Deep venous thrombosis due to massive compression by uterine myoma

Zakrzepica żył głębokich jako powikłanie mięśniaków trzonu macicy

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Summary

A 42-year-old woman, gravida 3, para 3 was admitted to hospital because of painful oedema of her right lower extremity. Initial physical examination revealed a gross, firm tumour filling the entire peritoneal cavity. Doppler ultrasound scan revealed a thrombus in the right common iliac vein, extending to the right femur and popliteal veins, and partially into the calf deep vein. Computed tomography confirmed the existence of an abdominal tumour probably deriving from the genital organs and the presence of a thrombus in the said veins.

The patient underwent hysterectomy where a myomatous uterine was removed. She was put on subcutaneous enoxaparine and compressive therapy of the lower extremities. Such symptoms as pain and oedema receded. Control Doppler scan showed fibrinolysis, partial organization of the thrombus and final vein recanalisation. After exclusion of other risk factors of deep vein thrombosis apart from stasis, we conclude that the described pathology was the effect of compression of regional pelvic structures by a uterine myoma.

Key words: uterine myoma, deep venous thrombosis.

Streszczenie

Kobieta w wieku 42 lat, wieloródka, została przyjęta do szpitala z powodu obrzęku kończyny dolnej prawej. Wstępne badanie fizykalne wykazało obecność olbrzymiego, spoistego guza wypełniającego całą jamę brzuszną. W badaniu dopplerowskim naczyń kończyn dolnych stwierdzono występowanie skrzepliny w prawej żyle biodrowej wspólnej, rozciągającej się do żyły udowej, żył podkolanowych i częściowo żył podudzia tej samej strony. W tomografii komputerowej potwierdzono obecność skrzepliny w naczyniach jak wyżej oraz litego guza w obrębie jamy brzusznej, prawdopodobnie wychodzącego z narządu rodnego.

Pacjentka przebyła operację usunięcia mięśniakowato zmienionego trzonu macicy. Została poddana leczeniu heparyną drobnocząsteczkową oraz miejscowej kompresjoterapii. Objawy w postaci obrzęku i bólu kończyny dolnej prawej ustąpiły. Kontrolne badanie dopplerowskie uwidoczniło fibrynolizę, częściową organizację oraz udrożnienie naczyń żylnych. Po wykluczeniu innych przyczyn zakrzepicy żył głębokich, poza zaburzonym przepływem krwi, stwierdzono, że opisywana patologia wynikała z masywnego ucisku struktur miednicy mniejszej mięśniakowato zmienionym trzonem macicy.

Słowa kluczowe: mięśniak macicy, zakrzepica żył głębokich.

Introduction

Intravascular thrombosis of deep veins may be the cause of very serious medical consequences including acute pulmonary thromboembolism, or even sudden death. In accordance with the classic triad of Virchow, such factors as stasis, disruption of vascular endothelium and alterations of coagulation pathways are all recognized as possible reasons for deep venous thrombosis [1–3]. Surgical procedures being performed in the abdominal region, especially on the small pelvis, pregnancy and puerperium, long-term bed rest, obesity as well as hormonal treatment, especially with oral contraceptives, are all factors that contribute towards a higher risk of deep vein thromboembolism [4–6].

This study presents the case of a 42-year-old lady admitted to hospital because of an enormous tumour of

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the abdomen accompanied by thromboembolism of the pelvic veins and deep veins of the right lower extremity.

Case report

A 42-year-old Caucasian woman, gravida 3, para 3, presented to the Department of Operative Gynaecology in the Research Institute of the Polish Mother's Memorial Hospital in Łódź, Poland, with a gross abdominal tumour, probably deriving from the genital organs with coexisting deep vein thrombosis of her right lower extremity. A few days prior to admission, the patient started suffering from severe pain of her right thigh, and could observe acrocyanosis of the entire right leg together with its oedema.

There was no history of chronic diseases, addiction, pharmacological or operating treatment in the case of this woman. The family history was also clinically unimportant.

She did not complain of any symptoms other than those mentioned above. The abdominal tumour was an unexpected finding of the physical examination upon admission to hospital, with no earlier indicators of such a problem. The patient did not suffer from any digestive, urinary or genital dysfunction. She denied undergoing regular gynaecological check-ups.

Bimanual pelvic examination disclosed a gross, firm, abdominal tumour, probably deriving from the small pelvis, filling almost the entire peritoneal cavity up to the ribs. Physical assessment revealed an additionally significant oedema of the right thigh and calf (the difference between the circumferences of the right and left thigh and calf was 17 cm and 12.5 cm, respectively). The skin of both lower extremities was of appropriate temperature and colour without any pathological eruption and the pulse of the respective arteries of both lower extremities was symmetrically consistent with the heart rate.

Evaluation of laboratory tests disclosed mild resultant iron-deficiency anaemia, an increased level of fibrinogen in the blood: 5.3 g/l (1.8-3.5); increased level of D-dimers: 10005.7 µg/l (0-200); elevated level of the protein tumour factor CA-125: 101 U/ml (0-21).

An ultrasound scan of the abdominal cavity disclosed a gross, solid tumour extending between the right liver lobe and Douglas pouch. The uterus and adnexa could not be precisely estimated. The rest of the abdominal and pelvic organs were out of pathology. Both kidneys and ureters as well as the urinary bladder were unaffected.

Examinations of the lower extremities and pelvic Doppler studies revealed a thrombus in the right common iliac vein extending to the right femur and popliteal veins, partially into the calf deep veins. The outflow of the right lower extremity continued through superficial venous vessels. An ultrasound Doppler scan of the pelvis also displayed well-developed collateral circulation. However, precise evaluation of the vena cava was not possible because of its compression by the tumour.

Contrasted abdominal and pelvic computed tomography was consistent with the physical examination and ultrasound findings, demonstrating the close proximity of the tumour to the iliac and mesenteric veins, together with the effect of the minor change of their location. The measurements of the tumour were 303×200×164 mm. Most likely, the visceral branches of the iliac arteries supported the mass. The left iliac and femoral veins did not show any features of thrombosis. On the right side, there was a thrombus in the femoral and iliac venous vessels, and the vena cava was unaffected.

The patient was referred for explorative surgery of the abdomen with the possibility of performing a hysterectomy in the event of the tumour being of the uterine origin. However, the risk of pulmonary embolism made it imperative that the intravenous preventive filter (Tulip) was placed in the vena cava first. During an attempt to insert the intravenous filter, a number of problems were faced with stretching it to the level of renal arteries ramification due to the pressure of the extravenous tumour. A decision was made to change the treatment from intravenous manipulation to explorative surgery only, with pharmacological treatment consisting of 2 subcutaneous doses of small-corpuscular heparin (Clexane 2×80 mg s.c.) together with compression therapy of the lower extremities.

The exploration revealed an excessively enlarged uterus with a diameter of 20 cm, with a gross tumour deriving from the anterior wall (with a diameter of 20 cm). Adnexa bilaterally were macroscopically unchanged. A standard hysterectomy was carried out. An intraoperative histopathological examination of the obtained material did not reveal any malignancy. The operation was performed without any complications with mild intensity of bleeding. The patient was kept under spinal anaesthesia and remained stable during the whole operation. Due to secondary anaemia (on the first day after operation, the haemoglobin and hematocrit levels were 7.4 g/dl and 23.4%, respectively), the patient was transfused with 3 units of blood. A postoperative histopathological inspection showed the uterus to have multiple subserosal and intramural leiomyomata consisting of benign spindle cells, together with foci of necrosis and hematomas. A postoperative normalization of coagulation parameters and blood cell count occurred. Oedema and pain of the right lower extremity gradually regressed. The patient was discharged on hospital day 8, after an uncomplicated postoperative course. She was prescribed enoxaparinum natricum (2×80 mg s.c.) and compression therapy of the lower extremities was recommended. On regular follow-up examinations, the patient did not present any pathologies or complaints.

All the laboratory tests including the coagulation report were unchanged. On the check-up six months after the operation, an ultrasound scan of the abdominal cavity was performed which did not reveal any pathologies. The Doppler scan of the veins in the left lower extremity showed that they are patent with standard blood flow while the Doppler scan of the right side revealed post-thrombotic changes without any features of active thrombosis. The right external and internal iliac veins were narrow with an irregular internal shape, with continuous blood flow from collateral venous circulation. The femoral vein was patent with marks of organised thrombus situated paraepithelially. The lower deep venous system was unchanged.

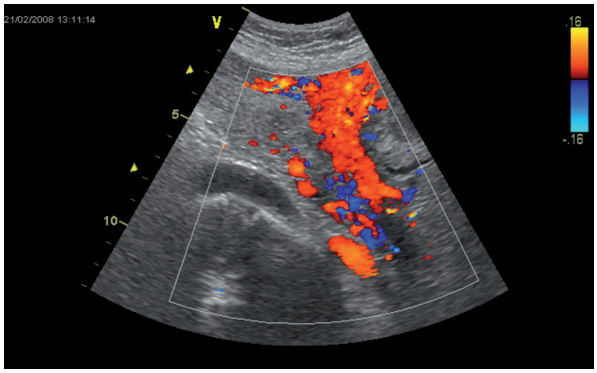

Fig. 1. Colour Doppler ultrasound scan of the right iliac vessels: hypoechogenic thrombus in the external iliac vein

Discussion

Uterine leiomyomata are smooth muscle cell tumours of the uterus. They occur in approximately 40% of women of reproductive age [7]. Depending on the size and location, they may be the reason for many pathological symptoms mainly due to the effect of compression. Urinary dysfunction such as frequent urination, hydronephrosis or hydrourether, intestine constipation are the commonest consequences of leiomyomata [1, 8, 9]. Thrombosis of ovarian and mesenteric veins leading occasionally to the process of necrosis [2, 8] or thrombosis of iliac and femoral veins with the risk of pulmonary embolism are rarely described in the literature [2, 8]. The aetiopathology of thrombosis concomitant with leiomyomata is mainly associated with compression of local organs. It is however important to eliminate the existence of other pathologies leading to thrombosis. In the case of our patient we excluded pathologies of

Fig. 2. Computed tomography scan, transverse section: fibroid mass

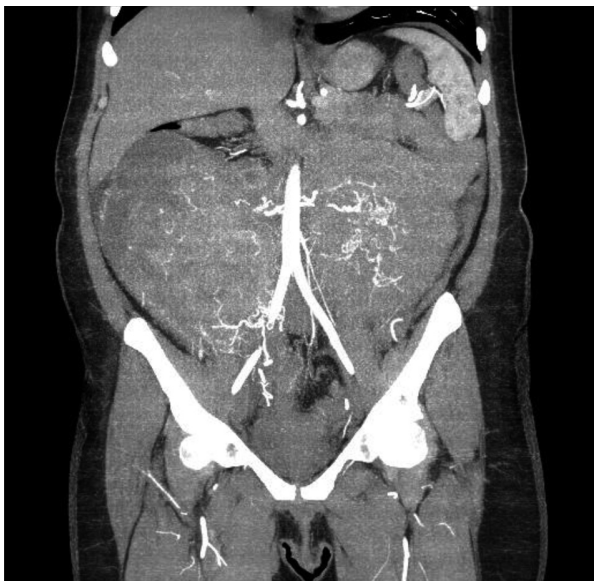

Fig. 3. Computed tomography scan, frontal section: transposition of abdominal organs by fibroid mass

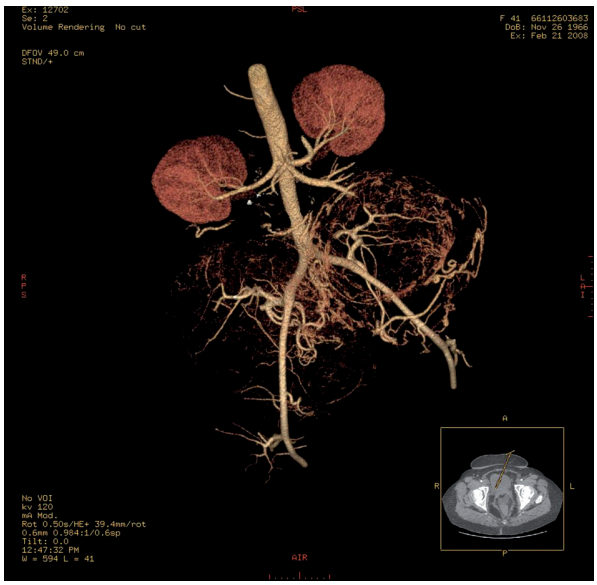

Fig. 4. Angio-computed tomography scan, 3-D reconstruction: irregular vessels of fibroid mass

coagulation pathways such as mutation of FV Leiden and PT20210A, and alterations of activated protein C resistance (APCR), antithrombin III (AT), protein C (PC) and protein S (PS), lupus anticoagulant (LA) and anticardiolipin antibodies.

There have been few illustrations of the association between deep vein thrombosis and leiomyomata in the literature so far. It is difficult to pinpoint the exact reason for such process, whether it is the effect of stasis or influence of these benign tumours on coagulation homeostasis [10]. Uterine leiomyomata contains increased amounts of mRNA for basic fibroblast growth factor (fFGF) and exhibit abnormal expression of type 1 basic FGF receptor in the endometrium [11]. FGF receptor also plays a role of the heparin binding growth factor and thus may also interfere with normal coagulation. A recent research reported elevated thrombospondin-1 expression in uterine leiomyomata compared to that seen in both normal endometrium and endometrial sarcoma. Thrombospondin is a glycoprotein involved in platelet adhesion reactions in addition to its role in inhibiting endothelial apoptosis [12]. The choice of the treatment method of leiomyomata depends on many factors such as size, number, location, type and intensity of related ailments, patient age, other accompanying diseases and procreation plans. A decision can then be made between hormonal therapy (contraindicated in women with a positive history of thromboembolism), embolisation or dissection of uterine arteries, myomectomy, laparoscopic hysterectomy and in gross tumours, hysterectomy during laparotomy. In the case of our patient the only method that could be used was hysterectomy during laparotomy.

Leiomyomata are extremely frequent in the female population, however the consequences of their appearance may vary and lead to serious complications including pulmonary embolism. The obligation of each doctor is individual and careful evaluation of every patient is required so that the best multidirectional care may be provided with appropriate therapeutic effects.

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