

Lower extremity deep venous thrombosis and pulmonary embolism associated with an uterine leiomyoma

S Raguraman^a, V Vathanan^b

Abstract

Deep venous thrombosis (DVT) and pulmonary embolism (PE) are rare and life-threatening complications caused by compression of inferior vena cava (IVC) and pelvic veins by large leiomyoma of the uterus. We report a 54-year-old woman presented to the Accident and Emergency (A & E) department with complaints of left leg swelling, pain and shortness of breath. She had a history of heavy menstrual bleeding and treated with oral progesterone. Her examination revealed tachypnea and 24-week size abdominopelvic mass. Imaging investigations confirmed DVT in left iliofemoral vein and PE. MRI pelvis showed a uterus containing a large intramural fundal fibroid, compressing the IVC, common iliac veins and the right ureter. The patient successfully treated by anticoagulation therapy and delayed hysterectomy. DVT and PE are life-threatening and rare complications of leiomyoma. Early diagnosis, intense monitoring, appropriate treatment for DVT, PE and timely intervention of leiomyoma are vital elements for optimal management and outcome.

Key words: leiomyoma, deep venous thrombosis, pulmonary embolism, hysterectomy, multidisciplinary team (MRV).

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Introduction

Uterine leiomyomas are the most common benign tumour of uterus and also known as uterine fibroids affect 30% of reproductive women¹. It is asymptomatic in most of the women or presents with several different symptoms such as heavy menstrual bleeding, abdominal distension, pelvic pain or discomfort and urinary dysfunction. Besides, some rare presentations of large leiomyoma are lower-extremity oedema, intestinal obstruction and DVT.

PE is a life-threatening condition occurring about 23-69 per 100,000 population and it can cause sudden death in 25% of patients². Acute DVT and PE have several predisposing factors such as inherited disease such as thrombophilia, immobilization, obesity, cancer, pregnancy, trauma, oral contraceptives, major pelvic surgeries and rarely pelvic venous stasis due to external compression of Inferior Vena Cava (IVC)². Around 50% of patients with DVT also recognized to have PE and almost 80% of patients with PE diagnosed with DVT^{3,4}.

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An appropriate diagnosis, intense monitoring and early treatment are essential vital factors for life-saving and to prevent further complications.

We present a rare case of left iliofemoral DVT and PE caused by a large uterine leiomyoma, which successfully treated with anticoagulant therapy and interval hysterectomy.

Case report

A 54-year-old woman was urgently referred to the A&E department from General Practitioner (GP) with a history of left lower-extremity swelling for four weeks and two weeks history of shortness of breath. Apart from that, she did not have fever, chills, nausea, shortness of breath, or chest pain. She did not have any significant risk factors for DVT/PE such as prolonged immobility, recent surgery, family history of DVT/PE, smoking and usage of HRT or oral contraceptives in her history. Meantime, she had a history of heavy menstrual bleeding for six weeks. She was on norethisterone for six weeks, waiting for an ultrasound scan and hysteroscopy to assess the heavy menstrual bleeding at gynecological outpatient clinic.

Physical examination revealed her body mass index of 29 kg/m² and afebrile. She was haemodynamically stable, but her heart rate was 136 and oxygen saturation was 93% without oxygen and 100% with 8L of oxygen. Her abdomen examination revealed non-tender, firm, mobile 24 weeks gravid uterus size of the abdominopelvic mass, clinically suggestive of fibroid. She had oedema of the left lower extremity with tenderness over the left calf and medial thigh. Distal pulses were good bilaterally. Her basic blood investigations, including clotting profile, were normal. Her D-dimer was high (20,800ng/ml) and left leg duplex USS had shown left iliofemoral DVT. Her computed tomography pulmonary angiogram (CTPA) was confirmed central and bilateral PE.

Medical thrombolytic therapy was immediately started (Low molecular weight heparin), and norethisterone stopped. Her MRI pelvis revealed a uterus containing a large intramural fundal fibroid, compressing the IVC, common iliac veins and the right ureter. Further management plan discussed by the multidisciplinary team (MDT) including a gynaecologist, haematologist, interventional radiologist and vascular surgeon. MDT had initially planned to manage with IVC filter,

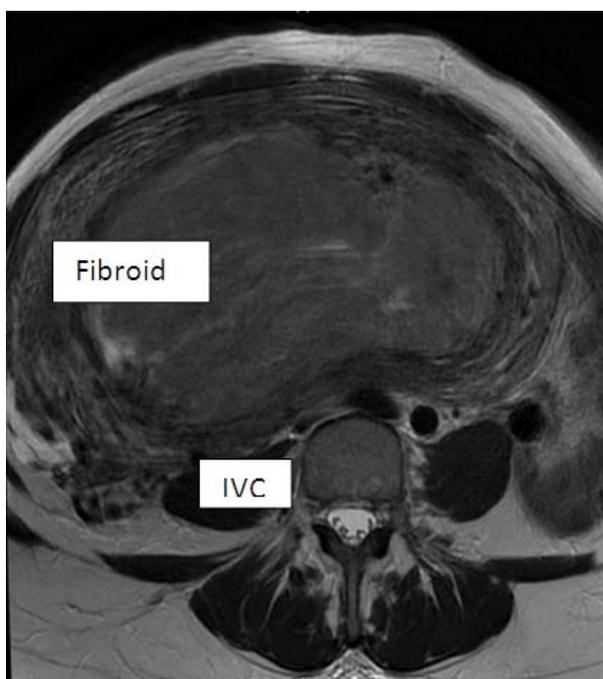


Figure 1.

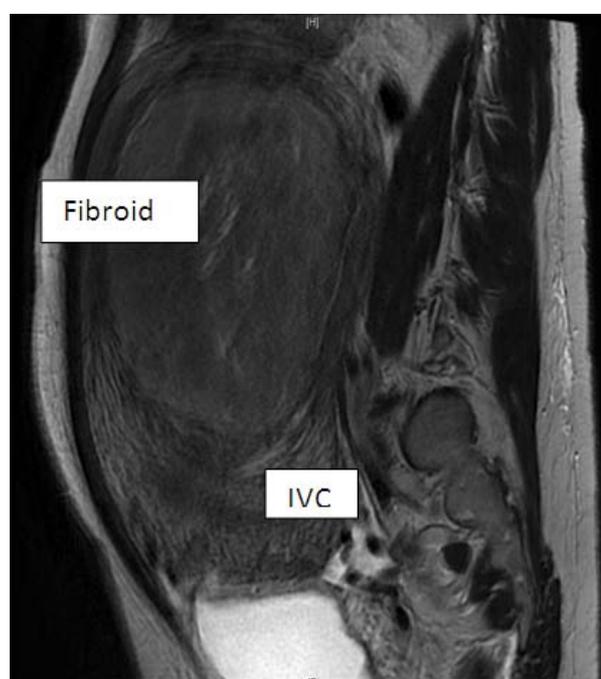


Figure 2.

Figure 1 and 2 – Transverse and sagittal view of fibroid in relation to inferior vena cava (IVC) respectively

GnRH analogue until optimizing DVT and PE with anticoagulation therapy. Then, retimed the definitive surgical management with a total abdominal hysterectomy and bilateral salphingo-oophorectomy (TAH+BSO).

Unfortunately, IVC filter insertion failed twice, mainly due to abnormal vasculature. Vascular surgical team reassessed her thrombotic status and found no significant clots in IVC. Therefore, it was planned to continue with anticoagulation therapy for six weeks and to perform TAH+BSO. She clinically improved with no further thromboembolic events during this period. TAH+BSO performed after six weeks as an uneventful procedure. Her post-operative period was uneventful.

Post-operatively therapeutic dose of low molecular weight heparin was continued up to three months. Her histology report confirmed benign leiomyoma, and she recovered well from surgery.

Discussion

DVT and subsequent PE are rare complications of large uterine leiomyoma. Virchow's triad explains the pathophysiology of thrombosis by stasis, hypercoagulability and endothelial dysfunction⁵. Venous stasis could be caused by compression of lower extremity venous plexus due to large uterine leiomyoma.

PE usually raised from lower extremity DVT. It could commonly present with chest pain, shortness of breath, cough with pink sputum and clinical signs of respiratory distress. Early diagnosis and immediate treatment are essential to prevent life-threatening events due to PE. Basic clinical assessment, including identification of risk factors for DVT/PE, proper respiratory and cardiovascular system examination and imaging studies such Lower limb duplex USS and CTPA play a pivotal role to diagnosed DVT/PE.

Management of uterine leiomyoma depends on several factors such as clinical presentations, location of fibroids, associated complications, medical fitness of patients and fertility wishes. Accordingly, management options varied as conservative, medical or surgical. Management of the large leiomyoma complicated with DVT and PE also depends on the above mention factors. However, the basic principle is to manage life-threatening complications and stabilize the patient first. Following which, leiomyoma should be treated to

prevent further complications and recurrence. Treatment depends on individual patient needs and risk factors.

Our literature survey had shown, different management options for large leiomyoma complicating DVT and PE depended on patient factors such as clinical presentations, associated complications, medical fitness of patients, fertility wishes and institutional factors such as investigations facilities and availability of treatment modalities⁶. Among reported cases, lower extremity DVT and PE commonly diagnosed with CTPA and lower limb duplex USS. In a few instances, Trans Esophageal Echocardiogram (TEE) also used to diagnose PE⁷. MRI pelvis was used to diagnose and evaluate leiomyoma in most of the cases. However, CT abdomen – Pelvis and combination of trans-vaginal and trans-abdominal USS also contributed to diagnosing leiomyoma in certain cases. All cases immediately managed with an anticoagulant. Besides, few cases with extensive venous thrombosis managed with IVC filter and embolectomy⁸. Following that, leiomyoma was managed by hysterectomy in most cases. However, young patients and women with fertility wishes were managed by myomectomy.

In the present case, clinical assessment and imaging studies such as lower limb duplex USS and CTPA were used to diagnose DVT and PE. Meantime, leiomyoma and its pressure effect on IVC diagnosed by MRI pelvis. Immediate thrombolysis treatment started with anticoagulation agents (LMWH). Norethisterone is second-generation progesterone and has a risk of thrombosis. Therefore, it stopped after diagnosis. This could have contributed to thrombotic risk along with large fibroid uterus compressing on IVC. The patient improved with anticoagulant therapy. Following which, given patient clinical condition and age, delayed hysterectomy was performed, and her recovery was uneventful and complete.

In her case, even though large fibroid uterus contributed to DVT and PE, it also prevented further clots progressing to PE due to its compression on IVC. This large fibroid uterus acted like a natural filter for clots. Therefore, there was a risk of more emboli progressing to form PE with immediate hysterectomy. Six weeks of anticoagulation therapy helped us to stabilize the clots of DVT so that it will not become loose or shoot emboli. Then the risk of emboli formation after releasing the IVC compression by large

uterus is much less. We followed this principle in managing this patient, and it succeeded in her full recovery without any further complications.

Conclusion

DVT and PE caused by the compression of IVC and pelvic veins is a rare complication of large leiomyoma of the uterus. Thrombolytic therapy associated with delayed hysterectomy could be considered to manage such cases. CTPA and lower limb duplex USS were used to diagnose DVT and PE and MRI pelvis helped to diagnose leiomyoma. Despite successful treatment and good outcome, we need to pay much attention to rare complications of uterine leiomyoma, including DVT, subsequent PE and implementation of appropriate treatment based on patient clinical conditions, available facilities and sound evidence. Early multidisciplinary involvement involving gynaecologist, haematologist, interventional radiologist and anaesthetist is crucial for a better outcome.

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