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Case Report

Use of magnet powered bronchoscopy forceps in the removal of bronchial metallic foreign body in an adolescent girl

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ABSTRACT

Aspiration of foreign body is defined as an entry of an object into the respiratory tract. The mainstay of treatment for removal of the foreign body is bronchoscopy. Here, we report an eleven-year-old girl who presented with accidental aspiration of right bronchial metallic foreign body, which was difficult to remove by conventional bronchoscopy forceps but ultimately removed by magnet powered forceps.

Keywords: Bronchoscopy, Children, Foreign body, Magnet

INTRODUCTION

Aspiration of foreign body is defined as an entry of an object into the respiratory tract (upper or lower). It is the most common problem among children below the age group of 4 years which can lead to morbidity and mortality.[1]

The child may develop symptoms in the form of cough, breathlessness, cyanosis, and abnormal chest sounds.

The earliest diagnosis and extraction by rigid bronchoscopy are the mainstay of treatment. In a few cases, bronchoscopy may not be successful and one may need to go for exploratory thoracotomy.[2,3]

Here, we report an eleven-year-old girl who presented with accidental aspiration of right bronchial metallic foreign body, which was difficult to remove by conventional bronchoscopy forceps but ultimately removed by magnet powered forceps.

CASE REPORT

History and examination

An eleven years girl presented in the emergency department at night with chief complaints of breathing difficulty and cough since evening. There was no history of cold, fever, chest pain and no past-history of bronchial asthma.

On examination, the patient was conscious, vitals were stable (SpO_2 97%) with respiratory rate of 20/min with minimum subcostal indrawing and bilateral equal air entry.

Investigations

X ray chest surprisingly showed a round, 5 mm radiopaque foreign body in right main bronchus without any lung changes (Figure 1). Afterwards, she gave the history of accidental aspiration of small metal ball while playing with the sibling in the evening.

Treatment

The rigid bronchoscopy (optimed size no. 6) was performed under intravenous general anesthesia which showed small metal ball foreign body in the right main bronchus (Figure 2). Its removal was attempted with conventional forceps and with basket also but both methods were unsuccessful due to difficulty in grasping the foreign body. Lastly, magnet forceps was attempted and we could successfully able to remove the metal ball foreign body without any complications (Figure 3).

Result and follow up

The post bronchoscopy X ray chest showed no foreign body without any lung complications (Figure 4) and treated with IV antibiotics Injection ceftriaxone 100 mg/kg/day along-with steroids injection dexamethasone 0.15 mg/kg/dose in three divided doses for 3 days as metallic body made sloughing injury in the bronchus.

Figure 1: X-ray chest posterior-anterior view having right bronchial foreign body.

Figure 2: Bronchoscopy view of metallic foreign body in right main bronchus.

Figure 3: Actual metallic foreign body immediately after extraction.

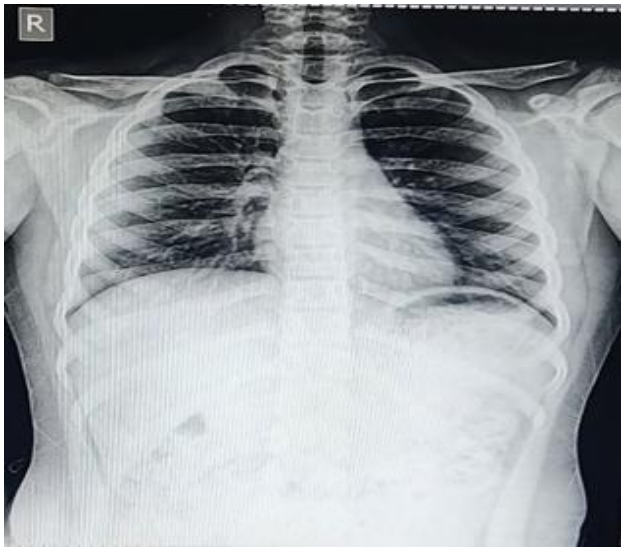

Figure 4: X-ray chest posterior-anterior view after extraction of foreign body.

DISCUSSION

The diagnosis of bronchial foreign body is usually made by considering age of patient, careful history taking, clinical examination and imaging studies like plain radiography or low dose computed tomography.[4] As the most common age group for foreign body aspiration is between 1 to 4 years, we did not suspect foreign body as the cause for acute symptoms in our patient initially.

The mainstay of treatment for removal of the foreign body is bronchoscopy either rigid or flexible but over the years clinicians prefer rigid bronchoscopy. The visualized foreign body through bronchoscope can be removed using various techniques and it depends on the object's shape, size, context, and sharpness.[5] In most cases, a

conventional grasping forceps can be convenient and successful. However, smooth objects may not be grasped with conventional forceps where retrieval baskets are used. Unfortunately, in our patient both the techniques were not successful. Few patients may need open exploratory thoracotomy in whom all attempts of bronchoscopy failed.

Narang et al used a surface magnet in the removal of another bronchial magnet in a seven-year-old girl.[6] Similarly, Sarafi et al used handmade magnet powered grasping forceps to remove bronchial magnets in whom multiple attempts were failed by using conventional bronchoscopy forceps.[7]

We observed that because of high density, high weight, round shape and smooth surface of the metallic foreign body, the conventional grasping forceps did not work. Even retrieval basket also failed as it was difficult to pass it beyond the object. So, the usage of magnet powered forceps seemed rational in our patient to successfully remove the foreign body which obviated the need of an open thoracotomy.

CONCLUSION

A patient coming with acute breathing difficulty, even at adolescent age, one needs to think of respiratory foreign body aspiration. The use of magnet forceps during bronchoscopy may be beneficial in the removal of round shaped, smooth metallic bronchial foreign body.

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