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Pulmonary embolism after minor surgery in a patient with low-risk thrombocythemia

Satoshi Hosoi, Takehiko Adachi, Tomoko Hara, Tatsushi Nakagawa, Yukiko Sasaki, Yasushi Hara, and Nobukata Urabe
Department of Anesthesiology, Kitano Hospital, 2-4-20 Ohgimachi, Kita-ku, Osaka 530-8480, Japan

To the editor: Essential thrombocythemia (ET) is a myeloproliferative disorder with chronic peripheral thrombocytosis. The risk of thrombosis in ET patients aged less than 60 years, with no thrombotic history, and a platelet count of less than 1 500 000/mm^3 is not increased, and clinical observation alone is recommended, based on the results of a prospective study [1]. However, pulmonary embolism after abdominal surgery in a patient with low-risk thrombocythemia has recently been reported [2]. We report here the occurrence of pulmonary embolism shortly after hand and shoulder surgery in a patient with low-risk ET.

A 54-year-old woman (height, 160 cm; weight, 57 kg) presented to our hospital for the removal of subcutaneous tumors in the right wrist and shoulder. Two years previously, she had been diagnosed with hypertension, and medication for it was started. Thrombocytosis was also detected at that time, but was left untreated. Baseline laboratory studies on admission revealed hemoglobin, 13.1 g·dl^{-1}; platelet count, 787 000·mm$^{3-1}$, and white blood cell count, $11.6 \times 10^9 \cdot l^{-1}$. The patient underwent removal of the subcutaneous tumors in the right wrist and shoulder in the prone position. Anesthesia was induced with 200 mg of thiopental, 100 μg of fentanyl, 2.5 mg of droperidol, and 8 mg of vecuronium, and maintained with sevoflurane and nitrous oxide. The trachea was intubated and an elastic bandage was applied to both legs to prevent deep venous thrombosis (DVT). During the removal of the right-wrist tumor, a tourniquet was used on the right arm for 1 h (250 mmHg). The time of surgery was 1 h 5 min, and that of anesthesia, 3 h 10 min. Blood loss was indeterminable; total infusion was 1000 ml, and urine output was 200 ml during the operation. No intraoperative hypotension was observed. Recovery from anesthesia was uneventful, and the patient was transferred to the surgical ward.

Six hours after the surgery, she walked, uneventfully. Twelve hours after the surgery, she walked a second time and developed nausea, cold sweats, and hypotension (systolic blood pressure, 60 mmHg). Infusion of Ringer's lactate solution was started, but her heart rate increased to 140–150·min^{-1}. Blood gas analysis revealed severe hypoxia with mild hypercapnia (Pa_{O_2}, 37 mmHg; Pa_{CO_2}, 47.4 mmHg). As pulmonary embolism was suspected, oxygen inhalation (51·min^{-1}) was begun, and 5000 units of heparin was given. Thrombus was identified in the pulmonary artery by computed tomography (CT) with contrast. Echocardiography revealed thrombus in the right atrium and right ventricle.

Fifteen thousand units of heparin and 120 000 units of urokinase were given per day. Warfarin was started 1 week after the onset day. The thrombus was not identified in the pulmonary artery on CT with contrast after 7 days of urokinase therapy. She was discharged from the hospital on warfarin and cilostazol 22 days after the surgery, without sequelae.

The present patient had no previous history of thrombus, was 54 years old, and had a platelet count of 787 000·mm$^{3-1}$. Although a bone-marrow biopsy was not performed, she was clinically considered to have low-risk ET, and clinical observation alone was performed. The duration of surgery and the amount of blood loss were both minimal. Accordingly, we employed only elastic bandages on the lower extremities during anesthesia, and used no other means of prevention of DVT. However, pulmonary embolism occurred, probably at the time of the second walk by the patient 12 h after the surgery. The findings in this patient and a recent case report [2] suggest that the prevention of DVT by intermittent pneumatic compression and/or anticoagulant prophylaxis, such as low-dose heparin administration, should be considered in patients with low-risk ET, even for minor surgery.

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Address correspondence to: T. Adachi
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