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LETTER TO THE EDITOR

Deep vein thrombosis: how long will it remain?

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To the Editor:

A 75-year-old woman underwent computer-navigated left total knee arthroplasty (TKA) under general anesthesia with sevoflurane, fentanyl, and remifentanyl combined with ultrasound-guided femoral nerve block with a total amount of 25 mL of 0.3% ropivacaine, followed by intravenous fentanyl PCA postoperatively. She had undergone right total knee arthroplasty 3 years prior to the present surgery, and her past history was otherwise unremarkable. All the surgical and anesthesiological procedures were uneventful, and the intermittent pneumatic compression (IPC) system was immediately started after the surgery. The initial dose of once-daily subcutaneous injection of 1.5 mg of fondaparinux was started following 24 h after the surgery. As a routine algorithm to predict the presence of deep-vein thrombosis (DVT), D-dimer testing in combination with compression ultrasonography was carried out on the second postoperative day, which revealed the presence of DVT in her right soleal vein (Fig. 1). The IPC was immediately discontinued, and administration of fondaparinux was continued as a treatment for and as a prophylaxis for the further development of DVT [1, 2].

In the presence of surgical injury and absolute venous stasis with the tourniquet inflated venous thrombosis formation usually takes place on the same side as the surgery was carried out. The results prompted us to examine her past medical records, which confirmed the formation of the present DVT during her right total knee arthroplasty 3 years prior to the present surgery (Fig. 2).

Fondaparinux, a synthetic pentasaccharide, is a factor Xa inhibitor that selectively binds antithrombin and rapidly inhibits factor Xa. Since the current approval of its clinical use for the prophylaxis of DVT in the United States as well as in Japan in patients undergoing major orthopedic surgery, including total hip replacement, hip fracture surgery and total knee arthroplasty, the risk of formation of DVT has been significantly reduced [2]. Conversely, 25–70% of patients who would have undergone major orthopedic surgery before the "era of fondaparinux" could have developed DVT [3], and it may have remained for a considerable amount of time. Indeed, from 2002 to 2007, when fondaparinux was not available at our facility, the number of cases who developed DVT following total knee arthroplasty was 48 out of 180 (26.7%), whereas only 5 out of 33 cases (excluding the present case) developed DVT during total knee arthroplasty (15.1%) in 2009.

Although IPC is an effective mechanical method of DVT prophylaxis that reduces the incidence of DVT formation by more than 50%, even without the use of any anticoagulation drugs such as fondaparinux and low-molecular-weight heparin [4], its use in patients who have pre-existing DVT is contraindicated, because it could potentially cause DVT release and may facilitate the subsequent development of pulmonary embolism (PE) (detailed information on indications and contraindications of IPCs can be obtained from the manufacturers' websites: http://www.orthofix.com/products/vascular.asp) [5].

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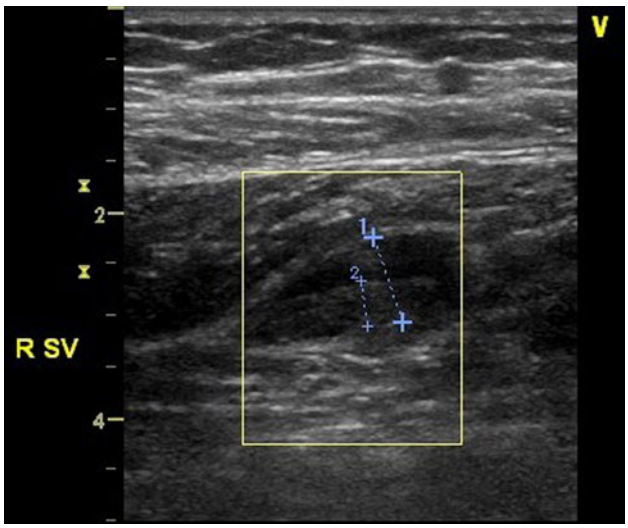

Fig. 1 B-mode ultrasonogram of the right soleal vein on the second postoperative day; thrombus formation can be seen

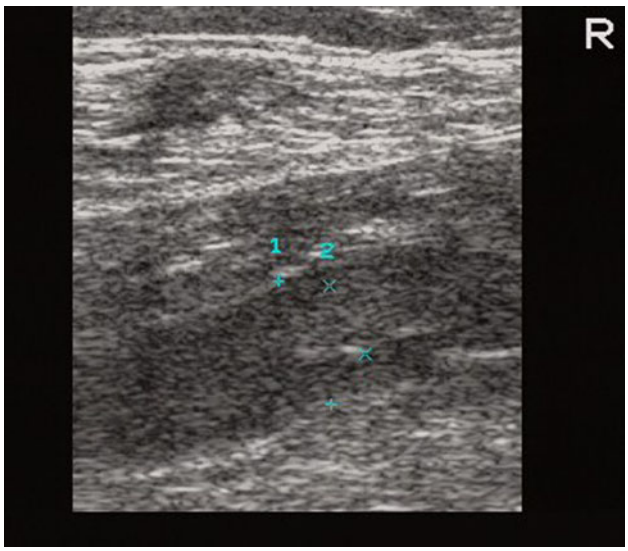

Fig. 2 The patient's past medical records revealed that thrombus formation had been already confirmed 3 years prior to the present surgery in her right soleal vein

Our present case report highlights the fact that careful examination with respect to the presence of DVT is required before applying IPC, especially in patients who underwent major orthopedic surgery before the "era of anticoagulation."

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