Continuous Diaphragm Sign

Eric R. Schmitt, MD, MPH
Michael D. Burg, MD

* Harbor–UCLA Medical Center, Department of Emergency Medicine, Torrance, California
† Kaweah Delta Medical Center, Department of Emergency Medicine, Visalia, California

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An 11-year-old female presented to the emergency department with fever of 1 day’s duration and sore throat. Her family described a 3-week history of cough with fever, trouble breathing, and wheezing. Her medical history included panhypopituitarism and asthma, and she was receiving steroid replacement therapy. She had recently undergone a dental extraction. Examination showed a temperature of 39.5°C, a 3/6 systolic murmur, bibasilar rales, and palpable cervical subcutaneous emphysema. On chest radiograph, the diaphragm appeared continuous and was not obscured by the inferior heart border (Figure 1). A computed tomography scan demonstrated the same finding (Figure 2).

The images depict a “continuous diaphragm sign,” an infrequent indicator of pneumomediastinum.1 It is seen on a frontal radiograph when gas in the mediastinum separates the heart and the superior surface of the diaphragm, and it can be seen on either upright or supine views.1,2 A continuous diaphragm may also be seen with pneumopericardium, although it is much less common.3,4 Distinguishing the 2 conditions radiographically can be challenging, but pneumopericardium typically appears as an isolated broad band around the heart rather than the multiple thin lucent streaks extending into neck seen with pneumomediastinum.3

Pneumomediastinum occurs after alveolar rupture as gas travels along the bronchovascular interstitial sheaths into the mediastinum.3,5 Nontraumatic causes include invasive procedures and mechanical ventilation, airway obstruction, barotrauma, and pulmonary or pericardial infections, and it has also been described after dental extractions.3–6 Spontaneous pneumomediastinum is

Figure 1. Frontal chest radiograph. The diaphragm is not obscured by the inferior heart border (black arrows).

Figure 2. Coronal reconstruction of chest computed tomography scan demonstrates a clear space between the heart and diaphragm (black arrows).
rare and usually benign, and tends to occur in males and younger patients.\textsuperscript{7,8} Common symptoms of pneumomediastinum are chest pain and dyspnea, and signs are subcutaneous emphysema, wheezing, and Hammon sign.\textsuperscript{3,7,8} Differential diagnoses include pneumothorax and esophageal rupture, and complications include hypotension from impaired venous return, tension pneumothorax, and cardiac tamponade.\textsuperscript{3,4,7}

Most cases follow a benign course and require no therapy, although in 1 series prophylactic antibiotics were given and all cases resolved without complication.\textsuperscript{8}

Address for Correspondence: Eric R. Schmitt, MD, MPH, Harbor–UCLA Medical Center, Department of Emergency Medicine, 1000 W Carson St, Box 21, Torrance, CA 90509. E-mail: ericrschmitt@yahoo.com.

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