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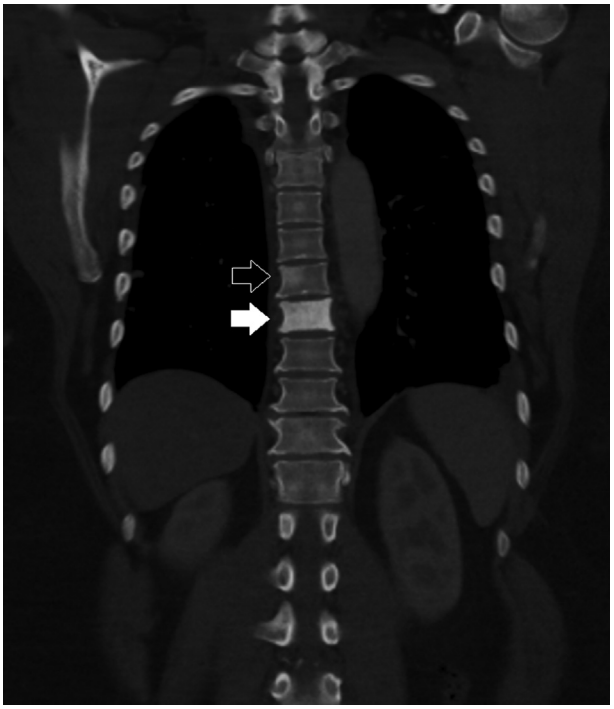

Figure 1. CT of the chest, abdomen, and pelvis (coronal view, bone window) showing complete sclerosis of the T8 vertebral body (solid arrow) and other sclerotic lesions throughout the thoracic and lumbar spine (hollow arrows), without loss of vertebral body height or other abnormality to suggest fracture.

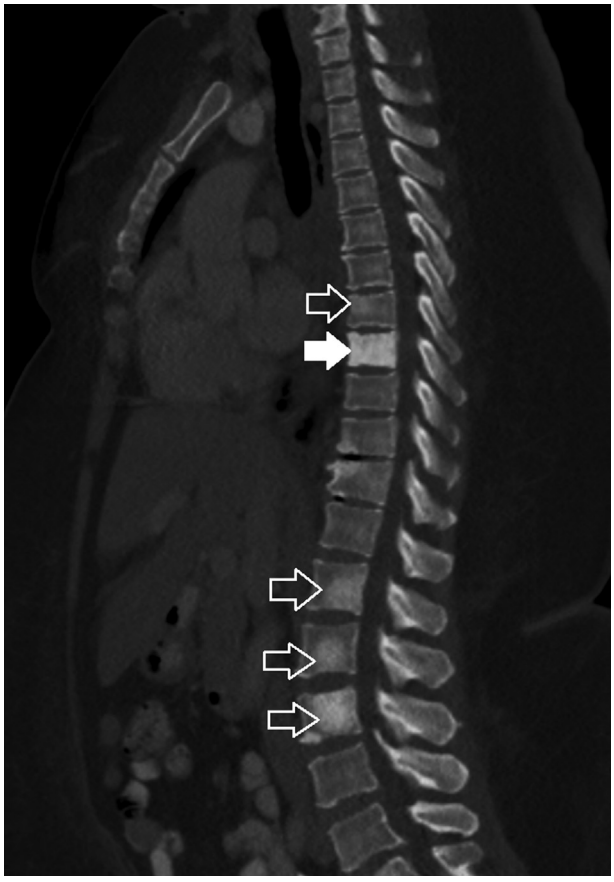

Figure 2. CT of the chest, abdomen, and pelvis (sagittal view, bone window) showing complete sclerosis of the T8 vertebral body (solid arrow) and other sclerotic lesions throughout the thoracic and lumbar spine (hollow arrows), without fracture deformity.

[Ann Emerg Med. 2019;74:601.]

A 51-year-old woman with a history of breast cancer presented to the emergency department (ED) with back pain of several months' duration. The patient was afebrile, and physical examination result was unremarkable, other than mild tenderness to palpation of the lumbosacral region. Because of concern for cancer recurrence, a computed tomography (CT) scan of the lumbar spine was ordered (Figures 1 and 2).

For the diagnosis and teaching points, see page 609.
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currents turn awry and lose the name of action." We hope that this will not be the case with TEE.

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1. Fair J, Mallin MP, Adler A, et al. Transesophageal echocardiography during cardiopulmonary resuscitation is associated with shorter compression pauses compared with transthoracic echocardiography. *Ann Emerg Med*. 2019;73:610-616.
2. Christenson J, Andrusiek D, Everson-Stewart S, et al. Chest compression fraction determines survival in patients with out-of-hospital ventricular fibrillation. *Circulation*. 2009;120:1241-1247.
3. Cheskes S, Schmicker RH, Christenson J, et al. Perishock pause: an independent predictor of survival from out-of-hospital shockable cardiac arrest. *Circulation*. 2011;124:58-66.
4. Vaillancourt C, Everson-Stewart S, Christenson J, et al. The impact of increased chest compression fraction on return of spontaneous circulation for out-of-hospital cardiac arrest patients not in ventricular fibrillation. *Resuscitation*. 2011;82:1501-1507.
5. Jost D, Degrange H, Verret C, et al. DEFI 2005: a randomized controlled trial of the effect of automated external defibrillator cardiopulmonary resuscitation protocol on outcome from out-of-hospital cardiac arrest. *Circulation*. 2010;121:1614-1622.
6. Nichol G, Leroux B, Wang H, et al. Trial of continuous or interrupted chest compressions during CPR. *N Engl J Med*. 2015;373:2203-2214.
7. Perkins GD, Lall R, Quinn T, et al. Mechanical versus manual chest compression for out-of-hospital cardiac arrest (PARAMEDIC): a pragmatic, cluster randomised controlled trial. *Lancet*. 2015;385:947-955.
8. Zhu N, Chen Q, Jiang Z, et al. A meta-analysis of the resuscitative effects of mechanical and manual chest compression in out-of-hospital cardiac arrest patients. *Crit Care*. 2019;23:100.
9. Teran F, Dean AJ, Centeno C, et al. Evaluation of out-of-hospital cardiac arrest using transesophageal echocardiography in the emergency department. *Resuscitation*. 2019;137:140-147.

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(continued from p. 601)

DIAGNOSIS:

Ivory vertebra sign caused by blastic metastasis. Ivory vertebra sign refers to a dense sclerotic vertebral body, which retains normal size and shape without any significant change in surrounding tissue or intervertebral discs. The ivory vertebra in blastic metastasis results from osteoblast stimulation that causes accelerated replacement of spinal tissue, which then converges and forms an increase in density.[1] Imaging findings may occur on single or multiple vertebral bodies. Although initially described on standard radiography, findings are best observed on CT.[2]

Patients with findings of ivory vertebra are usually middle-aged, with a history of cancer and subacute back pain. Ivory vertebra sign is typically associated with metastatic disease, most commonly of the breast or prostate. It is less frequently a manifestation of other cancers, such as lymphoma, plasmacytoma, chordoma, or primary bone sarcomas.[2] Paget's disease and osteomyelitis must also be excluded. A thorough history and physical examination, as well as a CBC count and erythrocyte sedimentation rate, should be considered while the patient is in the ED. Treatment must be aimed at the underlying pathology.[3]

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REFERENCES

1. Braun RA, Milito CF, Goldman SM, et al. Ivory vertebra: imaging findings in different diagnoses. *Radiol Bras*. 2016;49:117-121.
2. Graham TS. The ivory vertebra sign. *Radiology*. 2005;235:614-615.
3. Altman RD, Bloch DA, Hochberg MC, et al. Prevalence of pelvic Paget's disease of bone in the United States. *J Bone Miner Res*. 2000;15:461-465.