

CORRESPONDENCE

pressure (14 cm water) improved the patient's hemodynamic status (blood pressure, 140/90 mmHg; urine output, $>0.5 \text{ ml} \cdot \text{kg}^{-1} \cdot \text{h}^{-1}$; lactic acid, $<2 \text{ mmol/l}$; partial pressure of arterial oxygen, 135 mmHg with 80% oxygen), allowing further investigation. Pulmonary angiography confirmed the pulmonary embolism (fig. 1), and venocavography showed a compression on the left iliac vein (Cockett syndrome). Because of hemodynamic instability during the following 2 days, 60 mg rt-PA was administered over 6 h *in situ via* the pulmonary artery catheter but stopped at a cumulative dose of 57 mg because of bleeding on vascular puncture sites. No bleeding occurred from the wound or the uterus. Nevertheless, we obtained satisfactory hemodynamics and oxygenation and could reduce the epinephrine dosage, the fraction of inspired oxygen, and the positive end-expiratory pressure (partial pressure of arterial oxygen, 130 mmHg; arterial oxygen saturation, 98% with 40% oxygen; and positive end-expiratory pressure, 8 cm water). The cardiac output increased ($7 \text{ l} \cdot \text{min}^{-1} \cdot \text{m}^2$), and the pulmonary arterial pressure decreased (23 mmHg). Two days later, a second angiography confirmed the lung reperfusion (fig. 2). Epinephrine was discontinued 3 days later. The patient left the hospital on day 27 of admission with instructions to take an oral anticoagulant therapy.

Although we used low doses, our case and others^{2,3} illustrate the reduced bleeding complications associated with the perioperative use of rt-PA. However, the intraoperative use and the underlying coagulopathy may have increased the risk of bleeding in the case by Nishimura *et al.*¹

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In Reply:—We are grateful for the opportunity to respond to the thoughtful comments by Drs. Aya, Saissi, and Eledjam. The case they describe and the one we reported previously¹ may indicate that rt-PA can be used to treat life-threatening pulmonary embolism during and after cesarean section. We administered the dose of rt-PA as reported before in Japan, which was less than the doses reported in the United States or Europe. Because 10 mg rt-PA is equivalent to 5,800,000 units, we believe that the dose we used was not greater than that administered in the case reported by Aya *et al.* However, massive hemorrhage occurred in our case. It is imperative to try to reduce the dose of rt-PA in the future. Because we were resuscitating the patient and had no time to place the pulmonary artery catheter, rt-PA was administered *via* a right internal jugular vein in our case. But as Aya *et al.* demonstrated, when rt-PA was administered *via* the pulmonary artery catheter, the dose of rt-PA could be reduced. In the presence of severe complications, a further survey of the proper dose of rt-PA would be indicated.

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