

**Barry Mitchell, MD**  
**Kristen Helmick, MD**

From the Department of Internal Medicine, West Virginia University School of Medicine, Charleston Division, Charleston, WV.

0196-0644/\$-see front matter  
 Copyright © 2007 by the American College of Emergency Physicians.  
 doi:10.1016/j.annemergmed.2007.03.017



**Figure 1.** Patient after intubation.



**Figure 2.** Patient after intubation.



**Figure 3.** Venogram of superior vena cava, demonstrating stenotic and thrombosed proximal segment.



**Figure 4.** Venogram of superior vena cava after successful thrombolysis and angioplasty, showing improved proximal flow.



**Figure 5.** Patient 4 days after presentation and just before discharge. Used with permission of Barry Mitchell, MD, Department of Internal Medicine, West Virginia University School of Medicine, Charleston Division, Charleston, WV.

[Ann Emerg Med. 2007;50:500.]

A 56-year-old woman came to the emergency department after 1 day of nausea, vomiting, fever, and chills. A few hours before, she developed the sensation that “her head was swelling.” She developed respiratory distress and required intubation. The patient has a history of idiopathic gastroparesis and has had multiple surgical procedures, including placement of a gastric pacemaker and multiple central venous catheters. She had a tunneled central venous catheter placed for blood withdrawal more than 1 year ago. Physical examination demonstrated nonpitting edema and bluish discoloration from the face to the clavicles (Figures 1 and 2). Her tongue and oral mucosa were also edematous. Venous duplex of the neck and upper extremities, computed tomography (CT) angiogram of the chest, and transesophageal echocardiogram results were all negative.

*For the diagnosis and teaching points, see page 516.  
 To view the entire collection of Images in Emergency Medicine, visit [www.annemergmed.com](http://www.annemergmed.com)*

18. Jones SS, Allen TL, Flottesmesch TJ, et al. An independent evaluation of four quantitative emergency department crowding scales. *Acad Emerg Med.* 2006;13:1204-1211.
19. Joint Commission. *The Joint Commission for the Accreditation of Hospitals and Organization Specification Manual.* Available at: <http://www.jointcommission.org/PerformanceMeasurement/PerformanceMeasurement/Current+NHQM+Manual.htm>. Accessed February 20, 2007.
20. Pines JM. Profiles in patient safety: antibiotic timing and pay-for-performance. *Acad Emerg Med.* 2006;13:787-790.
21. Houck PM, Bratzler DW, Nsa W, et al. Timing of antibiotic administration and outcomes for Medicare patients hospitalized with community-acquired pneumonia. *Arch Intern Med.* 2004;164:637-644.
22. Meehan TP, Fine MJ, Krumholz HM, et al. Quality of care, process, and outcomes in elderly patients with pneumonia. *JAMA.* 1997;278:2080-2084.
23. Brodie BR, Stuckey TD, Wall TC, et al. Importance of time to reperfusion on 30-day and late survival and recovery of left ventricular function after primary angioplasty with myocardial infarction. *J Am Coll Cardiol.* 1998;32:1312-1319.
24. Pines JM, Hollander JE, Localio AR, et al. The association between emergency department crowding and hospital performance on antibiotic timing for pneumonia and percutaneous intervention for myocardial infarction. *Acad Emerg Med.* 2006;13:873-878.
25. Piantadosi S, Byar DP, Green SB. The ecological fallacy. *Am J Epidemiol.* 1988;127:893-904.
26. Fine MJ, Auble TE, Yealy DM, et al. A prediction rule to identify low-risk patients with community-acquired pneumonia. *N Engl J Med.* 1997;336:243-250.
27. Gilbert EH, Lowenstein SR, Koziol-McLain J. Chart reviews in emergency medicine research: where are the methods? *Ann Emerg Med.* 1996;27:305-308.
28. Solberg LI, Asplin BR, Weinick RM, et al. Emergency department crowding: consensus development of potential measures. *Ann Emerg Med.* 2003;42:824-834.
29. Pines JM, Morton MJ, Datner EM, et al. Systematic delays in antibiotic administration in the emergency department for adult patients admitted with pneumonia. *Acad Emerg Med.* 2006;13:939-945.
30. Williams SC, Schmaltz SP, Morton DJ, et al. Quality of care in U.S. hospitals as reflected by standardized measures, 2002-2004. *N Engl J Med.* 2005;353:255-264.
31. Magid DJ, Asplin BR, Wears RL. The quality gap: searching for the consequences of emergency department crowding. *Ann Emerg Med.* 2004;44:586-588.
32. Asplin BR, Magid DJ, Rhodes KV, et al. A conceptual model of emergency department crowding. *Ann Emerg Med.* 2003;42:173-180.
33. Metlay JP, Schulz R, Li YH, et al. Influence of age on symptoms at presentation in patients with community-acquired pneumonia. *Arch Intern Med.* 1997;157:1453-1459.
34. Waterer GW, Kessler LA, Wunderink RG. Delayed administration of antibiotics and atypical presentation in community-acquired pneumonia. *Chest.* 2006;130:11-15.

## IMAGES IN EMERGENCY MEDICINE

*(continued from p. 500)*

### DIAGNOSIS:

*Superior vena cava syndrome.* The diagnosis was suspected according to the patient's physical examination but was proven with venography. A venous duplex test failed to reveal any thrombosis. A CT angiogram of the chest did not show a mass that could cause superior vena cava compression, nor did it demonstrate thrombosis. A transesophageal echocardiogram was obtained to rule out tamponade.

Superior vena cava syndrome is usually associated with external compression from intrathoracic masses, most commonly lung cancers.<sup>1</sup> Venous thrombosis associated with central venous catheters is increasingly being recognized as a cause of superior vena cava syndrome.<sup>2,3</sup> Our patient had a central venous catheter, and dehydration from gastroenteritis likely contributed to her acute presentation. Venography demonstrated superior vena cava stenosis and thrombosis (Figure 3). Thrombolytic therapy and angioplasty were required to relieve the obstruction (Figure 4). Within 4 days of treatment, her physical examination returned to normal (Figure 5).

### REFERENCES

1. Rice TW, Rodriguez RM, Light RW. The superior vena cava syndrome: clinical characteristics and evolving etiology. *Medicine (Baltimore).* 2006;85:37-42.
2. Greenberg S, Kosinski R, Daniels J. Treatment of superior vena cava thrombosis with recombinant tissue type plasminogen activator. *Chest.* 1991;99:1298-1301.
3. Rantis PC Jr, Littooy FN. Successful treatment of prolonged superior vena cava syndrome with thrombolytic therapy: a case report. *J Vasc Surg.* 1994;20:108-113.