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Case Report

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DEEP SEPTIC PELVIC THROMBOPHLEBITIS – A LIFE-THREATENING CONDITION IN POSTPARTUM PERIOD

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SUMMARY – Deep septic pelvic thrombophlebitis is a rare but potentially devastating complication in the puerperium. Early diagnosis and aggressive treatment of this postpartum complication is essential. We report a case of a 23-year-old multipara, who presented with persistent high fever and abdominal pain two days after delivery. Diagnosis of deep septic pelvic thrombophlebitis was suspected and confirmed by using contrast-enhanced computerized tomography. Upon admission in the intensive care unit, she developed shortness of breath together with hypoxemia, which was attributed to septic pulmonary emboli. *Streptococcus pyogenes* group A was cultured from cervical swab. Treatment consisted of broad spectrum antibiotic therapy and low molecular weight heparin. She was dismissed for home care symptom-free fourteen days after delivery and referred to hematologist to diagnose the possible causes of thrombophilia.

Key words: *Thrombophlebitis, septic, postpartum; Septic embolus*

Introduction

Deep septic pelvic thrombophlebitis (DSPT) is a rare, potentially life-threatening condition during puerperium. Besides DSPT, another form of septic pelvic thrombophlebitis (SPT) has been described in the literature, i.e. ovarian vein thrombosis (OVT). SPT is not a common condition; it occurs in 1/2000 deliveries (1/9000 vaginal and 1/800 cesarean deliveries). Mortality is 18 *per* million pregnancies in the United States of America, whereas data for Slovenia are unknown[1]. According to the literature, the incidence of isolated DSPT is not known.

Clinical suspicion of the cause remains the cornerstone of diagnosis, with lower abdominal pain and puerperal pyrexia attributed to the underlying condition.

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We present a case of successful diagnosis and treatment of a 23-year-old multipara with DSPT and septic emboli in the lungs.

Case Report

A 23-year-old multipara was admitted to the Intensive Care Unit (ICU) due to hemodynamic instability in the postpartum period. She had spontaneous vaginal delivery of a live full-term male baby two days before admission to ICU. Pregnancy was uneventful, she had no concomitant diseases, and no history of thrombosis. Her previous pregnancy and postpartum course were normal. She did not require any uterine or placental instrumentation at the time of delivery.

The immediate course of her hospitalization was uneventful but on the second day she became highly febrile (up to 39.4 °C) and started to complain of severe abdominal pain in both hypogastric regions. There was no associated nausea or vomiting.

Clinical examination revealed lower abdominal quadrant pain, while uterine palpation did not elicit pain. Her vital signs were stable (blood pressure 95/65 mm Hg, pulse rate 107/min, peripheral saturation with oxygen 97%). Abdominal and gynecologic ultrasound revealed no useful finding. Cervical swab was obtained, along with two sets of blood culture and urine culture. Initial laboratory values revealed elevated levels of D-dimer (11573 mcg/L) and C-reactive protein (CRP; 106.2 mg/L). Urine analysis revealed no pyuria. The patient received cefazoline and low molecular weight heparin (LMWH) in a prophylactic dose, as well as analgesics for pain relief.

Later on the same day, she became hypotensive (blood pressure 64/31 mm Hg) with pulse rate 110/min, peripheral oxygen saturation was 97%. Aggressive fluid resuscitation was started.

Repeat gynecologic examination and vaginal ultrasound revealed no pathology. Due to the high suspicion of SPT, contrast-enhanced computerized tomography (CT) was performed. It suggested the presence of thrombus in one of the right pelvic veins, as well as dilated right ureter and right renal pelvis (Fig.1). Laboratory investigations revealed elevated levels of CRP (401 mg/L) and procalcitonin (PCT; 18.75 mg/L), as well as urea (8.5 mmol/L) and creatinine (147 μmol/L). D dimer levels were decreased (5099 mcg/L).

Metronidazole was empirically added to her therapy due to suspected complications of SPT (possible embolic thrombi in the lung and/or systemic spread of the infection). She was transferred to ICU due to hemodynamic instability, which responded poorly to fluid resuscitation. Vasopressors were not needed due to stabilization of her hemodynamics immediately upon admission. Antibiotic therapy was changed; ceftriaxone was used instead of cefazoline, and the dosage of LMWH was increased to therapeutic dosage.

Episodes of tachypnea together with peaks of body temperature elevation were noticed. They coincided with falls in peripheral oxygen saturation, as well as hypoxemia and hypocapnia in arterial blood analysis, suggesting the possible migration of septic thrombus into the lungs. Chest radiography revealed pulmonary congestion with bilateral parenchymal infiltrates and pleural effusion. She responded to intensive respiratory physiotherapy and noninvasive ventilation. Conventional mechanical ventilation was not needed.

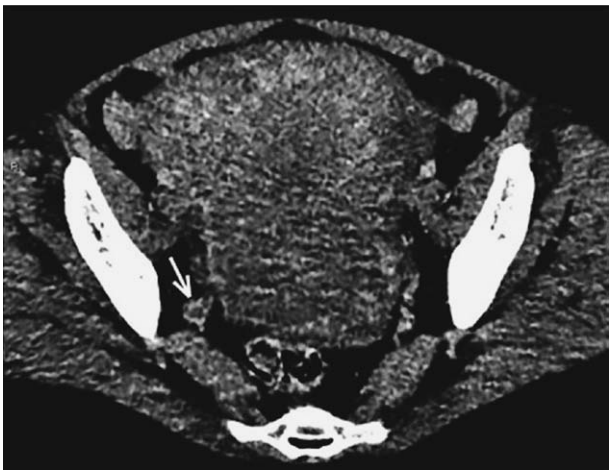

Fig. 1. Presence of thrombus in one of the right pelvic veins.

All microbiological cultures (blood, urine and sputum) remained negative but cervical smear revealed *Streptococcus pyogenes* group A sensitive to antibiotic therapy, which she already received.

She was transferred to the High Dependency Unit (HDU) after three days. She still had peaks of elevated temperature with tachypnea, which were observed rarely as compared to her stay in ICU. Her antibiotic therapy with metronidazole was discontinued on day 7 of her hospital stay and LMWH 48 hours after persistent afebrile state.

She was dismissed for home care 14 days after delivery and referred to hematologist to exclude other thrombogenic diseases.

Discussion

Deep septic pelvic thrombophlebitis is a rare, potentially life-threatening condition occurring in the postpartum period. Together with OVT, this entity is also known as SPT. DSPT and OVT share the same pathogenesis and probably represent the same process in different locations[2].

Risk factors include cesarean section, pelvic infection, induced abortion, pelvic surgery, pregnancy, uterine fibroids, underlying malignancy, and hormonal stimulation[2,3]. The condition is not unique to postpartum state.

Physiological changes in late pregnancy and puerperium contribute to the pathogenesis of the disease, i.e. venous stasis (reduced blood flow in dilated veins)

and hypercoagulability in pregnancy, as well as endothelial damage (due to intrapartum trauma or uterine infection)[2-4].

Clinical presentation is crucial to confirm the diagnosis. DSPT presents in the early period after delivery and is characterized with peaks of fever and signs mimicking endometritis, such as persistent pain in lower abdominal region, as described[1,2]. Other causes of puerperal pyrexia must be excluded such as endometritis and parametritis, pelvic abscess, infection of the wound following cesarean section, episiotomy or vaginal/cervical lacerations, mastitis, drug induced fever and other causes of possible infection, mainly those affecting the urinary tract. Clinical presentation of tachypnea/dyspnea can mimic classic pulmonary embolism and underlying deep vein thrombosis[1,3,5,6].

According to some authors, DSPT is a diagnosis of exclusion[2]. However, the patient with high suspicion of the diagnosis needs to have basic laboratory results and microbiological cultures taken. DSPT is confirmed with imaging techniques. Laboratory results are nonspecific to exclude other causes of pyrexia and/or puerperal sepsis[2]. Elevated levels of CRP, as well as PCT can be observed, as seen in our case. Elevated levels of urea and creatinine, as described, were attributed to postrenal obstruction.

Microbiological cultures are rarely positive; in spite of urine, sputum and blood cultures taken, only cervical swab tested positive for *Streptococcus pyogenes* group A in our case. Positive blood culture is almost an exception to the rule; a recent study showed its incidence below 3%[5]. Most of other isolates described in the literature included *Escherichia coli*, anaerobes, staphylococci, and streptococci[1,5].

As mentioned above, DSPT is confirmed with imaging techniques. Imaging techniques include uterine phlebography, femoral venography, and ultrasonography[1]. Nowadays, CT and magnetic resonance imaging (MRI) are used. Both methods are superior to ultrasonography, CT being the standard technique and MRI gaining in popularity owing to the absence of ionizing radiation[2,6]. Both methods have high sensitivity and specificity (contrast enhanced CT 100% *vs*. 92% and 99% *vs*. 100%, respectively)[5,6].

Due to the previous nonconclusive abdominal and vaginal ultrasound (mainly to exclude other differential diagnoses), contrast enhanced CT was performed in our case showing the presence of thrombus in one of the right pelvic veins, as well as consequently dilated right ureter and right renal pelvis.

Treatment consists of broad spectrum antibiotics and anticoagulation therapy[1]. Peripartum antibiotic coverage in our case consisted of cephalosporine; due to insufficient coverage of possible pathogens, metronidazole was empirically added to therapy. The length of antibiotic therapy is still a matter of debate; according to some authors, a short course is advocated, antibiotic should be discontinued after clinical improvement (afebrile state for at least 48-72 hours) together with normalization of laboratory values, whereas others recommend continuation of therapy until discharge from the hospital[5].

Controversy also exists concerning anticoagulation therapy. Therapeutic dosage of LMWH was used in our case, although some authors recommend the application of conventional heparin or even placement of a vena cava filter in cases of pulmonary embolism[5]. We enlarged the dose of LMWH to therapeutic levels and continued both therapies until the patient was afebrile for 48 h, as recommended[2]. We strongly suggest the shortest possible course of antibiotic therapy, according to the local policy of prevention of multidrug resistance.

Pulmonary embolism of septic emboli is a known complication. Others include migration and spread of thrombosis to abdominal veins and veins of lower extremities. Mortality is very low (2%), mainly attributed to systemic spread of infection or to septic emboli to the lungs[2,5,7].

The attacks of tachypnea and dyspnea in our patient were attributed to septic pulmonary embolism (together with concomitant fever, typical arterial blood analysis, and chest radiogram). They were observed during her treatment in the ICU and subsided in HDU.

Recurrence of the condition is possible[2].

To exclude other causes of thrombophilia (besides pregnancy as a hypercoagulable state) in spite of negative history data, our patient was referred to hematologist. In case of future pregnancies, prophylactic dosage of LMWH should be considered[8].

In conclusion, DSPT is a rare, potentially life-threatening condition. It must be presumed clinically in patients with unexplained persistent fever in the first days after delivery. Since the number of cesarean sections and instrumental deliveries (both being risk factors for DSPT) is increasing, we should be aware of the possible rising incidence of the condition.

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Sažetak

DUBOKI VENSKI SEPTIČNI TROMBOFLEBITIS – ZA ŽIVOT OPASNO STANJE NAKON POROĐAJA

S. Kozar i *H. Šavc*

Duboki venski septični tromboflebitis je rijetka, ali isto tako moguća ozbiljna komplikacija poslije porođaja. Rana dijagnoza i agresivno liječenje ove komplikacije nakon porođaja je od najvećeg značenja. Prikazujemo slučaj 23-godišnje višerotkinje s prisutnom ustrajnom visokom temperaturom i bolom u trbuhu dva dana poslije porođaja. Postavljena je sumnja na dijagnozu septičnog tromboflebitisa dubokih zdjeličnih vena, koja je potvrđena nalazom kontrastne kompjutorske tomografije. Nakon prijma u Jedinicu intenzivnog liječenja bolesnica je teško disala i imala znakove hipoksemije povezane sa septičnim ugruškom u plućima. Iz uzetog brisa vrata maternice dokazan je *Streptoccocus pyogenes* grupe A. Terapija je obuhvatila primjenu antibiotika širokog spektra i niskomolekularnog heparina. Bolesnica je puštena kući bez znakova bolesti 14 dana nakon porođaja i upućena specijalistu hematologu na daljnju diagnostiku mogućeg uzroka trombofilije.

Ključne riječi: *Septični tromboflebitis dubokih zdjeličnih vena; Stanje nakon porođaja; Septični ugrušak*