases.

Although ACP was thought to be unrelated to allergic rhinitis in the past, a well-recognized association between allergy and ACP had been shown in recent studies [4,13]. Chen et al. detected allergy in 50% of children presenting with ACP using skin-prick tests [4]. Similarly, Cook et al. showed that allergic disease plays a significant role...
Fig. 1. Typical appearance of ACP in paranasal tomography: (a) polyp filling the antrum and passing through the ostium; (b) choanal extension of the polyp.
in ACP [13]. Aktas et al., however, found no relation between allergy and ACP in their patients [14]. Unfortunately, routine allergic study was not performed in our patients.

Recent studies on etiopathogenesis have revealed some new findings; Jang et al. studied the role of arachidonic acid metabolites in the pathogenesis of ACP, and they found that decreased lipoxygenase pathway products may be involved in the pathogenesis of ACP [15]. Sunagawa et al. showed possible role of urokinase-type plasminogen activator and plasminogen activator inhibitor-I in the pathogenesis of ACP in their study [16].

Histologically, there is essentially no difference between ACPs and nasal polyps. The mucosal surface is formed by the respiratory epithelium. The polyp usually contains sparse mucous glands and has a myxoid stroma, with variable densities of inflammatory cells concentrated near the surface. Sometimes, secondary stromal alterations may occur, like prominent fibrovascularity, neovascularization, and thrombosis, which may cause difficulty in the differential diagnosis [17]. On the other hand, results of Cook et al.’s study were somewhat different; they showed very high degree of eosinophilia and plasmocytophilia and presence of many mucous glands in the tissues from ACP patients [13]. In our study, we detected prominent eosinophilia in only one patient and very mild eosinophilia in another patient. We did not detect mucous gland in any case.

It is very well known that the treatment of ACP is always surgical. Historically, surgical therapy has involved two different modes—simple avulsion of the polyp or Caldwell–Luc procedure. Simple avulsion of the polyp alone carries a high recurrence rate [2,14]. Therefore, the antral part of the polyp should be resected to avoid recurrence. There is controversy concerning the route of removal of the antral part. The Caldwell–Luc procedure offers a good exposure and ensures complete removal of the antral part of the polyp [18]. In children, however, the Caldwell–Luc procedure carries significant risks to the developing teeth and the bone growth centers of the maxilla. Cheek swelling, anesthesia of the cheek and maxillary teeth, and long recovery time are the other possible side effects of the procedure [12].

Fig. 2. Gross appearance of ACP.
Recently, endoscopic surgery has become the choice of surgery because of it being less harmful for children and having short recovery time. Kamel suggested removing the antral part of the polyp through maxillary ostium, and he reported no recurrence in their patients [11]. However, El-Guindy and Mansour suggest that by using this technique intraantral remnants of the polyp and a second cyst lying in an unfavorable position may be easily overlooked. They advocate combining middle meatal surgery with transcanine sinuscopy to overcome this problem [10]. The findings of the present study confirm El-Guindy and Mansour’s study in that two of four patients showed recurrence, whose polyps were removed through maxillary ostium, while there was no recurrence in patients who had transcanine sinuscopy.

As a conclusion, ACP should be considered in the differential diagnosis for any child with nasal obstruction and a nasal mass. There is a need for a careful history, nasal endoscopy, and radiological work-up to confirm the diagnosis. Endoscopic surgery through middle meatal antrostomy combined with transcanine sinuscopy ensures the complete removal of the antral part of ACP.

References