CASE REPORT

Placenta percreta in week 10 of pregnancy with consecutive hysterectomy

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Placenta percreta in early pregnancy is rare and has been documented in only a few cases. We report on a patient with abdominal pain in week 10 of pregnancy. Sonography revealed a defective embryonic development and the absence of a border line between trophoblast and myometrium, as well as invasive growth in the region of isthmocervical transition, so curettage was performed. Heavy bleeding at this stage made a hysterectomy necessary. Histological examination revealed a placenta percreta. Because of possible complications, the therapy of choice for a placenta percreta is a hysterectomy, as was performed in this case.

Key words: abdominal pain in early pregnancy/impaired placentation/mole-like changes/placenta percreta

Introduction

Placenta percreta is a complication of pregnancy that can be life-threatening for both mother and fetus. Three forms of abnormal surface formation between the placenta and the uterus are distinguished: placenta accreta, placenta increta and placenta percreta.

As a result of inadequate development of the decidua there is an abnormal connection between the trophoblast and the myometrium; in cases of placenta accreta the chorionic villi grow into the basal decidua, in placenta increta the chorionic villi penetrate into the musculature, and in placenta percreta the villi pass through the myometrium. Then, infiltration of not only the serosa but also of neighbouring organs such as the urinary bladder and the bowel can occur and serious complications may arise.

Case report

The patient was admitted to our clinic in the calculated week 10 of pregnancy for lower abdominal pain on the left side.

The patient had previously given birth normally to two children (17 and 13 years earlier) and to a third by Caesarean section (7 years earlier). A diagnostic dilatation and curettage had been performed at the age of 14 years due to dysfunctional bleeding.

Sonography revealed a non-vital embryo at week 8 of gestation. At the same time we noticed an enlarged placenta and the absence of a border line between the trophoblast and the myometrium. In the cervico-corporal transition, the trophoblast infiltrated the myometrium and reached as far as the serosa. The thickness of the myometrium in this area amounted to ~2 mm. The site was well vascularized and there was the suspicion of an invasive mole (Figure 1). In addition, a trace of free fluid was found in the pouch of Douglas.

The laboratory findings at admission were: haemoglobin 14.1 g/dl, β-HCG 36 456 mIU/ml. Though the HCG level was in the normal range, an invasive mole could not be excluded due to the ultrasound examination. Therefore CT scans of the abdomen and pelvis, a chest X-ray, and magnetic resonance imaging (MRI) of the cranium were performed as part of the obligatory staging process. All were normal.

A curettage was indicated and, after informed consent, performed under sonographic control. Heavy bleeding occurred that could not be managed even after suturing of the uterine arteries; hence, an abdominal hysterectomy had to be performed (blood loss ~800 ml). During exposure of the bladder an injury to the bladder in the region of the old Caesarean section scar occurred. We must assume that a penetration by the placenta percreta had occurred in this region. The lesion was sutured without problems. The patient was released from our clinic in good health on post-operative day 12.

Macroscopic examination of the hysterectomy specimen with dimensions of $8 \times 6 \times 5$ cm revealed a tumour measuring $8 \times 2.5 \times 2.5$ cm. Histology demonstrated our uterus with placenta percreta as well as normal endo- and ectocervical mucosa. Typical invasive chorionic migratory cells and placental villi were demonstrated in the outer layers of the myometrium (Figures 2 and 3). Placental tissue with signs of detachment
was found in the curettage specimen. In addition, histological examination found oedema, partial fibrosis with haemorrhagic areas and ghost villi in combination with extensive thrombosis of the arteries and veins in the neighbouring myometrium. These findings might partially explain the enlargement of the placenta. There was no evidence for a hydatiform mole or a chorionepithelioma.

Discussion

Due to absent or inadequate formation of the decidua, the trophoblast can infiltrate the myometrium. Literature reports on the frequency found placenta accreta, increta and percreta vary between 1:540 and 1:93000. The average incidence is ~1:7000 pregnancies (Fox, 1972; Breen et al., 1977).

Predisposing factors for an abnormal placentation include prior cervical dilatations and curetages, endometritis, submucous myomas and uterine scars such as those after Caesarean section. The relationship between abnormal placentation and previous Caesarean section was investigated by Clark and colleagues (Clark et al., 1985). According to this study, the risk for one type of placental disorder, placenta praevia, in pregnant women without prior Caesarean section is 0.26%, and this increases linearly with the number of previous sections up to 10% at four or more. When a placenta praevia is present, the probability of placenta accreta increases from 5% without previous Caesarean section to >24% with one, and up to 67% with four or more prior sections (Clark et al., 1985). Wax et al. investigated the interpregnancy interval as a risk factor for placenta accreta. They showed that the Caesarean-to-conception intervals are shorter in patients with abnormally adherent placentas, but not the delivery-to-conception intervals (Wax et al., 2000). Thus, it can be assumed that with an increasing number of prior Caesarean sections the probability of an abnormal placentation also increases.

In a survey of the literature we found only a few cases of placenta percreta in a similar early stage of pregnancy. Monks et al. reported a case of a gravid 4 para 3 with three previous Caesarean sections, then at week 10 of gestation with the diagnosis of incomplete abortion. Ultrasound showed a cervical pregnancy. Because of a very strong bleeding which was unresponsive to curettage, oxytocin infusion and bimanual compression they performed a hysterectomy. The pathologist found a placenta percreta (Monks et al., 1993). Jelsema and Zuidema described a case of cervical pregnancy at 5.5 weeks gestation. After Caesarean section at week 38 of gestation followed by immediate hysterectomy, pathologic examination showed a placenta percreta (Jelsema and Zuidema, 1992). Other authors treated a patient in the first trimester with uterine rupture by cervical pregnancy with hysterectomy. Pathologic examination of the uterus also showed placenta percreta (Marcellus et al., 1989). Another case of placenta percreta in the first trimester was diagnosed with MRI. The authors prolonged the pregnancy to 32 weeks gestation. After delivery, the uterus and placenta were removed in toto (Thorp et al., 1998). Other reports are concerned with placenta percreta in higher gestational ages. Thus, the case described here represents a very rare clinical situation.

If a pathological placentation, e.g. placenta percreta, is not diagnosed sufficiently early, life-threatening bleeding may occur upon manual detachment of the placenta. The spongy decidua, the normal detaching layer, cannot be found and the heavily perfused myometrial vessels may be opened with the subsequent danger of haemorrhagic shock. A timely diagnosis is therefore of great importance for both mother and infant.

In pregnant patients with shock symptoms, abdominal pain and haemoperitoneum the cause may be a rupture of the uterus produced, for example, by a placenta percreta (Job et al., 1994; Smith and Müller, 1996; Moriya et al., 1998).

In patients who have undergone previous Caesarean sections, one should always be aware of the correlation of placenta praevia with abnormal placentation. Of course, placenta percreta can also occur during first pregnancies without any prior gynaecological operations or endometritis (Imseis et al., 1998).

An abnormal placentation can be detected by various imaging procedures, with sonography being the most suitable. Sonographic criteria are: the absence of a normal, hypodense retroplacental myometric zone, a reduced or absent surface between uterine serosa and urinary bladder and, possibly, the presence of focal exophytic tissue (Finberg and Williams, 1992).

Doppler sonography can detect an abnormal vascularization of the myometrium. Furthermore, MRI can be used as a supplementary diagnostic procedure in cases where the placenta cannot be adequately evaluated by sonography and in which there is an elevated risk of abnormal placentation (Levine et al., 1997; Thorp et al., 1998; Maldjian et al., 1999).

A further sign of a placenta accreta/increta/percreta may be an otherwise inexplicable elevated alpha-feto protein (AFP) value in the maternal serum. There is a significant relationship between placenta accreta/increta/percreta and elevated AFP levels in maternal blood (Kupferminc et al., 1993; Zelop et al., 1998). In addition, Ophir et al. found an elevated maternal serum creatine kinase concentration in two patients with placenta increta and percreta (Ophir et al., 1999).

When macroscopic haematuria is found, an infiltration of
the urinary bladder must be considered. If placenta percreta is suspected then a pre-operative cystoscopy is recommended as a planning aid for the necessary operative steps (Hudon et al., 1998). In the present case there was no macroscopic haematuria so this diagnostic step was not performed.

The therapy of choice for placenta percreta is hysterectomy. There is only a little experience in treatment of the disease during first trimester. In this way (hysterectomy) the risk of maternal mortality can be reduced. Hysterectomy by a longitudinal laparotomy is recommended (O’Brien et al., 1996). A difficult factor is the balance between the risk to the infant from premature birth and the risk to the mother of waiting longer and maintaining the pregnancy.

Bilateral ligation of the internal iliac arteries offers a possibility to reduce blood loss during the hysterectomy (Souter et al., 1995). Other authors have described balloon catheter occlusion of the iliac vessels in patients with placenta percreta. The catheter is implanted pre-operatively and inflated, after delivery of the baby, during the hysterectomy (Dobois et al., 1997).

In some other cases, conservative procedures have also been described in order to preserve fertility; however, these are still

**Figure 2.** Invasive chorionic migratory cells in the myometrium (haematoxilin and eosin staining, magnification: ×400).

**Figure 3.** Placental villi in the outer layers of the myometrium (haematoxilin and eosin staining, magnification: ×200).
of an experimental nature. For example, resection of the afflicted area of the uterus (Cox et al., 1988) and covering of a uterine rupture by a Tacho Comb® sponge (Tekesin, 1999) have both been described. Other authors performed a treatment with methotrexate after delivery, and in some cases they were able to avoid a hysterectomy (Legro et al., 1994; Gupta and Sinha, 1998; Mussalli et al., 2000).

However, this method must be critically considered. Jaffe et al. and Silver et al. have reported failures of methotrexate therapy. In cases of a clinical suspicion of placenta percreta the placenta is left in situ during the Cesarean section. Subsequently the patient is given methotrexate. If coagulation disorders occur there is no choice but to perform a final hysterectomy (Jaffe et al., 1994; Silver et al., 1997).

In conclusion, the case of placenta percreta in week 10 of gestation described here represents a very rare complication in circumstances and without knowledge of the definitive histo-

|References |


Submitted on May 21, 2001; accepted on November 6, 2001