

Two Cases of Deep Vein Thrombosis that Developed During Pregnancy

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ABSTRACT

Objectives: Vein thromboembolism (venous thromboembolism, VTE) management in pregnancy is challenging due to lack of validated diagnostic approaches, changes in maternal physiology and other factors. Here we present 2 cases of VTE that developed during pregnancy, and make a discussion about the management.

Case reports: The first case was a 28-year-old woman, gravida 0, and para 0, who underwent medical examination for swelling and sharp pain in the left leg at the 30th week of pregnancy. She was advised follow up in 2 weeks with the hospital where she planned to deliver. Extensive thrombosis formation from the lateral left ilium to left central femoral vein was observed using compression ultrasonography. Heart sonography showed no signs of heart failure, so heparin-sustained intravenous feeding was started. At the 37th week, a retrievable inferior vena cava (IVC) filter was implanted, and labour was induced at 39 weeks. Vaginal delivery occurred after cervical dilation with a transcervical balloon. Heparin and oral medication was resumed 12 hours post-delivery. The IVC filter was replaced on day 12, and removed 25 days postpartum. The second case was a 27-year-old woman, gravida 0 and para 0, hospitalized for impending premature birth from the 29th through 35th week. Notable oedema and pain developed in the left leg 1 day post discharge. Since her D-dimer level was high (8.57 µg/mL), the patient was transferred to our hospital for suspected DVT on the same day. As DVT was observed in the left inguinal part to the femoral region on compression ultrasonography, heparin treatment was started immediately. The patient developed dyspnoea post the 36th week and pulmonary embolism in bilateral pulmonary artery main stem was found on contrast-enhanced computed tomography (CT). A planned caesarean delivery was performed with general anaesthesia shortly after IVC filter implantation. Heparin sustained dosage and oral anticoagulation drugs were resumed postpartum. After being discharged, the IVC filter was replaced in the outpatient department.

Conclusions: Early diagnosis and treatment are important for the management of DVT developed during pregnancy. Selection of approach is important as examination methods are and treatments to be used in pregnancy are limited.

Keywords: Deep vein thrombosis (DVT), Pulmonary embolism (PE), Pregnancy, Management.

INTRODUCTION

The incidence of vein thromboembolism (venous thromboembolism, VTE) is estimated to be 0.76-1.72 per 1000 pregnancies, which is 4 times higher than the incidence in age-matched, non-pregnancy controls. Isolated pelvic deep vein thrombosis (DVT) is more common in pregnancy and postpartum cases (11%). Here, we present 2 cases of VTE that developed during pregnancy.

Case Report

The first case was a 28-year-old woman, gravida 0 and para 0, with no unusual personal or family history, who got pregnant naturally. At the 16th week, the possibility of previa placenta was considered, and the patient was advised

rest. At the 30th week 2nd, edema of the left leg developed. Because of exacerbation of oedema and sharp pain in the left leg, she underwent a medical examination on the 30th week 6th and was advised follow-up. The pain aggravated in the

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31st week, and she had trouble walking. She visited the obstetrics and gynaecology clinic where she planned to deliver. Left thigh deep vein thrombosis was diagnosed on sonography, and she was transferred to our hospital.

The patient's haematocrit value was high (40.5%) and the D-Dimer level increased by 2.2 µg/mL. No changes were noted

in the diameter of the common left femoral vein on compressed ultrasound examination, and colour Doppler showed interrupted blood flow, indicating left femoral vein thrombosis and, likewise, a thrombus in the left external iliac vein (**Figure 1a**).

Figure 1

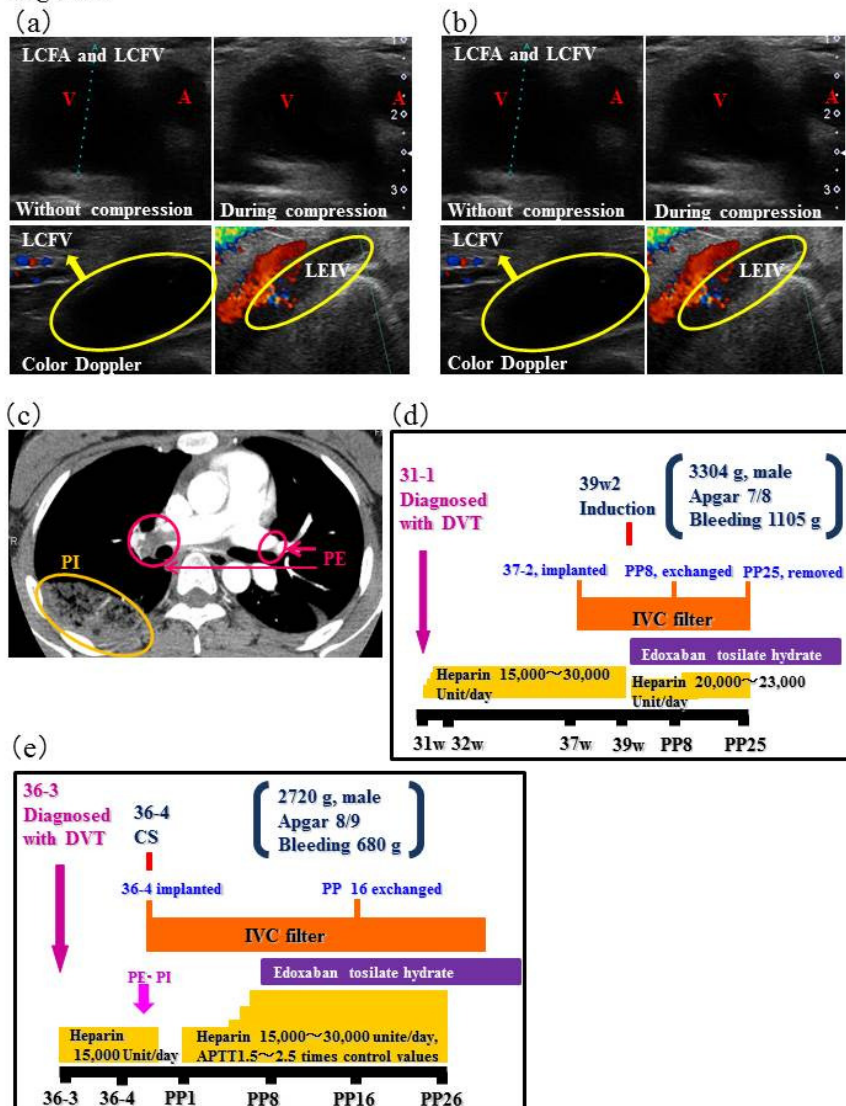


Figure 1. 1a and 1b, Evaluation of compression-caused deformation of the left common femoral vein (LCFV). Under pressure by the probe, no changes were noted in the diameter of LCFV on compressed ultrasound examination, and colour Doppler showed interrupted blood flow, indicating left femoral vein thrombosis and, likewise, a thrombus in the left external iliac vein. 1a: the first case; 1b: the second case. Figure 1c, on contrast-enhanced computed tomography (CT), the clot was found to extend from the main stem of right pulmonary artery to the inferior lobe pulmonary artery and from the main stem of left pulmonary artery to tongue ward. In lower right lung field, a frosted glass shadow suggested pulmonary infarction. Figure 1d, illustration of clinical course of the first case. Figure 1e, illustration of clinical course of the first case. LCFA = the left common femoral artery; LCFV = the left common femoral vein; LEIV = Left external iliac vein; A = artery; V = vein; PE = pulmonary embolism; PI = pulmonary infarction. CS = caesarean section; PP = postpartum.

The patient was diagnosed with DVT, and right ventricular load was not recognized on cardiac ultrasound examination. Continuous intravenous infusion of heparin was started to keep the activated partial thromboplastin time (APTT) at 1.5 to 2.5 times control values. An inferior vena cava (IVC) filter was implanted on the 37th and 4th. On the second day of the 39th week, she had a vaginal delivery after cervical dilation with a transcervical balloon. Heparin treatment was resumed and oral edoxaban tosilate hydrate was started simultaneously. The IVC filter was replaced on the 12th day and removed on the 25th day postpartum.

The second case was a 27-year-old woman, gravida 0 and para 0 with no unusual personal or family history. She was hospitalized from the 29th through 35th week for impending premature birth and was administered continuous intravenous infusion of ritodrine. On the sixth day of the 35th week, she developed left leg oedema, and Saireito was prescribed. On the 36th weeks and 2nd, she underwent a medical examination for increased leg swelling and sharp pain, following which she was transferred to our hospital with a suspected DVT because of a D-dimer level of 8.57 µg/mL.

As in the first case, no changes were noted in the diameter of the left total femoral vein on compressed ultrasound examination, and colour Doppler showed interrupted blood flow in the left external iliac vein, suggesting left total femoral vein thrombosis. Similarly, thrombosis was indicated in the left external iliac vein, and the patient was advised bed rest (**Figure 1b**). Heparin sustained dosage was started on diagnosing DVT. However, dyspnoea developed on the next day of the 36th weeks and 4th. On contrast-enhanced computed tomography (CT), the clot was found to extend from the main stem of right pulmonary artery to the inferior lobe pulmonary artery and from the main stem of left pulmonary artery to tongue ward. In lower right lung field, a frosted glass shadow suggested pulmonary infarction (**Figure 1c**).

A caesarean section was performed under general anaesthesia after emergency retrievable IVC filter implantation. Sustained heparin loading was resumed after delivery. After sustained heparin was replaced with subsequent overlap with oral anticoagulant therapy with edoxaban tosilate hydrate, the patient was discharged and followed up in the outpatient department.

DISCUSSION

The elements of Vichow's triad—venous stasis, vascular damage, and hypercoagulability—are all present during pregnancy and postpartum period. Vasodilation due to elevated progesterone levels, pelvic venous compression by the gravid uterus, and long-term immobilization (strict bed rest) for seriously ill hyperemesis gravidarum, severe preeclampsia, impending premature birth, previa placenta and the multiple pregnancies, are considered as risk factors

for DVT. In addition, because of pulsatile compression of the left iliac vein by the right iliac artery, pregnancy-associated DVT is on the left side in over 85% of cases [1,3,5-6].

The management approach for VTE during pregnancy is not well-established. Anticoagulant therapy is the preferred treatment for DVT and PE. Thrombolytic medications may be considered for the treatment of patients who are haemodynamically unstable and in cases of refractory hypoxemia or right heart dysfunction [2,4]. Since thrombolytic therapy is associated with risks, such as bleeding [8], placental abruption [1,3], preterm labour, and foetal loss [7], its use should be discouraged in patients with isolated DVT whose oxygenation and haemodynamics are adequate.

Prescription of anticoagulant therapies may vary depending on the estimated date of delivery (EDD). If VTE is diagnosed near term (over 37 weeks), IVC filter placement should be considered, and a planned induction performed after reversal of anticoagulation. If VTE is diagnosed 2 to 4 weeks prior to delivery, intravenous heparin prior to induction should be encouraged, which can be discontinued during active labour or reversed by protamine infusion if delivery is precipitous. In patients diagnosed 1 month prior to delivery, low-molecular-weight heparin (LMWH) or unfractionated heparin (UFH) should be administered every 12 hours for 24 hours prior to the planned induction. In all of the cases, once haemostasis is achieved postpartum, heparin therapy may be resumed [7].

If VTE is suspected, diagnosis and treatment with LMWH or UFH should be immediate, and continue until the diagnosis is excluded. However, it is necessary to select the most suitable management approach depending on each case. In this report, DVT was diagnosed 1 month prior to expected delivery in case 1, while VTE seemed remote (>2 weeks). However, on compressed ultrasound examination, thrombosis clot was not organized. Therefore, IVC filter was implanted. In case 2, the expected delivery was over 2 weeks and with continuous intravenous heparin infusion, planned induction was possible without IVC filter implantation; however, the patient developed pulmonary infarction and hypoxemia. Considering the risk-benefit for pregnancy in the 36th week, an emergency caesarean section was performed.

CONFLICTS OF INTEREST

The authors have no conflicts of interest relevant to this article.

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