Conservative treatment of an early ectopic pregnancy in a cesarean scar with systemic methotrexate - case report

A.C. Iyibozkurt, *M.D.*.; **S. Topuz,** *M.D.*.; **F. Gungor,** *M.D.*.; **I.H. Kalelioglu,** *M.D.*.; **E. Cigerli,** *M.D.*.; **S.E. Akhan,** *Assoc. Prof.*

Department of Obstetrics and Gynecology, Istanbul Medical School, Istanbul University,

Summary

Purpose of investigation: Pregnancy implanted in a cesarean scar is rare, and is a life-threatening condition due to high risk of uterine rupture, hemorrhage, hysterectomy, and maternal mortality. *Case report*: We describe a 26-year-old woman who presented with five weeks of amenorrhea and a serum hCG level of 10,440 mIU/ml. Transvaginal sonography revealed a gestational sac of 15 x 11 mm containing a yolk sac located in a previous cesarean scar. She was successfully treated conservatively with multi-dose methotrexate. No side-effects were encountered. The serum hCG levels were undetectable in 58 days. The patient had normal menstrual cycles afterwards. *Conclusions*: In the view of increasing cesarean rates, healthcare professionals should be aware of the possibility of a scar pregnancy and the potentially life threatening sequelae. Early diagnosis by transvaginal sonography can improve outcome and minimize the need for emergent surgery. Conservative treatment with systemic methotrexate is an effective option in selected patients.

Key words: Methotrexate; Ectopic pregnancy; Cesarean section scar.

Introduction

Pregnancy developing within a previous cesarean section scar is a rare type of ectopic pregnancy that carries a high risk of uterine rupture, hemorrhage, hysterectomy, and maternal mortality [1]. With increasing use of transvaginal ultrasonography (TVS), this condition may be diagnosed earlier and treated more conservatively avoiding the need for emergent surgery. We report a case of ectopic pregnancy in a cesarean scar diagnosed by TVS and successfully treated conservatively with systemic methotrexate (MTX) without performing a dilatation and curettage procedure.

Case Report

A 26-year-old Caucasian woman (gravida 1, para 1) after five weeks of amenorrhea was referred to our institution because of a preliminary diagnosis of ectopic pregnancy. She had no other symptoms. Her obstetric history revealed a previous cesarean section, performed with a low transverse uterine incision due to breech presentation, 18 months before. The physical examination was unremarkable; she had a normal-sized uterus and no adnexal masses were palpated. TVS revealed a normal uterus. The endometrium measured 13 mm in thickness and there was an anechoic collection near the isthmic area 5 x 5 mm in size. The left ovary was normal. At the lateral margin of the right ovary, a cystic mass measuring 17 x 19 mm in diameter was seen. No free fluid was seen in the cul-de-sac. Laboratory data revealed a quantitative serum human chorionic gonadotropin (hCG) level of 5,995 mIU/ ml. The patient was admitted to the hospital with the differential diagnosis of ectopic pregnancy and intrauterine pregnancy. Observation of vital signs and serial hCG level monitorization was planned. A repeat quantitative hCG level of 7,670 mIU/ ml was obtained 48 hours later. The repeat TVS findings were similar. Forty-eight hours later the hCG measured 10,440 and the patient was reevaluated. There was tenderness over the anterior wall of the uterus. On TVS, the endometrium measured 15 mm in thickness and contained an irregular anechoic fluid collection. Over the cesarean scar on the isthmic portion of the uterus, a gestational sac of 15 x 11 mm containing a yolk sac was visualized (Figure 1). A slight amount of free fluid was seen in the cul-de-sac. The diagnosis of a cesarean scar ectopic pregnancy was established and the patient was informed about treatment options, possible risk of uterine rupture and profuse bleeding which may require emergent hysterectomy. After discussion, conservative treatment with MTX was chosen because the patient had no symptoms, wanted to preserve her fertility, hCG levels were around 10,000 IU/ml, the gestational sac was small in diameter, and no signs of internal

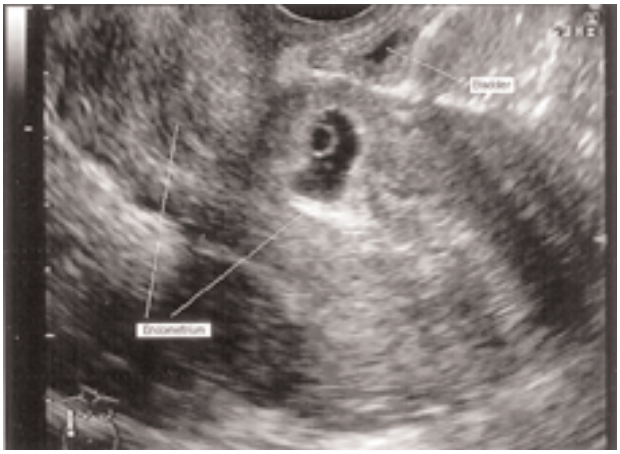

Figure 1. — Gestational sac and yolk sac located in the previous cesarean section scar.

Revised manuscript accepted for publication April 6, 2006

bleeding were observed. She was given multiple doses of MTX which included four doses of 75 mg (1 mg/kg) intramuscular MTX given on days 0, 2, 4, and 6 with leucovorin rescue given on days 1, 3, 5, and 7. No-side effects were observed. The quantitative hCG levels continued to rise initially to 15,538 until day 4 and then decreased to 5,370 on day 7. The patient was discharged from the hospital on day 9 with a hCG level of 3,975. Fifty-eight days later, the hCG level decreased to 0.3 IU/ml and the mass on the anterior wall of the uterus had disappeared completely. The patient had normal menstrual cycles.

Discussion

Although its true incidence has not been determined, pregnancy implanted in a cesarean scar is commonly cited as the rarest form of ectopic pregnancy and a life-threatening condition. A review of the English literature between 1978 and 2001 revealed only 18 cases while the number of reported cases has increased up to 66 since 2002 [2]. This increase may reflect both the increasing number of cesarean procedures currently being performed [3] as well as earlier detection of such pregnancies due to widespread use of TVS [4].

Among the theories for explaining the occurrence of pregnancy implanted in a cesarean scar, a blastocyst entering the myometrium through a microscopic dehiscent tract, is the most probable and reasonable. Such tract is believed to be created through a trauma that occurred in association with a previous uterine surgery or trauma like cesarean delivery, curettage, myomectomy, metroplasty, hysteroscopy, manual removal of placenta, and IVF [1, 5]. It has also been suggested that the interval between such trauma and a subsequent pregnancy may affect implantation events [6]. The time interval between the last cesarean delivery and the diagnosis of scar pregnancy ranges from six months to 12 years in the literature [5]. Our patient's history was remarkable for a spontaneously conceived pregnancy terminated by a planned cesarean section. Neither curettage nor any type of uterine surgery for gynecologic disease was noted. Hence, cesarean section seems to be the only predisposing factor in our patient and the time interval between cesarean delivery and the diagnosis of scar pregnancy was 18 months, suggesting that complete healing of the uterine scar must have occurred by that time. The interesting association between cesarean section for breech presentation and the subsequent occurrence of pregnancy in the resultant scar, proposed by Maymon *et al*. [7], was also present in our case. Later in their review of scar pregnancies [2], they proposed that this association might not be merely coincidental and healing processes after elective procedures performed in a non-developed lower uterine segment (like for breech deliveries) might facilitate implantation of the blastocyst within the scar. It is also interesting to see this relationship in the first case of scar pregnancy encountered at our university. We agree with Maymon *et al*. that changing surgical techniques, indications for cesarean section and surgery in non-developed lower uterine segments might have an impact on the occurrence of scar pregnancies. This intriguing association needs to be examined further.

We first used transvaginal and then transabdominal ultrasound with a full bladder, as proposed by Ravhon [8], for diagnosis. According to Vial [9], three sonographic criteria should be present: 1) the trophoblast must be mainly located between the bladder and the anterior uterine wall; 2) on sagittal view of the uterus running through the amniotic sac, a discontinuity in the anterior wall of the uterus should be demonstrated; 3) no fetal parts must be visible in the uterine cavity. Since an early diagnosis of ectopic scar pregnancy was made at five gestational weeks in our case, the fetal pole was not visible; instead all of the gestational sac and yolk sac was located inside the previous cesarean scar. Although MRI is used for diagnosis in some reports, we found a combined approach of (transabdominal plus transvaginal) ultrasound scan accurate and cost-effective in our patient.

It is prudent to consider and offer termination of pregnancy after explaining the risks of uterine rupture with life-threatening hemorrhage as soon as the diagnosis is made. Because of its rarity, there is no universal treatment guideline to manage this condition. Surgical treatment includes excision of the gestational sac and repair of the cesarean scar, which has been successfully performed by both laparotomy and laparoscopy. However, this operative approach still carries a significant risk of uncontrolled hemorrhage that has led to hysterectomy and loss of reproductive function in some of the reported cases [4]. Dilatation and curettage has a high risk of severe vaginal bleeding which may necessitate hysterectomy and it should not be considered the first choice of therapy as proposed by some authors [10, 11]. Treatment with MTX is an option which is both effective in treatment of the disease and in preserving the uterus and future fertility. Local and systemic MTX treatments are described, but local MTX injection is technically more difficult, especially in a case like ours, where the gestational sac is 6-8 mm in dimension. Thus, we chose systemic MTX to avoid the risks associated with other treatment methods. Some authors have proposed that systemic absorption of MTX may be limited which may delay the absorption of the gestational sac [1, 8], because the cesarean scar pregnancy is surrounded by fibrous scar tissue rather than a normally vascularized myometrium. Whether local MTX would have resulted in a shorter treatment and a shorter time for normalization of hCG levels in our case, one cannot know; but absorption of systemic MTX was enough to treat our case. It is also important that no curettage or other additional treatment was necessary after this therapy. Normalization of hCG levels and dissappearance of the ectopic mass occurred within two months of the therapy. Although multi-dose systemic MTX treatment may result in failures requiring laparotomy [12], the pregnancies in that case series were bigger and hCG levels were higher than our case, which may explain the reason for failure of MTX.

In view of the increasing cesarean rates and use of TVS, healthcare professionals should be aware of the possibility of a scar pregnancy and its potentially life threatening sequelae. Early diagnosis and conservative treatment

options are effective in reducing morbidity and preserving fertility. Today there are many suggested conservative treatment options, but a consensus in treatment has not been developed yet. We propose that conservative treatment with systemic methotrexate alone may be a good choice of therapy in selected patients diagnosed early.

References

[1] Fylstra D.L.: "Ectopic pregnancy within a cesarean scar: a review". *Obstet. Gynecol. Surv.*, 2002, *57*, 537.
[2] Maymon R., Halperin R., Mendlovic S., Schneider D., Herman A.: "Ectopic pregnancies in a Cesarean scar: review of the medical approach to an iatrogenic complication". *Hum. Reprod. Update*, 2004, *10*, 515.
[3] Shennon A.H.: "Recent developments in obstetrics". *Br. Med. J.*, 2003, *327*, 604.
[4] Jurkovic D., Hillaby K., Woelfer B., Lawrence A., Salim R., Elson C.J.: "First-trimester diagnosis and management of pregnancies implanted into the lower uterine segment Cesarean section scar". *Ultrasound. Obstet. Gynecol.*, 2003, *21*, 220.
[5] Seow K.M., Huang L.W., Lin Y.H., Lin M.Y., Tsai Y.L., Hwang J.L.: "A Cesarean scar pregnancy: issues in management". *Ultrasound Obstet. Gynecol.*, 2004, *23*, 247.
[6] Graesslin O., Dedecker F., Quereux C., Gabriel R.: "Conservative treatment of ectopic pregnancy in a cesarean scar". *Obstet. Gynecol.*, 2005, *105*, 869.
[7] Maymon R., Halperin R., Mendlovic S., Schneider D., Vaknin Z., Herman A. *et al.*: "Ectopic pregnancies in cesarean section scars: the 8-year experience of one medical center". *Hum. Reprod.*, 2004, *19*, 278.
[8] Ravhon A., Ben-Chetrit A., Rabinowitz R., Neuman M., Beller U.: "Successful methotrexate treatment of a viable pregnancy within a thin uterine scar". *Br. J. Obstet. Gynecol.*, 1997, *104*, 628.
[9] Vial Y., Petignat P., hohlfeld P.: "Pregnancy in a cesarean scar". *Ultrasound Obstet. Gynecol.*, 2000, *16*, 592.
[10] Huang K.H., Lee C.L., Wang C.J., Soong Y.K., Lee K.F.: "Pregnancy in a previous cesarean scar: a case report". *Chang Keng I Hsueh Tsa Chin*, 1998, *21*, 323.
[11] Shih J.C.: "Cesarean scar pregnancy: diagnosis with three-dimensional (3D) ultrasound and 3D power Doppler ultrasound". *Obstet. Gynecol.*, 2004, *23*, 306.
[12] Lam P.M., Lo K.W.K., Lau T.K.: "Unsuccessful medical treatment of cesarean scar ectopic pregnancy with systemic methotrexate: a report of two cases". *Acta Obstet. Gynecol. Scand.*, 2004, *83*, 108.

Address reprint requests to:
A.C. IYIBOZKURT, M.D.
Kalamis Fener caddesi
Gunes apt. 5/8
34710 Kadikoy
Istanbul (Turkiye)
e-mail: cemiyi@yahoo.com