Superior vena cava syndrome as unilateral right breast enlargement

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ABSTRACT
This case report describes a postmenopausal woman presenting to the breast surgery clinic with right breast enlargement, new spider veins on the chest, dyspnea, and facial swelling. She was treated for lung cancer. Imaging showed her right hilar mass causing critical superior vena cava (SVC) stenosis. She was transferred to thoracic surgery, underwent SVC stent placement, and her symptoms improved. SVC syndrome as a cause of right breast enlargement is unusual; therefore, carefully reviewing symptoms, medical history, and physical examination is crucial for diagnosis. (J Vasc Surg Cases Innov Tech 2022;8:477-9.)

Keywords: Superior vena cava syndrome; Stenosis; Obstruction; Breast edema; Mastitis

We describe a case of superior vena cava (SVC) syndrome presenting with right breast enlargement in a postmenopausal woman. Diagnostic evaluation and management are discussed along with a review of the medical literature. The patient agreed to publish her case details and images.

CASE PRESENTATION
A 72-year-old Caucasian woman presented to our breast surgery clinic with a 3-day history of an enlarged, tender, and pink right breast. She had also noticed new spider veins on her right chest wall skin, new-onset head pressure, and hoarseness. She had progressive dyspnea for more than 1 month and was prescribed an inhaler. One week before presentation, she developed eyelid puffiness, and her grandson said her face looked blue. Her symptoms progressed and included facial swelling, a feeling of her eyes popping out of her head, a dry cough, and three episodes of pink-tinged phlegm. She complained of intermittent chest pain that was burning and felt like a rubber band snapping, starting midsternum and radiating under her right breast and around it laterally.

Her past medical history was significant for being an ex-smoker finished her treatment 6 months before presentation.1,3-5 Most often, breast edema is bilateral, occurring in both breasts when it presents.1 Breast enlargement

Her physical examination showed an enlarged edematous right breast with multiple spider veins on the right upper chest wall associated with right upper arm edema and bluish discoloration of her face more pronounced when lying flat (Fig 1). Laboratory work was within normal limits. A chest radiograph showed a 7-cm tumor in the right hilar area and an elevated right hemidiaphragm, unchanged from the prior study. Based on her presentation, history, examination, and chest radiograph, a diagnosis of superior vena cava (SVC) syndrome secondary to right hilar lung cancer was made. She was emergently transferred to a thoracic surgeon for further evaluation and treatment.

Notably, a computed tomography scan of the chest with contrast showed an increased size of the right upper lobe mass, demonstrating direct invasion into the adjacent mediastinum and SVC resulting in high-grade SVC stenosis (Fig 2).

She was admitted and underwent SVC stent placement (Fig 3 and Fig 4). Using intravascular ultrasound, the stent was intentionally oversized by approximately 20%. The ev3 Protégé GPS self-expanding bare-metal stent 14 mm × 60 mm was placed within the SVC only, extending up to, but not covering the left brachiocephalic vein. An Atlas angioplasty balloon 12 mm × 40 mm was used to dilate the SVC to 12 mm. She was not anticoagulated during or after the procedure. Her dyspnea and her facial and right breast swelling improved significantly by the next morning and fully resolved within a few days. She had an uneventful postprocedural course and after observation for 36 hours she was discharged to home.

DISCUSSION
The incidence of SVC syndrome in the United States is about 15,000 cases annually.1 Signs and symptoms include head, neck, arms, and/or breast swelling; cyanosis; distended subcutaneous vessels; cough; hoarseness; dyspnea; and dysphagia.1 In SVC syndrome, breast edema can occur a few days, weeks, or months before presentation.1,5-6 Most often, breast edema is bilateral, occurring in both breasts when it presents.1 Breast

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edema can be due to benign and malignant causes, including nephrotic syndrome, congestive heart failure, leukemia, lymphatic obstruction, granulomatous disease, inflammatory breast cancer, postradiation treatment, mastitis, fat necrosis, and trauma. Although rare, unilateral right breast edema has been described. Some of its causes are mastitis, postradiation changes, infection, axillary lymphadenopathy, arteriovenous dialysis complications, and venous obstruction.

Bilateral breast swelling as an unusual presentation secondary to SVC and left subclavian vein obstruction from left upper lobe lung cancer has been described as well. One case with bilateral breast swelling reported an indwelling right subclavian vein port and presented years after its removal. Another case reported unilateral right breast edema secondary to right subclavian vein compression from right lung cancer. Right breast edema has been reported as an uncommon presentation of central vein occlusion at the level of the right brachiocephalic vein secondary to a chronic indwelling right internal jugular central venous catheter and history of upper extremity deep venous thrombosis. Unilateral right breast edema owing to SVC syndrome was also described in a patient with locally advanced right lung cancer treated with chemoradiation with excellent response of tumor and possibly caused by the treatment itself, which is also rare.

**CONCLUSIONS**

Although SVC syndrome is usually not fatal, it is potentially life-threatening. When a patient presents with breast enlargement, a careful and thorough history and physical examination will lead to a diagnosis. Emergent evaluation with a contrast-enhanced computed tomography scan of the chest and subsequent urgent intervention with stent placement in the SVC will resolve...
symptoms of SVC syndrome and avoid potential life-threatening medical complications, such as respiratory compromise and obtundation. Our patient’s presentation with unilateral right breast swelling and SVC syndrome owing to lung cancer is unusual. Moreover, our case emphasizes the need for an awareness of both benign and more serious potentially life-threatening causes of unilateral and bilateral breast swelling, such as SVC syndrome owing to malignancy.

The author thanks Dr Christopher Stark, Vascular and Interventional Radiology, from Columbia Memorial Hospital and Albany Medical Center, for informative discussion, figures and captions, and for assistance with the clinical care of the patient. The author thanks Cate Polacek, MLIS, Medical Writer, for manuscript editing; Carlos Mansilla, Information Technologist, for technical editing and Holly Flouton, Health Information Manager, from Columbia Memorial Health, for information assistance; and Dr Thomas Fabian, Cardiothoracic Surgery, from Albany Medical Center, Dr Peter Lamparello from New York Oncology Hematology, Dr Anna Maria Assevero, Internal Medicine, and Dr Mehjabin Zahir, Pulmonary and Critical Care Medicine, from Columbia Memorial Health for their assistance with the clinical care of the patient.

The author did not receive funding for this case report.

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Submitted Feb 15, 2022; accepted Apr 29, 2022.