Pulmonary cement embolism

Pulmonary embolism, the most dreaded and, paradoxically, the least symptomatic and diagnosed complication, occurs due to the leakage of cement into the perivertebral veins to enter the pulmonary vascular circulation. Cement, used in these procedures, has a thrombogenic potential leading to pulmonary artery occlusion. PMMA embolisms are detected on X-ray as tubular or branching radiodense lung opacities ¹⁾. Computed tomography (CT) scanning helps to confirm the diagnosis while echocardiogram and pulmonary function tests are helpful additional investigations to evaluate multiple pulmonary emboli, secondary pulmonary arterial pressure elevations, and variations in lung diffusion capacity, respectively ²⁾. Postoperative chest X-ray is considered justifiable in asymptomatic patients due to high risk of pulmonary embolism ranging from 3.5 to 23%, which is supported by several studies suggesting that followup with chest radiograph, especially in the first 24 hours following percutaneous surgery, is a beneficial measure to detect embolism, even in asymptomatic patients ³⁾.

Pulmonary cement embolisms are usually detected incidentally and less than 1% of patients have presented with clinical symptoms, which explains the lack of clarity in understanding the diagnosis and specific management of this clinical condition ⁴). Several studies confirm that patients with cement embolism are commonly asymptomatic or present with symptoms of dyspnea for brief periods of time ^{5) (6) 7) (8)}.

The risk of PMMA embolism with a paradoxical silent clinical presentation has limited the outcome of the procedure. Extreme caution is advised to medical personnel while manipulating weakened or tumor-affected vertebrae and ensures that the procedure is performed with critical monitoring and radiological followup for maximum benefit. Further studies for the risks of pulmonary cement embolisms are required, especially with comparison for the different procedures that have not been adequately studied ⁹.

Case series

Patients with pulmonary cement embolism diagnosed using chest radiography between 2008 and 2014 at one tertiary referral hospital were included. Their mortality risk was compared to that of randomly selected, age-, sex-, and year-matched patients without pulmonary cement embolism (ratio, 1:10) by using Kaplan-Meier estimates and covariate-adjusted Cox proportional regression analysis. The study included 11 patients with pulmonary cement embolism and 110 patients without pulmonary cement embolism. The patients showed no significant intergroup differences in baseline characteristics, except comorbid heart failure. During a mean follow-up duration of 1.7 ± 1.6 years, five patients (45.5%) with pulmonary cement embolism and 60 (50.0%) without pulmonary cement embolism died, mostly because of underlying malignancy. Although the patients with pulmonary cement embolism (adjusted hazard ratio, 1.10; 95% confidence interval, 0.43-2.85). Subgroup analyses showed similar results. Incidentally found pulmonary cement embolism had no significant impact on all-cause mortality ¹⁰.

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