Use of Heparin Alone in Treating Pulmonary Emboli

Found in Association with In-Transit Right-Heart Thrombi in a Nonagenarian

In patients who present with pulmonary embolism, right-heart thrombus is a rare condition that is associated with increased mortality rates, compared with pulmonary embolism alone. Thrombolytic therapy has been associated with a survival benefit in previous studies of pulmonary embolism arising from right-heart thrombus. However, older patients have been excluded from such studies because thrombolysis places them at excessively high risk of bleeding. We present a case, in a 92-year-old woman, of pulmonary embolism arising from right-heart thrombi that we successfully treated with heparin. (Tex Heart Inst J 2013;40(4):487-8)

The initial treatment of hemodynamically significant pulmonary emboli often requires thrombolytic therapy and, in some cases, pulmonary embolectomy. However, these therapies are inappropriate for frail, elderly patients because of the increased risk of bleeding. In this communication, we report the successful treatment with intravenous heparin of a nonagenarian with pulmonary emboli in association with right-heart thrombi—a condition that is a marker for hemodynamic instability.

Case Report

In March 2011, a 92-year-old woman with no history of cardiopulmonary disease presented with sudden respiratory distress and chest pain. The patient, who weighed 50 kg, was tachypneic upon arrival at the emergency department (respiratory rate, 28 breaths/min). Initial electrocardiograms and chest radiographs were unrevealing. Computed tomographic pulmonary angiograms revealed extensive bilateral pulmonary emboli involving the right and left lower lobes and subsegmental areas of the upper lobes. A transthoracic echocardiogram revealed multiple mobile densities (1–2 cm) consistent with thrombi in both the right atrium and the right ventricle (Fig. 1); these disappeared during the course of the study. Evidence of right ventricular dysfunction (dilation, hypokinesis, systolic and diastolic flattening of the interventricular septum, and severe tricuspid regurgitation) was present, and Doppler evaluation of the tricuspid valve suggested moderate pulmonary artery hypertension (40 mmHg). Lower-extremity ultrasonograms revealed acute deep-vein thrombosis involving the right external iliac vein and the right femoral and popliteal vein. The patient was treated with parenteral heparin (80 U/kg bolus followed by continuous infusion at 18 U/kg/hr, which was adjusted to keep the partial thromboplastin time between 1.5 and 2 times normal). A vena cava filter was placed, and the patient underwent subsequent anticoagulation with warfarin. She recovered uneventfully and was discharged from the hospital.

Discussion

In 1991, Redberg and colleagues reported a case in which right-heart thrombi were briefly visible while in transit to the lungs, in association with ongoing pulmonary embolism in a 65-year-old woman. Since then, appreciation of the clinical importance of right-heart thrombi has grown as a result of case reports, retrospective and prospec-
However, the mean patient ages in these reports were 62.9\textsuperscript{9} and 59.8\textsuperscript{4} years, similar to the age of the patient whose case was reported by Redberg and colleagues,\textsuperscript{1} but more than 30 years younger than our patient. Because age >75 years and low body weight (<65 kg for women; <80 kg for men) are considered risk factors for adverse events with heparin therapy,\textsuperscript{6,7} the very old are not included in treatment-outcome studies of pulmonary emboli that compare heparinization with thrombolysis.

To our knowledge, this paper is the first to report successful initial treatment with intravenous heparin of a nonagenarian with pulmonary embolism in the presence of right-heart thrombi seen in transit. Thrombolytic therapy\textsuperscript{6} and embolectomy are considered high-risk treatments in this population. This report provides evidence of successful therapy—with heparin alone—of a potentially fatal problem in a very old population.

References


