

Clinical analysis of diagnosis and treatment of 13 cases with cesarean scar pregnancy

Q.Y. Wu¹, J. Ling¹, Q. Xue², X.Z. Huang³, J. Tan¹

¹Department of Obstetrics and Gynecology, Affiliated Jiangyin Hospital of South-East University, Jiangyin

²Department of Ultrasound, Affiliated Jiangyin Hospital of South-East University, Jiangyin

³Department of Interventional Radiology, Affiliated Jiangyin Hospital of South-East University, Jiangyin (China)

Summary

Objective: To explore effective methods in diagnosing and treating cesarean scar pregnancy (CSP) after cesarean section. **Materials and Methods:** The clinical data of 13 cases with CSP who were admitted to the present hospital from October 2009 to February 2012 were retrospectively analyzed. **Results:** The agreement diagnostic rate was 92.3% (12/13). On the basis of transvaginal color Doppler ultrasonography 12 patients had medical therapy combined with uterine artery embolization (UAE) and curettage was successfully performed. One patient was diagnosed through an emergency setting due to symptomatology. **Conclusion:** Early accurate diagnosis of CSP is the key to perform proper and successful treatment.

Key words: Cesarean; Cesarean scar pregnancy (CSP); Ultrasonography; Diagnosis; Treatment.

Introduction

Cesarean scar pregnancy (CSP) is a special type of ectopic pregnancy, and is one of the long-term complication [1]. In recent years the cesarean section rate is on the rise and CSP rate shows an increasing tendency and there was no specificity in clinical situation, maybe as a result of uterine massive hemorrhage or even uterine rupture that threatens the patient's life. Thirteen cases of CSP were reviewed and analyzed in this article.

Materials and Methods

Clinical data of the case

Thirteen clinical cases of CSP in Southeast University Affiliated Jiangyin Hospital were collected from October 2009 to February 2012. Patients' age ranged from 22 to 37 years, with an average of 30 years, and most had a history of multiple pregnancies or cesarean sections. There were nine cases that had menolipsis history, with a time range of 37 to 90 days; nine cases had vaginal bleeding, three cases of bleeding after abortion, and one case with abdominal pain.

Equipment and methods

A transvaginal color Doppler sonography with type C8-4v probe and 5.5~7.0 MHz frequency was used. Observation contents included incision lesions' morphology, size, internal echo, and blood supply of anterior wall of uterus bottom. Dynamic observation with ultrasonography was performed every week after conservative treatment. A chemiluminescence immunoassay was used to assess blood β -hCG values at one day before conservative treatment, at three days and seven days after treatment, and then every two weeks until the β -hCG levels decreased to normal value (< 2.9 mIU/ml).

Diagnostic criteria

Patients' clinical manifestation and urine pregnant tests or β -hCG confirmed the pregnancy and CSP was diagnosed through ultrasonography. Godin first reported that vaginal ultrasonography's imaging characteristics of cesarean scar pregnancy in 1997 [2], and formulated strict diagnostic criteria: 1) no gestation sac in uterus; 2) no gestation sac in cervical canal; 3) gestation sac grow in isthmus of anterior wall of uterus; 4) uterine wall among bladder and gestation sac is weak.

Treatment methods - drug treatment

Conservative drug treatment is suitable for the cases without symptoms and with hemodynamic stability, uterus did not rupture, and pregnancy time < 8 weeks, thickness of muscular layer between CSP and bladder < 2 mm [3]. Methotrexate (MTX) and mifepristone were used for treatment. The dosage of MTX was a single-dose muscle injection of 50mg/m² and mifepristone followed with a dose of 50 mg each time, twice daily, orally, for five days. The administration of MTX is adjusted according to any eventual β -hCG fluctuations. The patients were closely observed for any serious side-effects as bone marrow suppression, injury of liver and renal function, and so on during the drug treatment; it was stopped if they appeared.

Uterine artery embolization (UAE): embolization through femoral artery is performed and can be reached from one or from both sides for an emergency hemostasis of patients in critical condition and 100 mg of MTX was introduced in the vessels.

Surgical treatment

Dilatation and curettage: once CSP is diagnosed, dilatation and curettage is not recommended immediately, as it may lead to massive vaginal bleeding, perforation of uterus, etc. Dilatation and curettage was performed under ultrasound after drug treatment or UAE.

Trans-abdominal operation: Local lesion resection and uterus neoplasty or dilatation and curettage included. Local lesion resection is suitable for conservative drug treatment or those not effective after UAE; dilatation and curettage is only suitable for vaginal bleeding that cannot be controlled by conservative treatment or CSP patients with no reproductive function requirement.

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Table 1. — *Clinical feature and basic information of 13 CSP cases.*

Case	Age	Menolipsis history	Vaginal bleeding history	Abdominal pain history	Pregnancy history	Cesarean times	Time from last cesarian
Cesarian (yrs)							
1	27	none	22 days	none	3 pregnancies, 1 birth	1	7 years
2	32	45	Bleeding after drug abortion	none	2 pregnancies, 1 birth	1	9 years
3	26	43	Half a day	none	4 pregnancies, 2 birth	2	1.5 years
4	34	12 weeks	Bleeding 2 months after abortion	none	5 pregnancies, 2 birth	2	0.5 years
5	35	none	40 days	none	10 pregnancies, 2 birth	2	5 years
6	29	39	1 day	none	1 pregnancies, 1 birth	1	8 years
7	27	37	3 days	positive	4 pregnancies, 1 birth	2	3.5 years
8	26	lactation period	2 months	none	2 pregnancies, 1 birth	1	9 months
9	22	55	half a month	none	3 pregnancies, 1 birth	1	3.5 years
10	28	38	6 days	none	4 pregnancies, 1 birth	1	4 years
11	31	41	1week	none	4 pregnancies, 2 birth	2	2 years
12	31	55	none	none	2 pregnancies, 1 birth	1	2.5 years
13	37	unrevealed	Bleeding after drug abortion	none	4 pregnancies, 2 birth	1	5.5 years

Table 2. — *Lab tests, ultrasound performance and treatment in 13 CSP cases.*

Eg.	Lab. test		Ultrasound test			Treatment	Discharge diagnosis
	HGB (g/l)	Blood β -hCG (mIU/ml)	Diagnosis	Lesion size	Blood		
1	110	6,748	twice	4.0×2.7cm	rich	drug	CSP
2	125	11,109	twice	3.1×1.6cm	rich	drug	early pregnancy + CSP
3	123	96.96	once	1.2×1.0cm	rare	drug	CSP
4	46	5.47	twice	3.1×1.8cm	rich	drug + UAE	CSP + hemorrhagic shock
5	96	4,870	twice	3.1×2.6cm	rich	drug + UAE	CSP + anemia
6	113	28,679	once	1.6×1.1cm	rich	drug + D&C	CSP
7	106	39,385	once	3.8×1.3cm	relatively rich	drug+ D&C	CSP + anemia
8	111	2,987	twice	3.3×2.6cm	rich	drug + D&C	CSP
9	119	1,579	once	1.3×0.8cm	rich	drug + UAE + D&C	CSP
10	123	26,940	once	2.2×1.0cm	rich	drug + UAE + D&C	CSP
11	105	123,867	twice	5.4×5.3cm	rich	drug + UAE + D&C	CSP + anemia
12	126	26,984	once	1.9×1.2cm	rich	drug + UAE + D&C	CSP
13	55	7,504	misdiagnosis	8.1×5.4cm	rich	Laparotomy: local lesion resection + subtotal hysterectomy	CSP+ hemorrhagic shock

Notions: drug: MTX with mifepristone; UAE: uterine arterial embolization

Efficacy evaluation

Clinical symptoms and physical sign disappear after treatment, blood β -hCG value reduce to common value (< 2.9 mIU/ml), incision's scar lesion at uterus bottom disappear under ultrasound show be healed.

Results

Thirteen CSP cases had β -hCG test before treatment and the values ranged from 5.47 to 123,867 mIU/ml. Twelve out of 13 (92.3%) cases were diagnosed once or twice by transvaginal color Doppler sonography (typical ultrasonogram as Figure 1), of which six cases were diagnosed at first time (46.2%, 6/13), and other six cases were diagnosed at second time, among which one case of early pregnancy was complicated with CSP. One case was transferred form another hospital where an ultrasonography was performed due to constant

vaginal bleeding after early pregnancy abortion. A rich blood ventricosity mass of 8.1×5.4 cm was detected and a local lesion resection and subtotal hysterectomy was performed, and pathology verified CSP after operation. Clinical manifestation, pregnant production history, lab test related, ultrasonography and treatment of this group are shown in Table 2. Drug side-effects as bone marrow suppression, injury of liver, and altered renal function were not reported. Follow-up visit continued 1.5 to six months after leaving the hospital, β -hCG values reduced to normal levels, and incision's scar lesion at uterus bottom disappeared under ultrasound.

Discussion

The incidence of CSP after cesarean occurs in 0.45% and 6.1% in ectopic pregnancy that have cesarean history

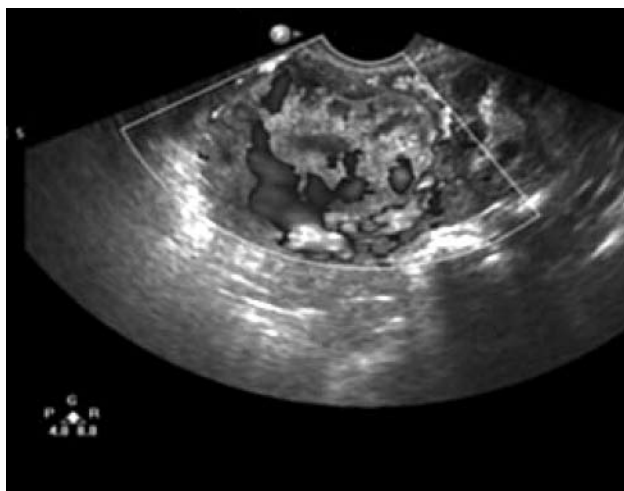


Figure 1. — Typical CSP transvaginal color Doppler sonography, with rich flow signal seen in mixed mass.

[4]. Etiology of CSP is still unknown and it may be related to poor healing of incision after cesarean as suggested by Jiaoguangyu *et al.* [5], it may be related with rapid fertilized egg movement or fertilized ovum growth retardation resulting in fertilized ovum implantation on uterus scar. Transvaginal color Doppler sonography is an important method for the diagnosis of CSP. Color Doppler imaging especially has an important value to observe the blood flow situation of lesions; 86% of this group show rich flow signal around lesion (Figure 1). In case of CSP, the trophocytes of the placenta villi intrude into uterus scar, destroy local blood vessels, and for this reason during uterine contraction may result a sudden hemorrhage that can be life-threatening if not treated correctly or on time; three cases of this group had conspicuous vaginal bleeding (1,000~2,000 ml) after uterine curettage. The misdiagnosis rate is high for the low rate of CSP and sonographer is not familiar with CSP: in this group six cases (6/13) were diagnosed as CSP at first ultrasound, six cases misdiagnosed were treated with misoprostol for abortion, and diagnosed as CSP at second ultrasonic testing for persistent vaginal bleeding, two cases had misoprostol abortion combined with CSP. In another case that was transferred into the present hospital because of massive vaginal bleeding after drug-induced abortion, and dilatation and curettage of the uterus in other hospital, ultrasound showed rich blood mass diagnosed as CSP after laparotomy operation performed due to the critical situation of the patient.

There is no uniform clinical treatment at present for CSP, to reduce bleeding, preserve reproductive function, and survival. The aim of MTX treatment, which is a folic acid antagonist drug that persists as thymidine phosphorylase and purine nucleotide intracellular 24 hours after administration, destroying trophoblast and causing rapid fetal death,

with definite effect, few side-effects, and does not increase pregnancy abortion rate in the following pregnancies [6]. Mifepristone is a type of progesterone receptor antagonist that can necrotize the membrane organization, and determine the death of the fetus. MTX combined with Mifepristone is a safe and reliable method of conservative medication at present [7]. The proposed UAE is a type of treatment that can avoid blood transfusion, reach hemostasis which is needed to preserve the uterus, while inducing an abortion [8]. In six cases CSP was diagnosed first by ultrasound, β -hCG value was 96.96 ~ 39,385 mIU/ml, lesion maximum diameter 1.2 ~ 3.8 cm, with five out of six case of cases < three cm. Two of these cases were treated with conservative therapy; other two cases were treated with conservative treatment for one week. Ultrasound showed blood supply to be reduced and dilatation and curettage of the uterus was performed under ultrasound guidance, and intraoperative blood loss was < 50ml. The other two cases were treated with a combination of medication, by UAE, and by dilatation and curettage of the uterus. The six cases of CSP were diagnosed by a second ultrasound and β -hCG value was 5.47 ~ 123,867 mIU/ml, and the size of the lesion was 3.1 ~ 5.4 cm. Doppler ultrasound showed rich blood flow signals ring in lesion, one case of medication, two cases combination of medication and UAE, two cases combination of medication and dilatation and curettage of the uterus, one case combination of medication, UAE and dilatation and curettage of the uterus: all cases healed. One patient was transferred into the present hospital because of massive vaginal bleeding in the progress of dilatation and curettage of the uterus in other hospital; ultrasound showed ventricosity mass in uterus bottom, Hb 55 g/l, BP: 72/45 mmHg, performed rescue treatment including blood transfusion, uterine packing, etc. immediately, and performed emergency laparotomy. Uterus' shape resembled a calabash during operation, with a bottom expansion of approximately 7×8 cm. Blood vessel was rich with hyacinthine-like surface, serosal layer was intact, under great tension, and preserving the uterus was difficult, therefore a subtotal hysterectomy was performed. Uterine form was regular after open resection, dark red necrosis tissue was seen in bottom, chorionic villi was proved with pathology.

Through a review of 13 cases treated for CSP the authors can state conclude: 1) ultrasound is an important tool for diagnosis of CSP and has an important value in the monitoring of lesion size and blood supply, and in choosing the right treatment; 2) make sense of CSP when faced with cesarean patients that have massive vaginal bleeding or bleeding continuously after abortion, in cases where treatment cannot be blindly continued, and checked with ultrasound by experienced sonographer for diagnosis and next treatment; 3) for those in early-stage CSP with small lesion in which villus invades slightly into muscular layer, drug treatment that causes the death of the embryos in one week, and performing dilatation and curettage has a positive ef-

fect; 4) for case with large lesions with rich blood supply and massive vaginal bleeding, treatment of UAE combined with MTX injection has a good effect, and dilatation and curettage can be performed one week later.

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Address reprint requests to:

J. TAN, M.D.

Department of Obstetrics and Gynecology

Affiliated Jiangyin Hospital of South-East University

Jiangyin 214400 (China)

e-mail: lingjing_112@163.com