G Chir Vol. 40 - n. 2 - pp. 112-114
March-April 2019

original article

Long-term steroid treatment: a potential risk factor for uterine rupture during pregnancy?

C. GRIGORIADIS[1,2], A. TYMPA[3], V. DELIVORIA[4], S. BAKA[5], K. THEODORAKI[3]

SUMMARY: **Long-term steroid treatment: a potential risk factor for uterine rupture during pregnancy?**

C. GRIGORIADIS, A. TYMPA, V. DELIVORIA, S. BAKA, K. THEODORAKI

Aim. *Uterine rupture during pregnancy is a rare but life threatening event in Obstetrics, with potentially catastrophic consequences for both the fetus and the mother. There are few published case reports that investigate the possible association between long-term steroid treatment and uterine rupture during the antenatal period.*

Case report. *A 33-year-old G2P1 woman with obstetrical history of one previous transverse low-segment caesarean section presented at the 30th week of gestation with severe abdominal pain which started spontaneously one hour before. She had medical history of pemphigus under long-term treatment with prednisolone. Clinical examination showed acute abdomen while the fetus developed heart rate decelerations. Emergency caesarean section via Pfannenstiel incision under general anaesthesia was performed. Uterine rupture was recognised with localization not at the scar of the previous caesarean section but at the left posterolateral site of the uterine fundus. A healthy premature male infant with an excellent Apgar score and weight of 1510 gr. was delivered by a low-segment caesarean section. Surgical repair of the site of the rupture with isolated sutures followed. There was no need for hysterectomy as hemorrhage was controlled and hemodynamic stability of the woman was restored.*

Discussion. *Uterine rupture should be included in the differential diagnosis by all obstetricians not only during labour but in acute abdominal pain during the antenatal period as well.*

KEY WORDS: Uterine rupture - Pregnancy - Emergency - Steroids - Pemphigus.

Introduction

Uterine rupture during pregnancy, defined as complete disruption of all uterine layers, is an extremely rare but life threatening situation in Obstetrics with potentially catastrophic maternal and fetal consequences. Previously published studies reported an incidence of uterine rupture during pregnancy estimated at approximately 0.8 to 5.3 per 10.000 births (1). However, this incidence gradually increased during the recent decades in association with advanced maternal age, increasing numbers of transmyometrial surgical interventions prior to gestation and higher rate of prostaglandin or oxytocin use at labour (2-4).

Uterine rupture during pregnancy could lead to major complications. Delayed diagnosis increases the risk for maternal and neonatal morbidity and mortality. Severe complications associated with uterine rupture during the antenatal period and labour are major maternal hemorrhage, need for blood transfusion or hysterectomy in order to restore hemodynamic stability of the pregnant woman, bladder injury and risk for vesicovaginal fistulae, maternal death, as well as prematurity, lower Apgar scores and neonatal death.

It is important for all Obstetricians to understand the etiology and potential risk factors for uterine rupture during pregnancy in order to establish closer monitoring in suspicious cases and achieve direct diagnosis and management. The risk factors of

[1] 2nd Department of Obstetrics and Gynecology, Aretaieion Hospital, University of Athens, Athens, Greece
[2] Leto Maternity Hospital, Athens, Greece
[3] 1st Department of Anesthesiology, Aretaieion Hospital, University of Athens, Athens, Greece
[4] Neonatal Intensive Care Unit, Leto Maternity Hospital, Athens, Greece
[5] Biopathology Laboratory, Aretaieion Hospital, University of Athens, Athens, Greece

Corresponding author: Costantino Grigoriadis, e-mail: xarisgrigoriadis@yahoo.gr

uterine rupture during pregnancy and labour include advanced maternal age, fetal macrosomia, shorter interval between deliveries, single-layer closure of uterus at previous caesarean section, multiple previous caesarean deliveries, transmyometrial surgical interventions (transabdominal or laparoscopic) prior to gestation, as well as trial of labour after caesarean section (5).

Several cases of rupture in unscarred gravid uteri have been reported (6-8). Myometrial weakness due to trauma, congenital anomaly or use of uterotonic drugs were possible causes of rupture in these cases. In one case of uterine rupture at the 23th week of gestation in a primigravid woman under long-term treatment with prednisolone for systemic lupus erythematosus, without history of uterine scarring or other known risk factors, systemic steroids possibly increased the risk of spontaneous uterine rupture (8).

We present a rare case of uterine rupture during pregnancy that was successfully managed with favorable maternal and neonatal outcome in a woman under long-term steroid treatment for pemphigus.

Case report

A 33-year-old G2P1 woman with obstetrical history of one previous transverse low-segment caesarean section presented at the 30th week of gestation with severe abdominal pain which started spontaneously one hour before. She had medical history of pemphigus under long-term oral treatment with prednisolone (up to 30 mg/day). She was also under low molecular weight heparin (LMWH) due to FV Leiden mutation heterozygosity and history of one miscarriage. Clinical examination showed acute abdomen while the fetus developed heart rate decelerations.

Emergency caesarean section via Pfannenstiel incision under general anaesthesia was performed. Entering the peritoneal cavity, hemoperitoneum and active hemorrhage were found. Uterine rupture was recognised with localization not at the scar of the previous caesarean section but at the left posterolateral site of the uterine fundus. A healthy premature male infant with an excellent Apgar score and weight of 1510 gr was delivered by a low-segment caesarean section.

Surgical repair of the site of the rupture with isolated sutures followed. There was no need for hysterectomy as hemorrhage was controlled and hemodynamic stability of the woman was restored. The post-operative period was uncomplicated and the mother was dismissed from the Hospital at the third post-operative day, while the infant received appropriate care at the Neonatal Intensive Care Unit because of prematurity for forty days with favorable perinatal outcome.

Discussion

Uterine rupture during pregnancy is associated with high incidence of maternal and perinatal mortality. It is a real emergency situation in Obstetrics that needs direct diagnosis and appropriate management via emergency surgical intervention. It is characteristic that large retrospective analysis of 126 cases of uterine rupture reported an incidence of maternal mortality at 13.5% and perinatal mortality at 83.3% (9). Another recently published 14-year retrospective analysis demonstrates that the longer the interval between rupture and surgical intervention, the longer the duration of hospitalization was (10). In our case direct diagnosis and emergency caesarean section lead to an ideal perinatal outcome. Hemodynamic stability of our patient was restored without need for hysterectomy and a healthy premature infant with an excellent Apgar score was delivered.

It seems that the most common modes of presentation in case of uterine rupture during pregnancy are hypotension, intrauterine death, abdominal tenderness and fetal distress (9). Our patient presented with severe abdominal pain which started spontaneously, while clinical examination showed acute abdomen and fetal distress.

According to the vast majority of published studies, it seems that the lower uterine segment, composed by uterine isthmus and inner cervical os is the most vulnerable part of uterus for rupture as it contains less muscle fibers during the second and third trimester (4, 10). Interestingly, larger size of uterine rupture was noted at fundus based on medical records that were analyzed by You SH et al. (4). In our presented case it is characteristic that a defect of approximately 3.5 cm was recognised with localiza-

tion not at the scar of the previous low-segment caesarean section but at the left posterolateral site of the uterine fundus.

The above mentioned unexpected localization of the defect in our patient in association with her medical history of pemphigus under long-term treatment with prednisolone led to our proposal that the major etiologic parameter of this complication was not the previous caesarean section but the potential adverse effects of high dosage systemic steroids administration. In addition, another case report study published by Noh JJ et al. in 2013 investigates the potential role of prednisolone in uterine rupture during pregnancy in a woman diagnosed with systemic lupus erythematosus (8).

The underlying pathophysiological mechanism could be that long-term glucocorticoid exposure may have potentiated the uterine growth suppression by estrogen receptor suppression in the uterus and wasting of the muscle because of decreased protein synthesis (11). In addition, reported cases of spontaneous rupture of aorta, spleen and tendons in patients with systemic lupus erythematosus support the hypothesis that autoimmune diseases and long-term steroid treatment may be associated with uterine rupture (12). It is important for Obstetricians to be aware of these morbidity rates for optimal antenatal care.

Conclusions

Uterine rupture is a real emergency situation in Obstetrics and direct diagnosis is the key for ideal management. All Obstetricians should include this condition in the differential diagnosis not only during labour but in cases of acute abdominal pain during the antenatal period as well.

Conflicts of interest

All Authors declare no conflict of interest.

References

1. Hofmeyr GJ, Say L, Gulmezoglu AM. WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. BJOG. 2005;112(9):1221-8.
2. Al-Zirqi I, Stray-Pedersen B, Forsen L, Daltveit AK, Vangen S. Uterine rupture: trends over 40 years. BJOG. 2016;123 (5):780-7.
3. Yoshiki N. Single-incision laparoscopic myomectomy: a review of the literature and available evidence. Gynecol Minim Invasive Ther. 2016;5(2):54-6.
4. You SH, Chang YL, Yan CF. Rupture of the scarred and unscarred gravid uterus: Outcomes and risk factors analysis. Taiwan J Obstet Gynecol. 2018;57(2):248-54.
5. Wu Y, Dai Z, Wang X. Hand-assisted laparoscopic surgery and its applications in gynecology. Gynecol Minim Invasive Ther. 2016;5(1):12-5.
6. Zwart JJ, Richters JM, Ory F, de Vries JI, Bloemenkamp KW, van Roosmalen J. Uterine rupture in The Netherlands: a nationwide population-based cohort study. BJOG. 2009;116 (8):1069-78.
7. Gibbins KJ, Weber T, Holmgren CM, Porter TF, Varner MW, Manuck TA. Maternal and fetal morbidity associated with uterine rupture of the unscarred uterus. Am J Obstet Gynecol. 2015;213(3):382 e1-6.
8. Noh JJ, Park CH, Jo MH, Kwon JY. Rupture of an unscarred uterus in a woman with long-term steroid treatment for systemic lupus erythematosus. Obstet Gynecol. 2013;122(2 Pt 2):472-5.
9. Chuni N. Analysis of uterine rupture in a tertiary center in Eastern Nepal: lessons for obstetric care. J Obstet Gynaecol Res. 2006;32(6):574-9.
10. Turgut A, Ozler A, Siddik Evsen M, Ender Soydinc H, Yaman Goruk N, Karacor T, Gul T. Uterine rupture revisited: Predisposing factors, clinical features, management and outcomes from a tertiary care center in Turkey. Pak J Med Sci. 2013;29 (3):753-7.
11. Rabin DS, Johnson EO, Brandon DD, Liapi C, Chrousos GP. Glucocorticoids inhibit estradiol-mediated uterine growth: possible role of the uterine estradiol receptor. Biol Reprod. 1990;42:74-80.
12. Lu M, Johar S, Veenema K, Goldblatt J. Patellar tendon rupture with underlying systemic lupus erythematosus: a case report. J Emerg Med. 2012;43:e35-8.