Uterine myoma as a cause of iliac vein thrombosis and pulmonary embolism: common disease, rare complication

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Abstract

Uterine myoma is a common condition among women, which may very rarely be associated with deep venous thrombosis (VT). Few reports of myoma with associated VT have been reported in the English language and, of those, only three were associated with embolic events. This manuscript reports the case of a 29-year-old patient who presented with pulmonary embolism due to iliac VT secondary to extrinsic compression by a uterine myoma. Considering the high prevalence of myoma in the population, it is advisable to specifically consider this hypothesis in the case of female patients with pulmonary embolism or limb VT and menstrual abnormalities. This will help to avoid extensive thrombophilia investigation and to accurately determine the correct cause of VT.

Introduction

Uterine myoma is a very rare cause of venous thromboembolism (VT). Only nine reports of myoma with associated VT have been reported in the English language so far and, of those, only three were associated with embolic events [1–9]. We report the case of a 29-year-old patient who presented with pulmonary embolism due to iliac VT secondary to extrinsic compression by a uterine myoma. This is the third report of pulmonary embolism associated with myoma in the literature.

Case Report

A 29-year-old female patient was diagnosed with uterine myomatosis with several fibroids. The largest myoma was intramural with 10 × 8 × 7 cm. Another subserous myoma measured 5 × 5 × 4 cm; several others were present (Fig. 1A). She was admitted for surgery with no respiratory complaints. She had no history of smoking or drug abuse, was using no medication and had no recent air travel.

The morning before the operation, 26 h after hospital admission, she presented acute onset dyspnea, cough and pleuritic pain. Her physical examination showed blood pressure (BP) = 110/70 mmHg, tachypnea (respiratory rate = 30 ipm), tachycardia (heart rate = 130 bpm), and left basal pulmonary crackles. Her oxygen saturation was 88%. No signs of leg swelling were noticed.

Computed tomography (CT) pulmonary angiogram was performed and revealed bilateral pleural effusion with partial atelectasis of inferior lobes, main pulmonary artery enlargement (3.1 cm) and mass filling defects in the several bilateral pulmonary artery segments (Fig. 1D).

The standard CT angiography protocol calls for evaluation of leg veins in order to identify deep vein thrombosis. A right iliac vein obstruction caused by the intramural myoma was identified (Fig. 1B and C).

Echocardiogram showed normal cardiac chambers dimensions, preserved systolic function, no pulmonary hypertension (pulmonary artery systolic pressure = 28 mmHg) and a normal left ventricular ejection fraction (68%).
Subcutaneous low-weight heparin and oral anticoagulation therapy with warfarin was prescribed. During the treatment, the patient’s menstrual flow increased significantly and iron deficiency anemia was detected. The scenario was controlled with oral iron supplements and anticoagulation was not withheld.

Four months after her initial hospital admission, total hysterectomy was performed. Warfarin treatment was interrupted for 5 days before surgery. During this period, low molecular weight heparin was prescribed. After hysterectomy, anticoagulation was kept for another three months. After that, D-dimer was measured and, as it was within normal range, warfarin was discontinued.

The patient presented neither past history of pregnancy loss nor past history of thrombosis. No family history of thrombophilia was identified. Homocysteine levels were normal. Leiden factor V, prothrombin gene mutation, lupus anticoagulant, and anticardiolipin were negative. Further investigation revealed normal levels of protein C, S, and antithrombin 3.

The patient was followed for one year after the discontinuation of anticoagulation therapy and she had no additional thromboembolic events.

**Discussion**

Reports of VT caused by massive myomas are described in Table 1. In all previously described cases, except for one, hysterectomy or myomectomy were performed, but the use of adjuvant treatments such as vena cava filters, thrombolysis, and thrombectomy were heterogeneous between reports. The most frequent site of venous compression was the common iliac vein. Compressions on the left, right, and both pelvic sides were described. Similarly, there was no follow-up of any patient and the anticoagulant’s treatment duration varied.

For this patient, the option was to initiate oral warfarin after a brief course of subcutaneous low molecular weight heparin and perform hysterectomy afterwards. Since the mechanism for deep venous thrombosis and subsequent pulmonary embolism was stasis due to iliac vein direct compression, myoma removal was a definitive treatment for further emboli prevention. The patient had a favorable outcome in one year follow-up. Our chosen length of anticoagulation was in accordance to that recommended by the ninth guideline for prophylactic and therapeutic anticoagulation of the Academy of Chest Physicians [10].

In cases of VT due to myoma, the major challenge is to manage metrorrhagia prior to the surgery. Due to anticoagulation therapy, the intensity of bleeding increases and frequently causes anemia, leading to suspension of anticoagulants or even introduction of alternative therapies such as permanent cava filters. This probably justifies the fact that, in three out of the previous nine reports of myoma-related VT described in literature, cava filters were placed. The morbidity associated with permanent cava filters although low, must still be taken into account, especially when thrombosis is clearly associated with a specific causal factor whose removal would allow suspension of anticoagulation therapy three months after its initiation.

In order to optimize treatment, there must be an effort to maintain anticoagulants irrespective of the increase in metrorrhagia. Anemia must be corrected with oral or intravenous iron supplements until the surgery, which should be scheduled as soon as clinical status is stable. The pulmonary embolism was treated and hysterectomy was performed four months after the ictus. Considering that the morbidity of pulmonary embolism is higher than that of isolated VT, pros and cons of surgery have to be carefully weighed.

Even though myoma-related VT is rare, uterine myoma is a very prevalent condition among women. Since CT or ultrasound imaging of the lower limbs or abdomen is not routinely performed following detection of pulmonary embolism, this diagnosis may be missed. Considering this, it is advisable to specifically question female patients with pulmonary embolism or limb VT about menstrual abnor-
malities or to actively pursue myoma venous compression in selected idiopathic VT cases. This will help to avoid extensive thrombophilia investigation and to accurately determine the correct cause of VT.

**Disclosure Statements**

No conflict of interest declared.

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

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**Table 1. Review of all reports of myoma-related veinous thromboembolism published in English language until today.**

| Toru et al. [8] | Left common iliac to popliteal vein | Paradoxical cerebral embolism | None | Acute period |
| Wu et al. [9] | Right ovarian vein | Absent | Transabdominal myomectomy | Catheter filter | Not reported |
| Kutsukata et al. [4] | Left ileofemoral vein | Absent | Hysterectomy | Thrombectomy | 6 months |
| Kuwano et al. [5] | Left iliac vein | Absent | Hysterectomy | Cava filter | Not reported |
| Bonito et al. [1] | Not specified | Pulmonary embolism | Hysterectomy | Thrombolysis | Not reported |
| Falcone and Serra [3] | Not specified | Pulmonary embolism | Hysterectomy | Not reported |
| Phupong et al. [7] | Not specified | Absent | Hysterectomy | Cava filter | Not reported |
| Nishikawa et al. [6] | Bilateral common iliac vein | Absent | Hysterectomy | Cava filter | Not reported |
| Dekel et al. [2] | Common iliac vein | Absent | Hysterectomy | Cava filter | 4 months |

DVT, deep vein thrombosis.