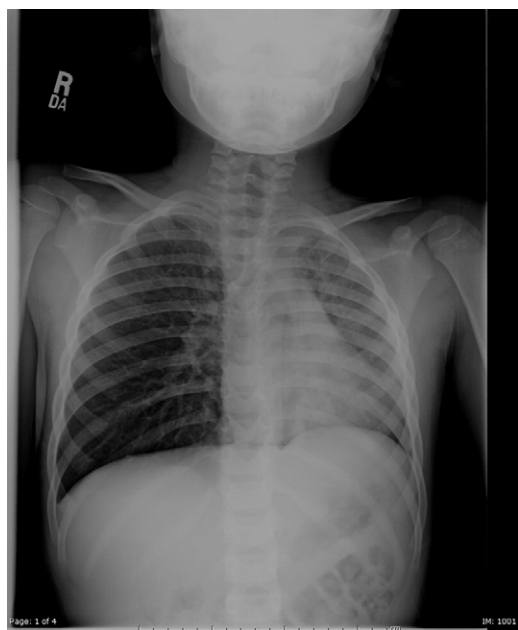


**Suhas M. Radhakrishna, MD**  
**Joshua Nagler, MD**

From the Department of General Pediatrics, Children's Hospital, Los Angeles, CA (Radhakrishna); and the Division of Emergency Medicine, Children's Hospital, Boston, MA (Nagler).

0196-0644/\$-see front matter  
 Copyright © 2007 by the American College of Emergency Physicians.  
 doi:10.1016/j.annemergmed.2006.11.011



**Figure 1.** Chest radiograph showing mediastinal shift, right-sided hyperinflation, and low lung volumes and diffuse haziness on the left consistent with atelectasis.



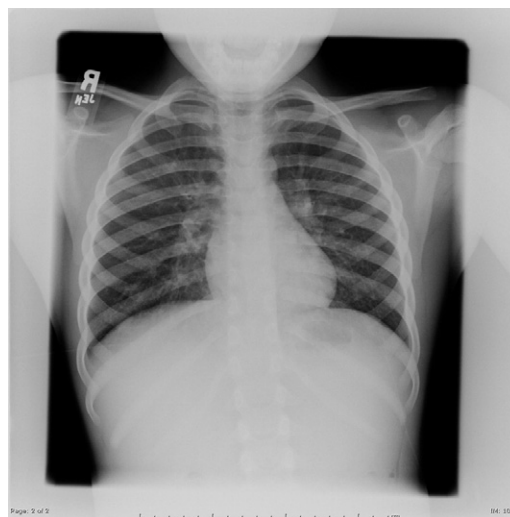
**Figure 3.** Image from bronchoscopy showing mucopurulent secretions from lower airway after removal of foreign body.

[Ann Emerg Med. 2007;49:822.]

A 7-year-old patient with asthma presented with worsening coughing and wheezing despite 4 days of albuterol and oral steroids. His temperature was 38.1°C, respiratory rate 32 breaths/min, and oxygen saturation 97% on room air. Pulmonary examination revealed faint wheezing and decreased breath sounds over the left hemithorax, with no improvement after nebulized albuterol therapy. Further questioning revealed the patient had choked on a plastic bead before the onset of his symptoms. A chest radiograph was obtained (Figure 1).



**Figure 2.** Image from bronchoscopy showing bead in takeoff from left mainstem bronchus.



**Figure 4.** Follow-up chest radiograph 1 day later, demonstrating normal lung expansion bilaterally. Used with permission of Joshua Nagler, MD, the Division of Emergency Medicine, Children's Hospital, Boston, MA.

*For the diagnosis and teaching points, see page 829.*

*To view the entire collection of Images in Emergency Medicine, visit [www.annemergmed.com](http://www.annemergmed.com)*

did not receive exogenous sodium bicarbonate. He was discharged hospital day 3. No additional cardiac electrophysiologic or genetic testing was performed, and the patient denied family history of sudden cardiac death.

Brugada electrocardiographic pattern has been reported with cocaine intoxication.<sup>2</sup> The precise mechanism for this effect is not known. Cocaine may unmask the underlying genetic myocardial defect, block sodium channels to replicate the Brugada electrocardiographic pattern, or induce the Brugada electrocardiographic pattern by another mechanism.

Cocaine is considered a possible cause of Brugada electrocardiographic pattern; however, only 2 reports have described cocaine-induced Brugada electrocardiographic pattern.<sup>1-3</sup> Brugada electrocardiographic pattern may also be misdiagnosed or unrecognized on ECG in cocaine-toxic patients.<sup>4,5</sup> In addition, as in our case, the emergency physician and ECG machine may incorrectly interpret the ECG as an "Acute Myocardial Infarction" (Figure 1). Treating this patient for acute coronary syndrome (eg, cardiac catheterization or fibrinolysis) could have led to unnecessary medical complications.

In conclusion, we report a case of Brugada electrocardiographic pattern induced by cocaine toxicity. Although Brugada electrocardiographic pattern is uncommon after cocaine intoxication, cocaine can induce a transient Brugada

electrocardiographic pattern that should be distinguished from cocaine-induced acute myocardial infarction.

Vikhyat S. Bebarta, MD  
Department of Emergency Medicine  
Wilford Hall Medical Center  
San Antonio, TX

Shane Summers, MD  
San Antonio Uniformed Services Health Education Consortium  
San Antonio, TX

doi:10.1016/j.annemergmed.2007.01.027

1. Antzelevitch C, Brugada P, Borggrefe M, et al. Brugada syndrome: report of the second consensus conference: endorsed by the Heart Rhythm Society and the European Heart Rhythm Association. *Circulation*. 2005;111:659-670.
2. Littmann L, Monroe MH, Svenson RH. Brugada-type electrocardiographic pattern induced by cocaine. *Mayo Clin Proc*. 2000;75:845-849.
3. Ortega-Carnicer J, Bertos-Polo J, Gutierrez-Tirado C. Aborted sudden death, transient Brugada pattern, and wide QRS dysrhythmias after massive cocaine ingestion. *J Electrocardiol*. 2001;34:345-349.
4. Kerns W 2nd, Garvey L, Owens J. Cocaine-induced wide complex dysrhythmia. *J Emerg Med*. 1997;15:321-329.
5. Wang RY. pH-dependent cocaine-induced cardiotoxicity. *Am J Emerg Med*. 1999;17:364-369.

## IMAGES IN EMERGENCY MEDICINE

(continued from p. 822)

### DIAGNOSIS:

*Foreign body aspiration.* There was asymmetric inflation of the 2 hemithoraces, with tracheal deviation and mediastinal shift. These findings are concerning for foreign body aspiration. Emergency bronchoscopy was performed, and a yellow bead was removed from the left mainstem bronchus (Figure 2). Culture of the purulent secretions (Figure 3) grew *Haemophilus influenzae*. Follow-up chest radiograph result the next day was normal (Figure 4).

The diagnosis of foreign body aspiration in children can be elusive, particularly when the choking event is not witnessed or reported. Initial symptoms may be subtle, or respiratory findings may be attributed to bronchiolitis, asthma, or pneumonia, delaying further evaluation. The diagnosis is delayed more than 24 hours in nearly 50% of patients and more than 1 month after the aspiration in 10% of cases.<sup>1</sup> Although foreign bodies are occasionally aspirated into the larynx or trachea, they are most commonly located in the bronchi.<sup>2</sup> Radiographic findings with bronchial foreign bodies may include hyperinflation, atelectasis, mediastinal shift, or pneumonia, although a normal radiograph result does not rule out foreign body aspiration.<sup>1,3</sup> Inspiratory/expiratory chest radiographs or fluoroscopy can increase yield. However, when clinical suspicion is high, rigid bronchoscopy is the diagnostic and therapeutic procedure of choice.

### REFERENCES

1. Tan H, Brown K, McGill T, et al. Airway foreign bodies (FB): a 10-year review. *Int J Pediatr Otorhinolaryngol*. 2000;56:91-99.
2. Black RE, Johnson DG, Matlak ME. Bronchoscopic removal of aspirated foreign bodies in children. *J Pediatr Surg*. 1994;29:682-684.
3. Steen K, Zimmermann T. Tracheobronchial aspiration of foreign bodies in children. *Laryngoscope*. 1990;100:525-529.