

A 2-year-old boy with cough and difficulty breathing is brought to the emergency department by his mother. She says that he was well and playing with his toys until 2 hours prior to presentation. He is healthy, but his 6-year old brother has a peanut allergy. The patient's temperature is 36.7 C (98 F), blood pressure is 92/48 mm Hg, pulse is 114/min, and respirations are 48/min. The patient's pulse oximetry shows 91% on room air. Physical examination shows nasal flaring and grunting with both subcostal and intercostal retractions. Wheezing is heard in the right lung field; the left field is clear to auscultation. No rales or rhonchi are noted. The remainder of the physical examination is within normal limits. Supplementary oxygen is applied. Chest x-ray reveals mild hyperinflation of the right lung. Which of the following is the most appropriate next step in management of this child?

- ☐ A. Bronchoscopy
- ☐ B. Chest computed tomography scan
- ☐ C. Chest physiotherapy
- ☐ D. Chest tube placement
- ☐ E. Intramuscular epinephrine
- ☐ F. Nebulized albuterol
- ☐ G. Racemic epinephrine

A 2-year-old boy with cough and difficulty breathing is brought to the emergency department by his mother. She says that he was well and playing with his toys until 2 hours prior to presentation. He is healthy, but his 6-year old brother has a peanut allergy. The patient's temperature is 36.7 C (98 F), blood pressure is 92/48 mm Hg, pulse is 114/min, and respirations are 48/min. The patient's pulse oximetry shows 91% on room air. Physical examination shows nasal flaring and grunting with both subcostal and intercostal retractions. Wheezing is heard in the right lung field; the left field is clear to auscultation. No rales or rhonchi are noted. The remainder of the physical examination is within normal limits. Supplementary oxygen is applied. Chest x-ray reveals mild hyperinflation of the right lung. Which of the following is the most appropriate next step in management of this child?

- ☒ A. Bronchoscopy [84%]
- ☐ B. Chest computed tomography scan [3%]
- ☐ C. Chest physiotherapy [0%]
- ☐ D. Chest tube placement [1%]
- ☐ E. Intramuscular epinephrine [3%]
- ☐ F. Nebulized albuterol [7%]
- ☐ G. Racemic epinephrine [2%]

[Proceed to Next Item](#)**Explanation:**

User Id: [REDACTED]

Respiratory distress is one of the most common presenting chief complaints in the pediatric emergency department. Although the differential diagnosis for respiratory distress is broad, this child's clinical presentation of sudden-onset respiratory distress without a preceding illness and focal findings on pulmonary examination is most consistent with foreign body aspiration (FBA). FBA is most common in children age 1-3 years. Commonly aspirated FBs include foods such as peanuts and popcorn and pieces of toys. More than half of aspirated FBs end up in the right mainstem bronchus; laryngeal and tracheal FBs are far less common.

Clinical features of FBA are shown in the table.

Clinical manifestations of foreign body aspiration

Clinical features of FBA are shown in the table.

Clinical manifestations of foreign body aspiration	
Signs & symptoms	<ul style="list-style-type: none"> • History of choking (80%-90% of cases) • Coughing • Sudden-onset respiratory distress • Cyanosis • Altered mental status
Physical examination findings	<ul style="list-style-type: none"> • Focal monophonic wheezing on affected side • Diminished aeration on affected side • Generalized wheezing • Inspiratory stridor • Hoarseness • Respiratory distress
Radiographic findings	<ul style="list-style-type: none"> • Hyperinflation or atelectasis of affected side • Visualization of foreign body

© USMLEWorld, LLC

Although chest radiographs are often obtained in patients with suspected FBA, they are normal in approximately 2/3 of cases given that most aspirated objects are radiolucent. If an FB causes partial obstruction, with air trapping during expiration, hyperinflated lungs are seen on imaging. In contrast, complete obstruction can result in atelectasis, post-obstructive pneumonia, and/or localized bronchiectasis (late feature).

The standard of care for both diagnosis and treatment of FBA is immediate bronchoscopy.

(Choice B) Although an aspirated FB may be seen on computed tomography scan of the chest, a scan is not indicated as it requires patient cooperation and only delays the diagnosis.

(Choice C) Chest physiotherapy is helpful in removing tenacious secretions and mucous plugs. It is indicated in patients with bronchiectasis.

(Choice D) Chest tube placement is indicated for patients with respiratory distress

the chest, a scan is not indicated as it requires patient cooperation and only delays the diagnosis.

(Choice C) Chest physiotherapy is helpful in removing tenacious secretions and mucous plugs. It is indicated in patients with bronchiectasis.

(Choice D) Chest tube placement is indicated for patients with respiratory distress secondary to a large pneumothorax, hemothorax, or pleural effusion. It is not indicated in this patient.

(Choice E) Intramuscular epinephrine is the first-line treatment for anaphylaxis. Anaphylaxis typically presents with respiratory distress, involvement of the skin-mucosal tissue (eg, generalized hives, itching, flushing, swollen lips and tongue), gastrointestinal symptoms (eg, crampy abdominal pain, vomiting), and hypotension. Although the patient's sibling has a peanut allergy, his clinical presentation is not consistent with anaphylaxis.

(Choice F) Although this patient has wheezing on examination, it is focal rather than generalized, as seen with asthma. Bronchodilators are not helpful in patients with FBA given that the underlying etiology is a fixed obstruction in the bronchus.

(Choice G) Nebulized racemic epinephrine is used for laryngotracheobronchitis (croup), which typically presents with mild upper respiratory symptoms, a "barky" cough, and inspiratory stridor. This child has none of these.

Educational objective:

Sudden-onset respiratory distress in a toddler with focal findings on physical examination is most consistent with foreign body aspiration. Chest x-ray is of limited help as most objects are radiolucent. A history of choking, if witnessed, is very helpful in diagnosis. Immediate bronchoscopy is indicated to remove the foreign body.

References:

1. [Indications for flexible versus rigid bronchoscopy in children with suspected foreign-body aspiration.](#)
2. [Extraction of tracheobronchial foreign bodies in children and adults with rigid and flexible bronchoscopy.](#)
3. [Foreign body aspiration in children: Experience from 2624 patients.](#)
4. [Tracheobronchial aspiration of foreign bodies and rigid bronchoscopy in children.](#)