A 19-MONTH-OLD boy had a 2-day history of intermittent cough, mild fever, and decreased appetite. Six hours prior to evaluation, the patient had had a coughing episode during which he became cyanotic while eating a piece of orange. On physical examination, he was comfortable, well nourished, and free of respiratory distress. Both tympanic membranes were erythematous. Air entry in both lungs was the same, but respiratory crackles were heard in the left lower lobe. Initial oxygen saturation was 88% on room air and 96% on 1.5 L/min of oxygen. An anteroposterior inspiratory chest radiograph was obtained (Figure 1). He was admitted to the hospital and treated with oral erythromycin and sulfisoxazole, nebulized albuterol, and oxygen. Two days later, he had another paroxysmal coughing episode with cyanosis, and a second chest radiograph was obtained (Figure 2).

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Denouement and Discussion

Orange Seed Aspiration

The child underwent rigid bronchoscopy, and an orange seed was removed from the left main stem bronchus. Foreign body aspiration into the respiratory tract in children is a common problem, and is life threatening if the object completely obstructs the larynx or trachea. Children younger than 5 years, usually between 1 and 2 years old, are at high risk of foreign body aspiration. Any type of material can be aspirated into the airways; eg, peanuts, nuts, seeds, beans, corn, hot dogs, and toy fragments. Boys are more commonly affected at a ratio of 2:1. Foreign bodies can become lodged in any portion of the airways. The most common site is the right main stem bronchus.

The clinical symptoms of foreign body aspiration range from no symptoms to severe respiratory distress, depending on the type, size, and location of the foreign body. The diagnostic clinical triad is wheezing, coughing, and decreased breath sounds. Often this triad is incomplete. Other symptoms are stridor, cyanosis, dyspnea, tachypnea, intercostal retraction, rhonchi, respiratory crackles, fever, vomiting, hemoptyis, hoarseness, and aphonia. An episode of choking associated with aspirable material is significant. Therefore, when evaluating a child with new-onset pulmonary symptoms, physicians should ask the family or caregivers if the child has had a recent choking episode.

Various studies have reported no abnormalities on chest radiographs in 6% to 80% of children with foreign bodies in the respiratory tract. Chest radiographic abnormalities are obstructive emphysema, atelectasis, consolidation, and the presence of a radiopaque object. Chest radiographs taken during inspiration and expiration are useful in detecting air trapped in the affected lung, but it is not always possible to time exposure to the phase of respiration due to the lack of cooperation from a small child. Chest fluoroscopy or lateral decubitus chest radiographs are useful to show obstructive emphysema, decreased diaphragmatic excursion, or mediastinal shift. Flexible bronchoscopy should be considered in children who do not have a definitive history of foreign body aspiration and who have unexplained recurrent or localized wheezing and/or persistent chest radiographic findings (eg, infiltrate or atelectasis) that occur in the same lung segment.

Rigid bronchoscopy is the procedure of choice to remove foreign bodies from the respiratory tract. In a few patients, endoscopic extraction may be impossible despite repeated attempts, and thoracotomy with segmental or wedge lung resection becomes necessary. Bronchiectasis, abscess, and bronchial stenosis may develop if the foreign body remains in place for a long time.

Our patient was seen after choking on a piece of orange; however, oranges are not typically associated with aspiration. The 2-day history of cough, erythematous tympanic membranes, respiratory crackles, and hypoxia suggested an infectious origin. The initial normal chest radiograph was misleading, as it was assumed that if the hypoxia was from a foreign body, radiographic changes would have been seen. This case illustrates several points. Oranges (or more importantly, orange seeds) should be considered in cases of aspiration. Parents should be instructed to remove the seeds before offering oranges or other seeded fruits to toddlers. Radiographic changes due to the aspiration of foreign bodies may not be visible initially even if there is enough obstruction to cause hypoxia. It is possible that lateral decubitus films taken at the time of presentation could be more effective in diagnosis than the anteroposterior inspiratory chest radiograph. Additional imaging studies should be considered in ambiguous cases.

Accepted for publication July 10, 1997.

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