

## Case report

### Case report: a challenging case of bilateral pulmonary embolism, deep venous thrombosis and bleeding uterine fibroids in a resource poor setting in Ghana



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#### Abstract

We present a case of a 41-year-old woman previously diagnosed with uterine fibroids, who presented with sudden onset chest pain, breathlessness and severe bleeding per vaginam. A CT Pulmonary Angiogram showed bilateral pulmonary emboli with right basal lung infarction and a Doppler ultrasound revealed deep venous thrombosis of the right femoral and popliteal veins. Ultrasound of the pelvis showed submucosal and intramural uterine fibroids. The challenge of treatment with this patient was treatment of her venous thromboembolism in the presence of her bleeding uterine fibroids. The patient was started on therapeutic dose SC enoxaparin. She subsequently underwent total abdominal hysterectomy with early mobilization, reinstatement of SC enoxaparin 6 hours post-op and full anticoagulation with warfarin 3 days after surgery. This case highlights the challenges with such a case in a resource poor setting.

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## Introduction

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The occurrence of venous thromboembolism (VTE), such as pulmonary embolism (PE) and deep vein thrombosis (DVT) stem from a pathogenesis that involves Virchow's triad of hypercoagulability, venous stasis and endothelial injury [1]. Additionally, the risk factors for VTE development are related to at least one of the components of the triad. Examples of risk factors are surgery, the presence of malignancy and prolonged immobility [1]. Other risk factors include the use of oral contraceptives and hormone replacement therapy [2]. There is inconclusive evidence on the role of anti-fibrinolytic drugs such as tranexamic acid and the role that they play in thrombosis. Tranexamic acid acts by preventing the breakdown of fibrin in clotted blood and it is believed this can lead to inhibition of dissolution of thrombi [3]. Anticoagulation is a key component of VTE management in the majority of patients, however there is much to be considered when initiating anticoagulation and numerous complications can arise as a result, the most common of these being bleeding. This case report highlights the challenges of management of patients with complex cases of venous thromboembolism in a low resource setting.

## Patient and observation

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A 41-year-old woman was referred to our facility with chest pain, breathlessness on moderate exertion and severe bleeding per vaginam. She also experienced dizziness, palpitations and easy fatigability. The patient had been scheduled for a hysterectomy on account of menorrhagia secondary to bleeding uterine fibroids at the referring hospital one month prior to presentation, however reported painful swelling of the right lower limb before the surgery and was diagnosed with a DVT. She was discontinued on the combined oral contraceptive pill and commenced on anticoagulation.

After a month of anticoagulation with warfarin, she began to experience severe menorrhagia, chest pain and breathlessness. She was subsequently referred to our facility for further management. At presentation, she reported using 3-4 baby diapers daily in place of sanitary pads. She had no significant family or social history. She had a history of contraceptive use with an implantable device (Jadelle®), which was removed one year prior to the onset of her symptoms, after 5 years of use. She had had five successful vaginal deliveries at home, the most recent being 6 years ago, and had no previous spontaneous abortions. On examination, she was severely pale, tachycardic and tachypnoeic, however remained normotensive, and her peripheral oxygen saturation was 99% on room air. Her abdomen was soft and non-tender with no palpable masses.

Her ECG showed sinus tachycardia and right ventricular strain pattern. Upon investigation, she had a haemoglobin of 6.1g/dL and platelets of 244 x 109/L. A pelvic ultrasound showed an anterior wall submucosal and posterior wall intramural uterine fibroid measuring 6.48 x 5.45 x 7.12cm and 2.95 x 2.84 x 2.23cm respectively, distorting the endometrial architecture. International Normalised Ratio (INR) at presentation was 2.5. Doppler ultrasound showed DVT of the right femoral and popliteal veins. The patient could not afford D-dimer testing or an echocardiogram. She was resuscitated with IV fluids and whole blood transfusions. Oral anticoagulation with warfarin was stopped and she was given IV Vitamin K, thromboembolic deterrent stockings and then subsequently started on SC enoxaparin after consultation with the haematologists. She was started on tranexamic acid and given IM Depo-Provera® to try to curtail the bleeding, whilst funds were mobilized for an urgent CT pulmonary angiogram (CTPA). The CTPA showed bilateral pulmonary emboli with right basal lung infarction. There was an 82% and 70.1% occlusion of the first order branches of the right main pulmonary artery to the lower and upper lobes respectively.

A thrombus was seen to straddle the bifurcation of the left main pulmonary artery with a 38.9% occlusion in the inferior branch and a near total occlusion in the superior branch to the antero-medial segment. There was a focal pleural based right basal density suggestive of a small infarct. The possibility of Inferior vena cava filter insertion with subsequent total abdominal hysterectomy or uterine artery embolization was discussed with the patient, however she asserted that she could not afford the cost of the IVC filter. After consultation with the gynaecology, anaesthesia and haematology teams, the patient underwent total abdominal hysterectomy, after suspension of SC enoxaparin 24 hours prior to surgery. Six hours after surgery, enoxaparin was restarted, with early mobilization. She was restarted on warfarin three days after surgery. SC enoxaparin was stopped 5 days after initiation of warfarin, once INR monitoring was shown to be in the therapeutic range.

## Discussion

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The main risk factor contributing to venous thromboembolism in this patient was the history of contraceptive use, creating a hypercoagulable state. Additionally, the size of the fibroid uterus, though not massive could have contributed to venous stasis. The two factors alone put her at risk of developing a DVT and subsequently a PE. One could also argue that the use of the anti-fibrinolytic drug, tranexamic acid, to which the patient had previously been exposed on account of her menorrhagia, could have been a contributory factory to VTE development due to its procoagulant effect. Evidence on the risk of thrombosis with tranexamic acid use is inconclusive, but some studies have suggested that it may render a 3-fold higher risk of developing DVT [4]. The clinical prediction score for this patient, using Well's score, was 7.5 (DVT symptoms and signs = 3 + PE as likely as or more likely than alternative diagnosis = 3 + heart rate > 100bpm = 1.5). This meant even

prior to definitive diagnosis of a pulmonary embolism which was delayed due to the patient's financial difficulty in paying for diagnostic tests, the pre-test probability was high. Clinical prediction scores are important in risk stratification of patients and deciding treatment choices [5]. An ECG performed showed a sinus tachycardia, which is the commonest ECG feature of a PE, seen in up to 44% of patients with acute PE.

The patient also had evidence of right ventricular strain pattern, with T-wave inversion in leads V1-V4. When present, this feature has been linked with a greater risk of all-cause mortality and poor clinical outcome, even in normotensive patients, such as this one [6]. Other ECG features of PE include S1Q3T3 pattern seen in 15-25% of patients, P-wave pulmonale, right axis deviation and right bundle branch block, none of which were present in this patient in spite of her significant pulmonary vessel occlusion. Management of this patient's DVT at the referral facility with initiation of SC enoxaparin and warfarin and subsequent continuation of warfarin therapy led to worsening of her menorrhagia. As a result, warfarin therapy was halted upon presentation at our facility and she was restarted on SC enoxaparin alone. Though long-term anticoagulation with low molecular weight heparin can be the treatment of choice for VTE long term, the financial burden for this patient as well as the uncertainty of compliance rendered it an unfavourable treatment choice. With the consideration of severe bleeding on warfarin and the possible need for surgical intervention to curtail her menorrhagia, this patient was started on low molecular weight heparin whilst further management options were considered.

Low molecular weight heparin has been found to have superior efficacy in the treatment of VTE in certain patient groups, including those undergoing invasive procedures [7]. The possibility of a novel oral anticoagulant (NOAC) was considered, however there is some evidence which suggests that some NOACs such as rivaroxaban, may lead to an increase in abnormal uterine bleeding when compared with

enoxaparin [8]. The dilemma for continued management of this patient was how to curtail the menorrhagia in order to continue anticoagulation. Definitive surgery in the form of a total abdominal hysterectomy was discussed with the gynecology team however the risk of development of additional VTE was a concern. The possibility of an inferior vena cava filter with the aim of reducing her risk of developing a new PE postoperatively, was also discussed with the patient, however she asserted that she could not afford it. The American college of cardiology lists indications for IVC filters to include "prevention of recurrent VTE in patients who cannot receive anticoagulation due to need for surgery" [9]. The patient went on to have a successful surgery with early mobilization and reinstatement of anticoagulation. Among the few other reports of such cases found during literature review and as summarized by Khademvatani *et al.* IVC filter and embolectomy are common modalities for treatment of such patients [10]. In a resource poor setting however, this might not always be possible. Appropriate anticoagulant selection and surgery therefore with consideration of patient factors is very important.

## Conclusion

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This case highlights the challenges associated with management of a rare and complex case of venous thromboembolism associated with bleeding uterine fibroids in a low resource setting and the need for appropriate consideration of anticoagulation treatment, which must be done on a case by case basis.

## Competing interests

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The authors declare no competing interests.

## Authors' contributions

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Author NYA wrote the first draft of the manuscript. Authors BET and LJ were responsible for the literature searches and editing the manuscript. All the authors have read and agreed to the final manuscript.

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