Imaging of antrochoanal polyposis

Sufian A. Al Roud (1)
Mohammad I. Al Rawashdeh (1)
Bdewi M. Awamleh (2)

(1) Department of ENT Royal Medical Services (RMS)
King Hussein Medical Centre
Amman, Jordan.
(2) Department of Radiology, King Hussein Medical Centre
King Hussein Medical Centre
Amman, Jordan

Correspondence:
Dr Sufian Al Roud
Amman, Jordan
Tel: 0777745292
Email: sufian.roud@yahoo.com

ABSTRACT

Objective: The aim of this study was to evaluate the common radiological features in initial and post operative follow up imaging of patients proved to have antrochoanal polyposis, and who were treated surgically, and to evaluate post operative clinical improvement of this sample.

Methods: A total number of 54 patients ages between 12 and 46 years, with mean age of 21.3 years, who proved to have ACP investigated by CT-Scan during a 3 year period (between May 2009 and February 2012) were retrospectively evaluated and follow up imaging CT-Scan was performed for this group of patients. The main presenting clinical symptom of the selected patients was nasal obstruction. We selected a coronal sinus CT-Scan as referral imaging modality for this study and according to which we made our calculations and conclusions.

Results: Unilateral polyposis was found in 38 patients (70.4%) and bilateral in 16 patients (29.6%). All patients were operated on by Functional Endoscopic Sinus Surgery (FESS). The patients were followed up by CT-Scan axial and coronal views at 4-6 weeks post operatively and only in 7 patients we recorded a post operative inflammatory finding of which in 2 patients the diagnosis was recurrent antrochoanal polyp.

Conclusion: We conclude that CT-Scan was very accurate in diagnosing antrochoanal polyp in pre and post operative assessment and the recurrence of this disease was very minimal according to follow up clinical and imaging results. The Functional Endoscopic Sinus Surgery (FESS) was very effective in preservation of normal antral mucosa with minimal complications in post operative follow up.

Key words: Antrochoanal polyposis, CAT-Scan, FESS
Introduction

Antrochoanal polyposis (ACP) is not uncommonly found in the general population investigated for paranasal sinus pathology; it represents a herniated maxillary sinus polyp through the ostium reaching the nasopharynx in the majority of cases and accounts for about 3-6% of all paranasal polyps. Imaging of these patients plays an essential part in managing and follow up of surgical treatments. The prevalence of this pathology is more prominent in pediatric and young adult age groups.

Killian was the first to describe choanal polyp (CP) in 1906 and considered it as a large solitary polyp originating from maxillary sinus mucosa and redirected posteriorly reaching the nasopharynx. This process takes part through the accessory ostium of the maxillary sinus (1). Many recent studies prove that not only is the accessory ostium the solitary anatomical origin of this medical entity, but it can also originate from sphenoid sinus and sphenoethmoidal recess and rare cases have been reported from the frontal sinus. This clarification was approached by the newly developed imaging modality machines, such as helical computerized tomography machines CAT-Scan and MRI. These pear shaped form antrochoanal polyps are seen usually solitary and unilateral in the majority of cases, differentiating them microscopically from common nasal cystic polyps (2).

The presenting features are common in children and young adult age groups (3). ACP recurrence after surgical removal is not uncommon in many studies being reported in literature (4). These lesions are usually benign and cause no bony or cartilaginous destructive changes of the maxillary boundaries, but can enlarge and extend in all directions. The commonest is the nasopharynx causing postnasal air route obliteration (5). Nowadays appropriate diagnosis is made by nasal endoscopy and computed tomography in axial and coronal views so as to make a final management plan for each case, considering that definite treatment is surgical in all cases (6). With improving new modalities of imaging machines, such as helical CAT Scans in multiplanar reformats, the diagnosis of these lesions is becoming more accurate excluding bony and dental artifacts (7).

Material and Methods

A total number of fifty four patients, aged between 12 and 46 years, with mean age of 21.3 years, were retrospectively analyzed and investigated by CT-Scan (Mx 8000 Dual helical Philips) during a three year period (between May 2009 and February 2012). The main presenting clinical symptom of each patient was nasal obstruction. Axial and coronal CT-Scan in multiplanar reformats for the paranasal sinuses was performed for all these all patients and a follow up postoperatively according to clinical request was done. We selected coronal sinus CT-Scan as referral imaging modality for this study and according to which we made our calculations and conclusions.

Results

Among patients included in this study (Table 1), unilateral antrochoanal polyps were found in 38 patients (70.4%) and bilateral in 16 patients (29.6%). All patients were operated on by Functional Endoscopic Sinus Surgery (FESS). All patients were followed up 4-6 weeks post operatively and only in 7 patients we recorded a post operative inflammatory finding of which in two patients the diagnosis was recurrent antrochoanal polyp (Figure 3).

Discussion

Unilateral benign paranasal polyp represents a disease that affects the child age group as well as young adults with no preferences regarding the sex preponderance, and in a few recent studies male patients are slightly more frequently seen (8). The etiology of this disease is mentioned as uncertain, but many theories describe the previous inflammatory processes and allergy that affect the mucosal layers of the sinus as a predisposing factor which remain unproved for other groups of editors (9). Antrochoanal polyp usually arises from mucosal lining maxillary sinus in the majority of cases and extends posteriorly through an accessory ostium into the nasal cavity which can be enlarged to obliterate the choanal and nasopharynx. The patient is usually young adult who complains of unilateral nasal obstruction worsening on expiration. When the disease progresses, this can block the Eustachian tube. Many diagnostic modalities are implicated in supporting a management plan for ENT surgery physicians, nasal endoscopy, computerized tomography (CT-Scan) and magnetic resonance imaging (MRI) are considered the main investigations used to detect uni- or bilateral nasal polyposis. When CT-Scan is used, the diagnosis is made by detecting a mass which fills the maxillary antrum and which goes through the accessory or original ostium into the choana [Figure 1&2]. MRI shows T1 hypointense and T2 hyperintense lesions within the antrochoanal regions (10). In our study we used just CT-Scan as the diagnostic modality of choice for all patients; the axial and coronal reformats were the preferred methods of choice.

Table 1: Frequency of unilateral antrochoanal polyps and recurrence of post operative percentages

<table>
<thead>
<tr>
<th>No. of patients</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral antrochoanal polyp</td>
<td>38</td>
</tr>
<tr>
<td>Bilateral antrochoanal polyp</td>
<td>16</td>
</tr>
<tr>
<td>Recurrence ACP</td>
<td>2</td>
</tr>
</tbody>
</table>
Figure 1: axial (a) & coronal (b) CT-Scan of 21 years old male patient showed huge lobulated right antrochoanal polyp filling right nasal cavity and post-nasal space.

Figure 2: Well defined soft tissue density polypoidal lesion arising from Right maxilla and extending posteriorly into nasopharynx of a 15 year old female patient. Note the complete blockage of Right Choana.
Differential diagnosis was made with other nasopharyngeal masses, including juvenile nasopharyngeal angiofibroma, meningoencephalocele, nasal glioma, hemangioma, adenoids and nasopharyngeal malignancy as well as lymphoma(11). A proper history and vigorous clinical evaluation along with careful selection of investigatory methods all were helpful in differentiating antrochoanal polyp from other suspected lesions. The frequent differential diagnosis was done with Juvenile nasopharyngeal angiofibroma due to similarity of presentations and almost affecting the same age groups of patients, which is usually highly vascular benign neoplasm with potential for local destruction, and it is commonly associated with epistaxis(12-14). Surgical removal was the method of choice in treating our patients and the Functional Endoscopic Sinus Surgery (FESS) was done for each patient. Complications were seen in a minority of patients which correlates well with other studies and did not exceed 4% of all cases, which is in the range of many international centers (15-17).

Conclusion

We conclude that CT-Scan in axial and coronal views was sufficiently accurate in diagnosing antrochoanal polyp in pre and post operative assessment and the diagnostic nasal endoscopy remains in limited use. Recurrence of this disease was very minimal according to follow up clinical and imaging results. The Functional Endoscopic Sinus Surgery (FESS) was very effective in preservation of normal antral mucosa with minimal complications in post operative follow up screening.

References


