CASE REPORT

Benign Granulomatous Polyp Obstructing the Bronchus

Saulat Hasnain Fatimi[1], Ali Khawaja[2], Ranish Deedar Ali Khawaja[2], Mehar Hoda[2] and Salima Ahmed Bhimani[2]

Abstract

Inflammatory endobronchial polyps are rarely encountered. We report a case of a 14 years old girl with a benign granulomatous polyp originating in the bronchus. Computed tomography scan showed an intraluminal soft tissue opacity while fiberoptic bronchoscopy revealed a large soft tissue mass completely occluding the left lower lobe. Rigid bronchoscopy under general anaesthesia identified a fleshy mass in the left main stem bronchus which was excised via bronchoscopy. The histopathology showed benign polyp with non-specific inflammation. The patient's symptoms improved subsequently and no recurrence was reported till two years of follow-up.

Key words: *Polyp. Granulomatous. Inflammatory. Tracheobronchial tree. Bronchus. Radiological diagnosis.*

INTRODUCTION

Tumours in the tracheobronchial tree are extremely uncommon. Although most of them are malignant, various benign tumours may also occur. The tumours of the tracheobronchial tree constitute around 2% of all lung tumours.[1] They include respiratory papilloma, granular cell myoblastoma, lipoma, fibroma, adenoma, leiomyoma, and haemiangioma.[1] Although these are slow growing tumours and are often asymptomatic, it is however, essential to reach a prompt diagnosis in a symptomatic patient for timely intervention and exclusion of malignancy. This is assisted by recent advances in technology which have provided physicians with multiple modalities to diagnostically image the tracheobronchial tree.

Inflammatory polyps are tumour-like lesions resulting from chronic inflammatory processes. They are mostly encountered in adults and seldom occur in the adolescent population. In this case report, we describe the case of a young girl who presented to us with a rare manifestation of a granulomatous polyp in the tracheobronchial tree.

CASE REPORT

A 14 years old girl, with no known comorbid condition, presented to the Outpatient Pulmonology Clinic with complaints of dyspnea and respiratory distress. She had a month old history of high-grade fever, rhinorrhea and progressively worsening cough. The patient had been in and out of various medical centres and was currently on oral antibiotics with minimal relief. She had also undergone a bronchoscopy three weeks prior to her visit of which no record was available. Her past history was insignificant with no respiratory complaints or allergies.

At the time of presentation, the patient was afebrile and tachypneic maintaining an oxygen saturation of 96% at room air. On clinical examination, the left lower lung was hyper-resonant with mild ronchi. She was admitted to the ward where chest roentogram and computed tomographic (CT) scan were advised. Infectious causes were ruled out by blood and sputum cultures which were negative for growth of any organism(s).

Chest X-ray showed hyperlucent left lung with decreased volume. The hemi-diaphragm was also raised on the left side. CT scan showed an intraluminal soft tissue opacity in left main stem bronchus occluding the lumen. There was mucus plugging distal to the opacity and atelectatic changes were seen in the superior segment of the left lower lobe (Figures 1 and 2).

On fiberoptic bronchoscopy, a large soft tissue mass was found to be completely occluding the left lower lobe. The patient was immediately referred to cardiothoracic surgery for further management.

After reviewing the chest X-ray and CT scan, a rigid bronchoscopy was performed under general anaesthesia for further investigation, and if possible, the removal of the mass. A 5-Fr scope was introduced into the trachea and an occlusive, fleshy mass was readily identified in the left main stem bronchus. The mass was completely resected and samples were sent for histopathological investigation. Patient's postoperative recovery was unremarkable and she was discharged on the third post-operative day.

Histopathological analysis revealed polypoidal fragments of tissue showing broad, stout fibro-cellular stroma covered by a double layer of respiratory type ciliated epithelium and mucus secreting glands. Signs of chronic inflammation with lymphocytes, plasma cells, and proliferating vessels were also seen.

Department of Surgery[1] / Medical Student[2], The Aga Khan University, Karachi.

Correspondence: Dr. Saulat Hasnain Fatimi, Department of Surgery, Section of Cardiothoracic Surgery, The Aga Khan University Hospital, Stadium Road, Karachi.
E-mail: saulat.fatimi@aku.edu

Received: December 08, 2011; Accepted: September 18, 2012

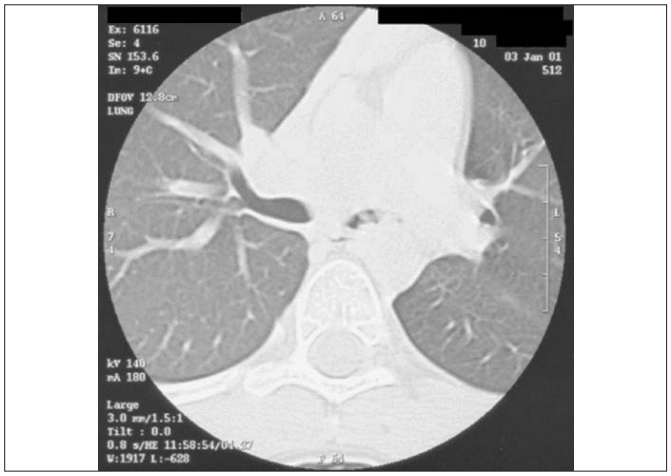

Figure 1: Computed tomography scan of granulomatous papilloma of the left main stem bronchus completely occluding the bronchial lumen. Notice the left main stem occlusion by this mass.

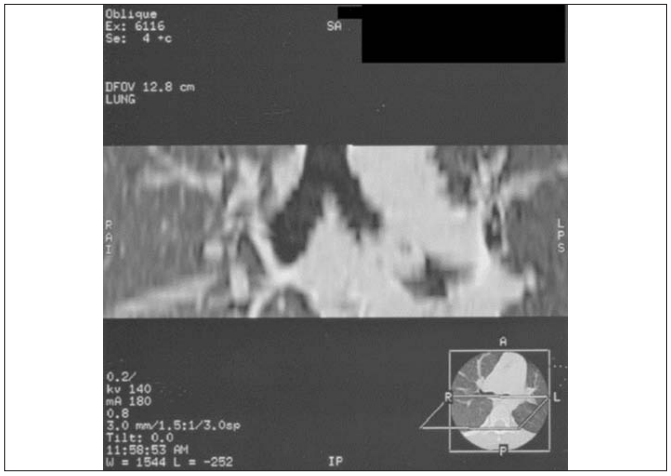

Figure 2: Computed tomography scan (coronal view) shows complete obstruction of the left bronchial lumen.

Five months later, the patient returned with a complain of non-productive cough. Chest X-ray was performed which was normal. She was subjected to a follow-up rigid bronchoscopy. Inflammation of the left main stem bronchus was seen with some luminal narrowing without recurrence of the polypoidal mass. The patient was followed for two years without recurrence.

DISCUSSION

Majority of tracheobronchial tumours are encountered in adults and are usually malignant. Endobronchial polyps are now considered to be rare and a distinct entity of benign lesions which are usually inflammatory in origin. Tracheobronchial polyps are divided into three distinct categories; multiple papillomatous, solitary papillomatous and those which represent hyperplastic processes such as inflammatory papilloma.[2]

Several likely pathological mechanisms have been postulated regarding the origin of endobronchial polyps. In some cases where a history of chronic bronchitis or bronchiectasis is present, the polyp is a result of an exaggerated but localized inflammatory response to severe acute thermal injury or chronic airway irritation in adults.[3] Aspirated foreign material, hypersensitivity pneumonitis and asthma in children have also been implicated as causative agents for granulation tissue.[4-6] Despite these theories, there is no concomitant theory to explain polyp formation in many cases. It is difficult to distinguish inflammatory polyps from other benign neoplasms of the tracheobronchial tree on clinical examination. The endoscopic appearance of polyps may vary but they are usually solitary with a smooth surface. They may be pedunculated or attached to the airway wall. Papillary projections are sometimes seen but are broader and fewer in number compared to squamous papillomas. Histological analysis provides the definitive diagnosis where polyps show a stromal configuration covered with normal respiratory epithelium. Clinically, the commonest manifestations of endobronchial lesions are cough, dyspnea, wheeze simulating asthma, chest pain and rarely hemoptysis.[1] In this patient, it could not be deduced whether the polyp occurred as a primary lesion or secondary to any other insult. Though she had a history of fever and rhinorrhea, she did not respond to antibiotics whereas complete resection of the polyp resulted in complete relief from symptoms. This shows that it was unlikely to be infective in origin. She did not have any history of allergies and family history of atopy was also negative.

Many modalities are now available to view and image the airways. We used a chest X-ray, CT scan and fiberoptic bronchoscopy for reaching a diagnosis. Chest X-ray is the most frequently used examination which can detect both the soft and hard tissues. However, it is mostly used as a screening test since the information provided is crude and is unable to detect small masses. This bridge is gapped by another type of X-ray imaging; the computed tomographic (CT) scan. It is a painless, swift method which has the ability to image soft tissues, bones and blood vessels concurrently. Fiberoptic bronchoscopy (FOB) is considered to be the gold standard in evaluating tracheobronchial lesions. It is an invasive method which allows direct visualization of the lumen with the option of resecting tissue specimens for biopsy. Hence, it can be used as both, a diagnostic and a therapeutic procedure. Although it is a simple procedure carried out easily under light sedation, it has some limitations. Many studies have concluded that FOB failed to evaluate the airway tract beyond the site of stenoses.[7] Moreover, it is unable to detect the extent of tumour, occurrence of a collapse and provides limited information regarding the degree of extraluminal disease.[8]

Another modality that is now increasingly being explored is virtual bronchoscopy (VB). It is a non-invasive modality constructing a three-dimensional view of the

airways by overlapping helical CT scan images.[7] VB was not used in this case due to unavailability. The accuracy of VB is still questionable with different studies reporting varying degrees of sensitivity and specificity.[7,8] Lacasse *et al.* concluded that VB alone cannot be reliable in detecting an endobronchial lesion, especially beyond the main stem bronchi. Therefore, the usage of fiberoptic bronchoscopy cannot be replaced.[9] Furthermore, its inability to evaluate the characteristics of the mucosal surface including colour and friability and lack of ability to extract tissue specimens for histological analysis make it of limited use.

For therapeutic purposes, rigid bronchoscopy was used to resect the polyp in this case. Endobronchial resection is now frequently considered as an alternative to thoracotomy. Many case reports augment the fact that bronchoscopic removal of endobronchial polyps is successful in completely eradicating the disease with immediate relief from symptoms. Surgeons should frequently consider it as an option in such cases since it is relatively easier to perform and has fewer complications.[10]

To conclude, young patients with unexplained respiratory distress should be thoroughly evaluated for benign tumours of the endobronchial tree. CT scan, virtual bronchoscopy and fiberoptic bronchoscopy are all complementary diagnostic tools. Polypoidal lesions should be kept in differential diagnosis and rigid bronchoscopy should be the preferred approach in managing such cases.

REFERENCES

1. Shah H, Garbe L, Nussbaum E, Dumon JF, Chiodera PL, Cavaliere S. Benign tumours of the tracheobronchial tree. Endoscopic characteristics and role of laser resection. *Chest* 1995; **107**:1744-51.
2. Kim JH, Jang AS, Park JS, Lee JH, Park SW, Koh ES, *et al*. Polypoid endobronchial lung cyst with bronchoscopic removal: a case report. *J Korean Med Sci* 2005; **20**:892-4.
3. Smith RE. Endobronchial polyp and chronic smoke injury. *Postgraduate Med J* 1989; **65**:785-7.
4. Mita Y, Dobashi K, Saitoh R, Tsuchiya S, Nakano H, Watanabe S, *et al*. [Removal of bronchial foreign bodies by suction with a bronchoscope]. *Nihon Kyobu Shikkan Gakkai Zasshi* 1997; **35**:442-6. Japanese.
5. Sugimoto Y, Kobayashi H, Kanoh S, Motoyoshi K, Aida S. [A case of bird fanciers' lung with endobronchial polyps]. *Nihon Kokyuki Gakkai Zasshi* 2003; **41**:746-9.
6. Argüelles M, Blanco I. Inflammatory bronchial polyps associated with asthma. *Arch Intern Med* 1983; **143**:570-1.
7. Adali F, Uysal A, Bayramoglu S, Guner NT, Yilmaz G, Cimilli T. Virtual and fiber-optic bronchoscopy in patients with indication for tracheobronchial evaluation. *Ann Thorac Med* 2010; **5**:104-9.
8. Summers RM, Selbie WS, Malley JD, Pusanik LM, Dwyer AJ, Courcoutsakis NA, *et al*. Polypoid lesions of airways: early experience with computer-assisted detection by using virtual bronchoscopy and surface curvature. *Radiology* 1998; **208**:331-7.
9. Lacasse Y, Martel S, Hébert A, Carrier G, Raby B. Accuracy of virtual bronchoscopy to detect endobronchial lesions. *Ann Thorac Surg* 2004; **77**:1774-80.
10. Kahan B, Amer NS. Multiple bronchial polyps. *Chest* 1970; **57**: 279-83.