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Bronchial Foreign Body Attributable to an Aspirated Marking Pin: A Case Report

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Abstract

We report the case of an 18 year old Japanese girl who suddenly started coughing after eating a piece of bread. Chest radiography revealed an aspirated marking pin used for sewing located in the right main bronchus. Using a flexible bronchoscope and a shortened endotracheal tube, we successfully removed the foreign body without any complications. Our case shows that a flexible bronchoscope can be used after intubation with an endotracheal tube cut to one-third its length to safely remove an aspirated pin.

Keywords: Aspiration, Bronchoscopy, Foreign body

Abbreviations: LCI: Lung Clearance Index; FEV₁: Forced Expired Volume in One Second; FEF₂₅₋₇₅: Forced Expired Flows between 25 and 75 Percent of Forced Vital Capacity

Introduction

Accidental foreign body aspiration into the tracheobronchial tree is not uncommon in children and adolescents. In Islamic countries, Turban pin aspiration syndrome is a new clinical entity afflicting young girls who wear turbans [1]. In Japan, marking pins are used for sewing.

Accidentally aspirated pins often lodge in the segmental bronchus with the sharp end pointing cephalad. A few cases of aspirated safety pins required open thoracostomy for removal [2]. Removal by rigid bronchoscopy is a safe method with a high success rate and is reported to be the preferred extraction method [1]. Some reports indicate that flexible bronchoscopy is superior to rigid bronchoscopy in retrieving aspirated pins [3]. However, it was reported that insertion of a flexible bronchoscope through an endotracheal tube may interfere with ventilation to a considerable degree [4]. Herein, we report a case of aspiration of a marking pin and discuss a safe procedure for its removal.

Case Report

Our patient was an 18-year-old Japanese girl who presented to the respiratory medicine department of Hakuai Hospital complaining of intractable cough and difficulty in breathing. Symptoms began immediately after eating a piece of bread.

Chest radiography revealed a foreign body associated with a marking pin in the right bronchus (Figure 1). Virtual bronchoscopy was performed with multi-slice computed tomography (CT). Threedimensional CT imaging confirmed the marking pin was in the right bronchus (Figure 1). The patient and her guardians consented to flexible bronchoscopy to remove the foreign body. Flexible bronchoscopy was performed during intravenous anesthesia with 0.1 mg g⁻¹ h⁻¹ midazolam. Respiratory depression occurred after the first few minutes of anesthesia, and flumazenil was then required to compensate. A marking pin was found stuck in the wall of the right bronchus (Figure 2). To avoid damage to the trachea and vocal cord during removal of the pin, we prepared an endotracheal tube, shortened to one-third its length. We inserted the shortened endotracheal tube into the trachea just before the pin was removed through the vocal cord. We removed the marking pin with alligator forceps, without complications.

The second day after admission, an abdominal radiography



revealed a foreign body resembling a nail in the intestines. During a

detailed interview with her father, we ascertained that she had been under great stress preparing for a university examination. The nail was spontaneously excreted in her stools within a couple of days. The patient was subsequently discharged and scheduled for a routine follow up in 1 week.

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Figure 2: An aspirated pin located in the right main bronchus was removed with flexible bronchoscopy.

Discussion

We removed an aspirated marking pin in a patient who admitted to emotional instability. Flexible bronchoscopy is reported to be a safe, easy, and successful method to remove foreign bodies such as pins [3]. A majority of cases can be successfully managed with bronchoscopy. However, unexpected complications may develop during removal. It was reported that an unusual complication was encountered during removal of an inhaled scarf pin in the trachea [4].

We were very cautious to avoid injury to the trachea and vocal cord while removing the pin. First, we use tomography-generated virtual bronchoscopy (VB) to confirm the suitability of flexible bronchoscopy. This non-invasive imaging method has been reported as a potential technique for detecting foreign bodies lodged in the airways [5]. In patients with suspected ingestion of a foreign body, initial VB may help to determine the presence and exact location of the foreign body. Second, to prevent damage to the trachea and vocal cord by the pin, we performed flexible bronchoscopy via an endotracheal tube shortened to one-third its length. The shortened endotracheal tube kept good operability of flexible bronchoscopy, and was able to protect the patient from injury during pin removal without interfering with ventilation, because she was intubated for a short period.

In summary, we described a patient who presented with an aspirated marking pin in the right main bronchus. Foreign body aspiration of pins is associated with low mortality; however, complications must be avoided during removal. Our procedure-flexible bronchoscopy during intubation with a shortened endotracheal tube-may be safe for removing an aspirated pin.

Statement Confirming Patient Consent

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

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