Antrochoanal Polyp

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ABSTRACT

The antrochoanal polyps (ACPs) originate in the maxillary sinus, come to the nasal cavity usually through the accessory opening of the maxillary sinus and extend into the nasopharynx. They occur in all ages, although show more frequency in pediatric patients than in adults. The endoscopic removal is the modality of choice with reasonable success rate. If the ACPs come through the accessory ostia, these openings should be connected with the natural openings.

KEY WORDS : Maxillary sinus · Polyp.

INTRODUCTION

Choanal polyp originated in a paranasal sinus, usually in the maxillary sinus, and extends on a pedicle from the middle meatus into the choana or nasopharynx, where it may continue to enlarge. Apparently, it may arise from any wall of the maxillary sinus and gains entrance to the nasal fossa by way of an ostium, usually a large accessory ostium. It is predominantly solitary and unilateral, and higher incidence in pediatric population. The intrasinus portion is cystic, and the solid portion reaches the nasopharynx. Two portions are connected with stalk, which passes through the ostium. Therefore this polyps look like a dumbbell. The cystic portion inside the sinus may be multi-chambered.

HISTORY

A description of a polyp in the nasopharynx which Palfyn observed in a girl in 1753 was one of the earliest descriptions of the choanal polyps.[1] In the 19th century, a number of interesting observations of the polyps in the nasopharynx were published by Semeleder (1866), Scheck (1884) and Moldenhauer (1886).[1] In 1981, Zuckerkandl had an illustration of a pedicle, originating in an antrum and passing into the nose through a large accessory ostium, in his book. In 1906, Killian presented a paper on the origin of the choanal polyp and expressed the opinion that it arose from the maxillary sinus and gained access to the nasal cavity through the accessory ostium.[2] In 1909, Kelly reported 15 cases of nasoantral polyps and, in 11 of these, he opened the antrum using the Caldwell-Luc procedure and demonstrated a connection between the lining membrane of the sinus and the polyp.[3] Kelly reported that in all instances there were large accessory ostia providing ready communication between the antrum and nasal fossa.[3]

EPIDEMIOLOGY

Generally, ACPs are reported to comprise 3% to 6% of all nasal polyps.[4] Stammberger reported that the antrochoanal polyps appeared to be rare, making up less than 0.8% of all their polyp patients.[5] Children made up 70% of antrochoanal polyp patients in their series. The incidence of the ACP is high in pediatric population, as high as 28%.[6] However, Cook, *et al*., reported an incidence of 22.3% (33 of 148) of all nasal polyp patients on whom they operated during the same period. 7 Of their patients, 85% were adults. Although the ACPs are found more often in children,[5][6][8-11] some reports reveal that ACPs are more often found in adults.[1][4][7][12][13] Cook, *et al*., reported the pathologic findings of the polyps coexisting with antrochoanal polyps in adult patients. This means that the ACP may be present with

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other polyps. If we were preoccupied with the fact that the ACP is usually present as only one polyp, we can miss the ACP cases that coexist with other polyposis.

Male preponderance was noted in nore than 70% of the reports

Usually ACPs are present as a unilateral polyp, with bilateral or unilateral nasal obstruction. However three bilateral ACPs were reported out of 74 patients.[8] Two other bilateral cases were reported.[11)13)]

PATHOPHYSIOLOGY

Killian found the ACP has root within the maxillary sinus and coming through the large accessory ostium of the maxillary sinus, with a dumbbell-like shape because of the relatively small size of the accessory ostium.[2] He proposed that the ACP was at first a simple antral polyp. Occasionally, as a result of blowing the nose, part of ACP finds its way through the wide accessory opening into the middle meatus. The growing stalk of the polyp presses in turn upon the walls of the accessory ositum and widens this entrance.[2]

There is some evidence that the lesion may start with a cyst from the posterior wall of the maxillary sinus, filling the maxillary sinus and eroding the medial sinus wall by pressure, before reaching the nose usually through the posterior fontanelle region with a stalk.[14] They exhibited a histologic finding of the ACPs identical to the structure of the common intramural cyst of the maxillary sinus. They suggested that the choanal polyp developed from the expanding intramural cyst protruding through the maxillary ostium and into the nasal cavity. The histologic finding that the ACP contains less submucous gland favors this suggestion.[4)9)]

Since reports made by Killian and Kelly in the early 1900s, there have been no debates on the exact exit site of the ACP from the maxillary sinus. After the introduction of endoscopic sinus surgery in the mid-1980s, a detailed examination on the exit site was made possible.[15] Kamel reported that the polyp passed through the main ostium in 20 patients from 22 patients.[16] However, 14 out of 22 (64%) of his patients were revision cases, and confirming the exact location of the ostium was considered to be difficult due to postoperative changes. In a study on pediatric cases, Wooley found that the exact exit site was the accessory ostium of the maxillary sinus in 3 from the 7 patients.[10] Stammberger described that, in over 80% of their cases, the polyp reached the nose via the posterior fontanelle and not through the natural ostium of the maxillary sinus.[5] According to a number of reports, in most or many cases, ACPs reached the nasal cavity through the accessory ostium of the maxillary sinus.[17)18)]

Regarding correlation with allergic diseases, most of the reports denied the correlations,[4)9)18)] while Cook, *et al*., reported that the association of allergic disease with ACPs to be statistically significant.[7] Seventy% (23 of the 33) of their patients were diagnosed as having allergic rhinitis.

DIAGNOSIS

The usual complaint was unilateral or bilateral nasal obstruction. Rhinorrhea was another common presentation.[6] Other symptoms include bleeding, snoring, halitosis and foreign body sensation. On examination, anterior rhinoscopy revealed a unilateral intranasal polypoid mass of pale, fleshy quality.[6]

When accompanied by the hypertrophy of the inferior turbinate was, ACPs may be easily missed. In the adult patients, ACP was accompanied with other polyposis.[7] The presence of polyps in the nasal cavity and nasopharynx can be confirmed with endoscopes easily.

Simple radiographic findings of the ACP were diminished aeration of the involved maxillary antrum, and the expansion of the antrum.[19)20)] But there were reports saying that bony erosion was not observed.[6)10)] CT showed polyp from posterior fontanelle.[12]

In general, ACPs are unilateral lesion. With simple roentgenogram, ipsilateral involvement of the inflammation was noted in 57.6% of the patients and bilateral involvement was noted in 42.6%.[4] Observing through a radiologic examination, bilateral sinus involvement was shown in 31 - 50% of patients.[6)8)18)] Soft tissue mass in the nasopharynx on lateral view was seen in 57% (8 out of 14) of patients.[6]

Choanal polyps usually originate from the maxillary sinus, however they also originate from the sphenoid sinus, anterior ethmoid sinus or posterior ethmoid sinus.[21] Polypoid mass should be differentiated with inverted papilloma.[21]

LOCATION

The ACPs originated most frequently from the posterior wall, followed by the inferior , lateral, and medial

wall.[9] This finding is consistent with that reported by Kubo.[1] Lee, *et al*. Reported that the floor of the maxillary sinus was the most frequent site of origin, followed by lateral wall, medial wall and roof in his 74 patients.[8]

PATHOLOGY

Grossly, ACPs have a characteristic dumbbell shape.[4] Earlier reports have indicated that the histology of the ACP does not differ significantly from that of nasal polyps. Tissue eosinophilia occurs less frequently in ACPs than in the nasal polyps.[4] Min, *et al*., reported that in ACP, eosinophilic infiltration is less severe than in the allergic polyp group.[9] The presence of submucous glands was significantly less pronounced than in the ordinary nasal polyp group.[4][9] These findings indicate that the ACP has little causal relationship with nasal allergy, but is all the more intimately associated with inflammatory processes.[9]

On the other hand, there was a contrasting report saying in 90% of patients (27 out of 33), abundant eosinophils or plasma cells are noted in the nasal polyp coexisting with ACPs.[7]

TREATMENT

For therapy, surgery is the modality of choice. The cystic portion coming out of the maxillary sinus must totally be removed.

For the removal of the polyps, removal by snare, evulsion polypectomy, intranasal antrostomy, or Caldwell-Luc operation were tried in 1950s.[1] A good result may be expected in 80% of person without chronic sinusitis following removal of the polyps by snare and avulsion.[1][4]

The radical external sinus operation is probably the procedure of choice when there is chronic suppurative inflammatory disease of the lining membrane of the sinus from which the polyp arose. Recurrence followed in approximately 5.5% of cases in which the external approach was used.

One recurrence was found in a patient treated with the C-L approach, out of 12, during an 18 months follow up period.[6] Lee, *et al*., reported no recurrence of ACP with Caldwell-Luc approach, however, a 33% recurrence rate with endoscopic technique, and 66% with simple avulsion.[8]

Functional endoscopic sinus surgery has been reported to be useful in the surgery of the ACPs.[12][16] Endoscopic sinus surgery is useful particularly in obviating the need for a standard Caldwell-Luc approach to the antrum.[7] During the operation, the ostia through which the ACPs comes to the nasal cavity should be confirmed carefully. If these opening are the accessory ostia, these opening should be connected with natural opening of the maxillary sinus. For the revision cases, ACP may come through the surgically created middle meatal antrostomy site or inferior meatal antrostomy site.[16]

Loury reported an 80% success rate with endoscopic sinus surgery technique for 5 patients.[12] No recurrence of ACPs with ESS technique were reported in 22 patients during 20 months[16] and in 33 patients during 24 months of follow up period.[7] Choo, *et al*., reported that he treated the ACPs in pediatric patients with endoscopic technique and no recurrence of polyps in 85% within a one year period.[22]

Lee, *et al*., compared the endoscopic technique for 15 patients and 10 osteoplastic Caldwell-Luc approach.[23] He did not observe any recurrence of ACP with endoscopic technique for 24 months. Same results were obtained with Kim for his 21 cases of ACP.[11] So now the endoscopic removal is the method of choice.[23]

Corticosterioid is not effective, which possibly related to the fact that few inflammatory cells, and no eosinophils, are encountered in histological sections.[5]

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