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Case Report

Methotrexate treatment of very high β-HCG ectopic pregnancy on previous cesarean scar: A case report☆,☆☆

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ABSTRACT

Ectopic pregnancy in a previous caesarean scar is a rare, potentially life-threatening situation that can cause massive bleeding and uterine rupture. Clinical symptoms can range from vaginal bleeding with or without pain, to uterine rupture with hypovolemic shock. Early diagnosis is possible by ultrasound examination, and it is very important because it leads to prompt management, improving maternal morbidity and mortality as well as future fertility. The current case report refers to a G3P2 woman with a history of 2 previous caesarean deliveries, who was diagnosed with an ectopic pregnancy on the caesarean scar using ultrasonography. The patient was treated with methotrexate both systemic and into the sac, as well as with injection into the sac of 5mEq potassium chloride. The woman was followed up until measurements of serum β-Human Chorionic Gonadotropin were within nonpregnant levels. There is no clear-cut best way to handle cesarean scar pregnancy. Pregnancy with a cesarean scar should be identified and treated as soon as possible in order to avoid serious problems and preserve fertility. However, even more advanced cesarean scar pregnancies can be managed conservatively at first, when a highly expertized team in a tertiary hospital is available.

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Introduction

Caesarean scar pregnancy (CSP) is a rare kind of ectopic pregnancy in which the fertilized embryo implants on the scar from a prior caesarean operation. Although a rare condition, CSP is becoming more prevalent as the number of caesarean sections conducted increases. Furthermore, these pregnancies can occur on myomectomy scars [1]. The displacement of the embryo in CSP is thought to be caused by either a fistula inside the scar tissue or a structural defect in the lower part of the uterus [2]. As women with CSP are more likely to experience uterine rupture, bleeding, hysterectomy, and loss of fertility, an early and precise diagnosis is essential. When performing a diagnostic ultrasound on a pregnant woman who has had caesarean deliveries in the past, CSP which should always be taken into account. A strong relationship has been shown between a history of uterine procedures such as dilatation and curettage, myomectomy, and caesarean section and an increased chance of developing CSP. Other risk factors include in vitro fertilization, adenomyosis, manual placenta removal, a short interval between pregnancies and multiple pregnancy [3]. Cesarean scar pregnancy's treatment should be personalized according to various criteria such as gestational age, clinical symptoms, gestational sac size, hemodynamic stability, and the patient's future reproductive aspirations. In circumstances when the women are clinically stable, systemic and local methotrexate injections may be evaluated as a therapeutic option. However, surgical procedures such as wedge resection of the ectopic pregnancy or hysteroscopic excision of the gestational sac may be required for women experiencing hemodynamic instability [4]. CSPs are frequently diagnosed and successfully treated during the first trimester of pregnancy. However, in certain situations, they are discovered in the second trimester, and surgical intervention is usually advised. It is vital to highlight that delayed diagnosis is related with increased risks of maternal mortality and morbidity [5]. In this case report, we present a delayed diagnosed cesarean scar ectopic pregnancy successfully treated with methotrexate in a tertiary hospital in Greece.

Case presentation

A 39-year-old woman was referred to the early pregnancy outpatient clinic to investigate the possibility of implantation of the gestational sac on the scar of previous Caesarean section. She was G3P2 with a history of 2 previous caesarian deliveries. Her first caesarian delivery was due to failure of labor induction, while the second due to the previous operation. The woman had regular 28 days menstrual cycle and following a 12-day delay of her menses pregnancy was confirmed with a β-Human Chorionic Gonadotropin (β-HCG) level of 4121 IU/L. An embryo with a fetal heart rate of 115 bpm and a CRL of 3.2 mm, equivalent to a gestational age of 6 weeks, was found inside an embryonic sac that had implanted at the lower uterine segment, according to a transvaginal ultrasound (Fig. 1). She was afebrile and in stable condition, with blood pressure 110/70 mmHg and heart ratio 75 bpm. She denied any pain or discomfort. Although she was informed about the risks associated with this type of ectopic pregnancy she opted to wait before arriving at a decision. Three days later she presented with vaginal bleeding and lower abdomen pain while her β-HCG level increased abnormally to 5565 IU/L. Transvaginal ultrasound revealed an empty uterine cavity with a clearly defined endometrium and a small gestational sac at the lower uterine segment. The sac contained a fetus with cardiac activity of 150 bpm and CRL = 10.6 mm corresponding to a gestational age of 7 weeks + 1 day. The cervical canal was empty, and no pathology was identified in the adnexa. Similar ultrasound findings were obtained 10 days later: a regular shaped embryonic sac 25 × 21 × 23 mm, with a regular yolk sac, a fetal heart rate of 179 bpm and a CRL of 18.8 mm corresponding to a gestational age of 8 weeks + 4 days. The sac was outside the uterine cavity and was implanted close to the scar of the previous cesarean section above the level of the internal cervical os. At least two-third of the sac was shown to be within the anterior uterine wall. Both adnexa were normal (Fig. 2). Upon speculum examination the cervix was normal and no bleeding was seen. On bimanual examination an anteverted uterus was identified with absence of adnexal tenderness. The woman was admitted to the gynecology clinic for manage-

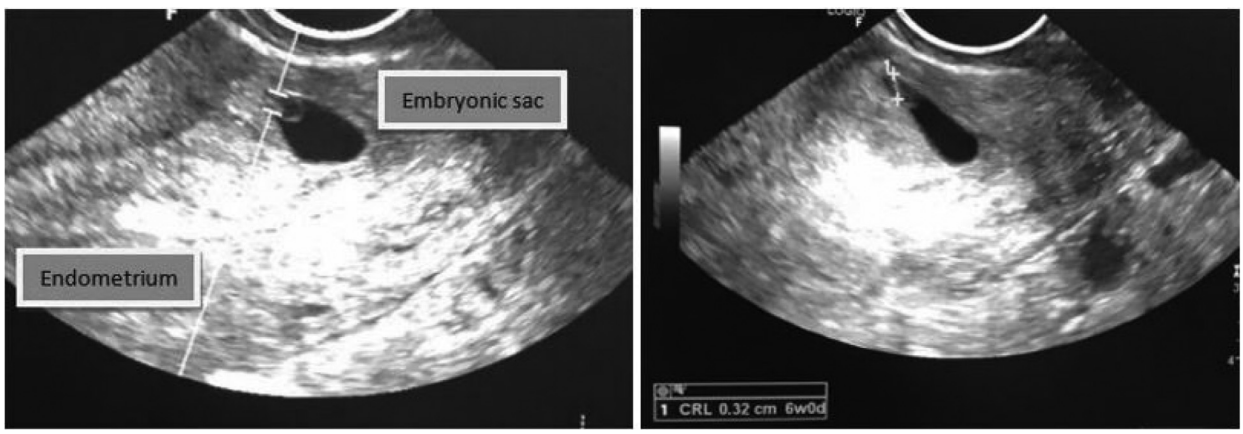

Fig. 1 – Transvaginal ultrasound indicates the existence of an embryonic sac which had been implanted at the lower uterine segment. An embryo with fetal heart ratio of 115 bpm is found in the sac.

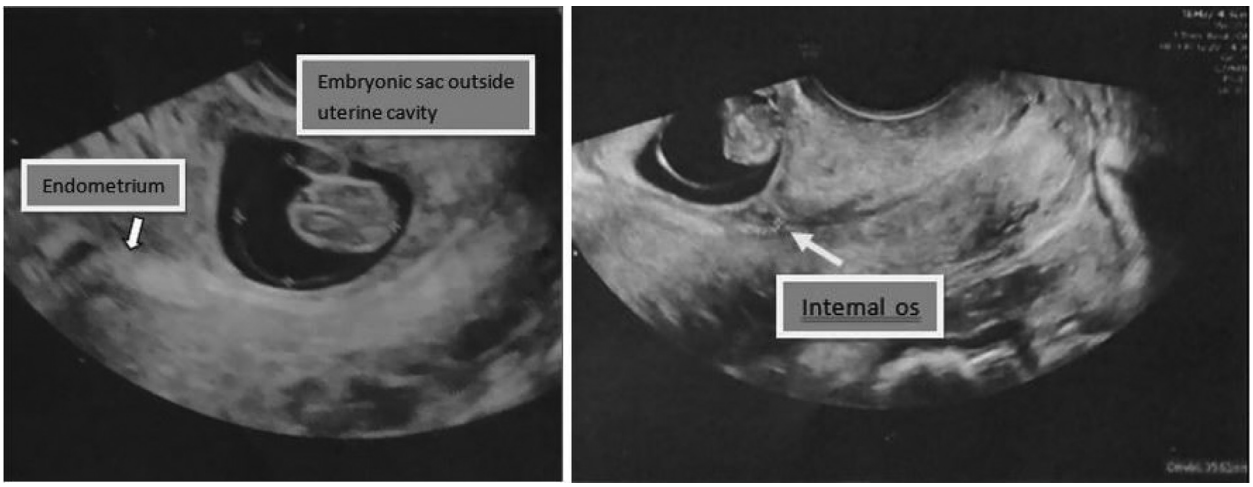

Fig. 2 – The gestational sac appeared to be outside the uterine cavity, above the level of the internal os. At least two-third of the sac is within the anterior uterine wall.

ment of her ectopic pregnancy. On admission, her β-HCG level was 21,588 IU/L and 100 mg of I.M. methotrexate was administered (day 0) followed by a 10 mg of leucovorin the next day (day 1). On the second day, the β-HCG level was 25,080 IU/L and a second dose of methotrexate was given followed by a second dose of leucovorin a day later. On the third day, and since cardiac activity was still present on ultrasound, an ultrasound guided gestational-sac injection of potassium chloride was administered followed by a single injection of 100 mg of methotrexate (Fig. 3). Following this procedure, no cardiac activity was detected. On the fourth day shrinkage of the sac was observed. On the fifth day the β-HCG level was 18,800 IU/L and a week later it had dropped to 2439 IU/L. On discharge significant shrinkage of the embryonic sac was observed (Fig. 4). The

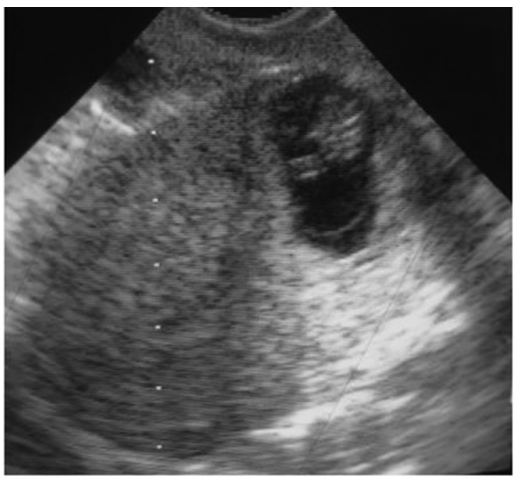

Fig. 3 – On the third day, an ultrasound guided gestational-sac injection of potassium chloride was administered, since cardiac activity was still present on ultrasound, followed by a single injection of 100 mg of methotrexate.

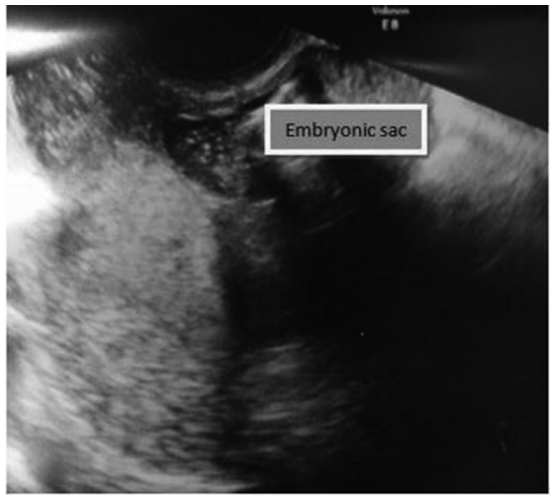

Fig. 4 – Significant shrinkage of embryonic sac is observed on the day of discharge.

woman was followed up until serum β-HCG values dropped to nonpregnant levels.

Discussion

A CSP is an ectopic pregnancy that occurs when the embryo is implanted on a caesarean scar. While it is rare, its incidence has increased to 0.09% due to the increased rate of caesarean deliveries [6]. These pregnancies, however, may also implant on myomectomy scars. The embryo is believed to migrate due to a defect in the lower uterine section or a fistula inside the scar [7]. Because of the increased risks of uterine rupture, bleeding, hysterectomy, and eventual loss of fertility associated with CSP, early and precise diagnosis is critical. A

pregnancy in the cesarean scar can be difficult to diagnose, but it should be taken into account when doing an ultrasound on a pregnant woman with a history of previous cesarean delivery. When ultrasonography indicates swelling of the lower uterine segment or the presence of trophoblast tissue beneath the supposed cesarean scar, together with Doppler evidence of peritrophoblastic vasculature, suspicion emerges. Furthermore, thinning (8 mm) or lack of myometrium between the gestational sac and the bladder wall may suggest the existence of a CSP [8,9]. Cervical pregnancy and placenta accreta should be considered while making a differential diagnosis. Although magnetic resonance imaging can be used to determine the location of the pregnancy, it is not necessary for the diagnosis of the condition. Prior uterine procedures such as dilatation and curettage, myomectomy, and caesarean section are all risk factors. Furthermore, risk factors such as in vitro fertilization, adenomyosis, manual placental removal, short intervals between pregnancies, numerous pregnancies, lack of the first stage of labor, and cephalopelvic disproportion should be evaluated [10–13]. Treatment for CSP differs and should be adjusted to considerations such as gestational age, clinical symptoms, gestational sac size, hemodynamic stability, and the woman's desire to maintain fertility. In circumstances when individuals are clinically stable, therapy may include systemic and local methotrexate injections [14,15]. In patients with hemodynamic instability surgery will be required involving wedge resection of the ectopic pregnancy or in some cases hysteroscopic excision of the gestational sac [16]. CSPs are usually diagnosed and treated in the first trimester. Very rarely they may be diagnosed during the second trimester and in these cases a surgical approach is indicated [17].

Conclusion

Although caesarean scar pregnancies are uncommon, they are associated with an increased risk of maternal mortality and morbidity if detected late. As a result, maintaining a high degree of suspicion is critical, especially in the presence of risk factors. To help in early diagnosis, an ultrasonography examination of the implantation site should be undertaken. Women who have surgically managed for a CSP should be advised about the hazards of future pregnancies, such as placenta accreta and uterine rupture because of to the weakened scar. Significantly, they should be encouraged to have early ultrasound evaluations in subsequent pregnancies in order to properly monitor and manage any possible complications.

Authors' contributions

All authors have made contributions to the conception and design of the study, drafting and revising the article. All authors were involved in the patients' care. All authors approved the final version.

Patient consent

Obtained.

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