Clinical picture

Multiple pulmonary cement embolism after percutaneous vertebroplasty

A 58-year-old man presented to the emergency department with dizziness and general weakness associated with melena. His blood pressure was 80/50 mmHg, and heart rate was 110 bpm. No history of chronic medical illnesses was reported. He underwent percutaneous vertebroplasty for the fourth lumbar spine due to compression fracture 3 years ago and did relatively well thereafter without any symptoms such as shortness of breath or chest pain. He was an alcoholic and a current smoker.

The electrocardiogram showed sinus tachycardia at a rate of 113 bpm. A frontal chest radiograph (Figure 1A) showed multiple tubular and branching opacities in the pulmonary arteries (arrowheads) representing multiple pulmonary cement emboli. Abdomen X-ray (Figure 1B) showed residual radiopaque cement in the perivertebral vein (arrowhead) nearby the fourth lumbar vertebral body presenting leakage of the cement following the vertebroplasty. Transthoracic echocardiography showed normal right ventricular function, normal pulmonary arterial systolic pressure and no evidence of intracardiac embolus-in-transit. He underwent gastric arterial embolization for gastric ulcer bleeding and was discharged 3 weeks later.

Percutaneous vertebroplasty and kyphoplasty are now a standard procedure for the treatment of osteoporotic compression fractures of the spine. Radiopaque bone cement is injected into the fractured vertebral body under fluoroscopic guidance. Leakage of the cement is one of the frequent complications of the procedures. Because of an environment of low pressure after formation of a cavity in the vertebral body by balloon inflation, kyphoplasty reduces the risk of intravascular leakage of the cement rather than percutaneous vertebroplasty.1

Development of pulmonary cement embolization (PCE) has variably reported ranging from 1 to

Figure 1. The chest radiograph (A) shows multiple tubular and branching opacities in the pulmonary arteries (arrowheads) representing pulmonary cement emboli. Abdomen X-ray (B) shows residual radiopaque cement in the perivertebral vein (arrowhead) nearby the fourth lumbar vertebral body (arrow) presenting leakage of the cement.

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23%,¹ ² and most of the cases were incidentally detected. Only <1% of cases with PCE presented with symptoms such as shortness of breath.² The diagnosis of PCE depends on clinical history of vertebroplasty or kyphoplasty in conjunction with the presence of radiopaque cement emboli on the chest radiographs or computed tomography scans. In acute stage, administration of heparin followed by anticoagulation for 3–6 months with warfarin is recommended to reduce the risk of pulmonary infarctions and thrombus formation.² ³ Surgical removal of the emboli should be considered in cases with massive embolism when the emboli lead respiratory symptoms with RV failure.³ Conservative treatment is a usual therapeutic option in asymptomatic patients with distal and small emboli.

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Conflict of interest: None declared.

References