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Asymptomatic acute massive abruptio placenta at 30 weeks' gestation in a primigravida with no risk factors – clinical presentation and management

Asymptomatické akutní masivní odloučení placenty v 30. týdnu těhotenství u primigravidy bez rizikových faktoru – klinické projevy a léčba

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Summary: Abruptio placenta can be a catastrophic event with a high association with adverse maternal and fetal outcomes. We present a case of massive abruptio placenta occurring in a young asymptomatic mother at 30 weeks' gestation. Although electronic fetal monitoring and ultrasound allowed a prompt diagnosis of an 8 × 5 cm retroplacental hematoma, the fetus died at the time of emergency cesarean section. The fetus was intubated, but could not be resuscitated. Histologic examination of the placenta documented thinning and stacked hypercapillarized villi, with syncytial buds and foci of fibrinoid necrosis in the presence of hyaline streaks on both the maternal and fetal sides.

Key words: abruptio placenta – no risk factors – acute fetal distress – emergency cesarean section – histopathological examination

Souhrn: Odloučení placenty může být katastrofální událostí s následky pro matku i plod. Prezentujeme masivní odloučení placenty, ke kterému došlo u mladé asymptomatické matky v 30. týdnu těhotenství. Ačkoli elektronický monitoring plodu a ultrazvuk umožnily rychlou diagnózu retroplacentárního hematomu o velikosti 8 × 5 cm, plod během akutního císařského řezu odumřel. Plod byl intubován a resuscitován, ale neúspěšně. Histologické vyšetření placenty prokázalo ztenčené a na sebe navrstvené choriové klky se zvýšeným množstvím kapilár a syncitiálními hnízdy a ložisky fibrinoidní nekrózy za přítomnosti hyalinních pruhů jak na straně matky, tak na straně plodu.

Klíčová slova: odloučená placenta – bez rizikových faktorů – akutní distres plodu – akutní císařský řez – histopatologické vyšetření

Introduction

In addition to providing oxygen to the developing embryo and fetus, the placenta is an essential organ that provides the fetus with a variety of nutrients, endocrine secretions, and protection from maternal infections. The placenta exerts its effects by releasing various types of molecules into the maternal and fetal circulation that act through autocrine, endocrine, and paracrine pathways [1–3].

Abruptio placenta is an acute event that occurs during pregnancy and can endanger both the mother and fetus, with an estimated incidence of 1/100–200 deliveries. In severe cases, abruptio placenta is associated with high neonatal mortality in the range of 1.2 per 1,000 births [2,4]. The underlying pathogenetic mechanism is decidual hemorrhage with secondary develop-

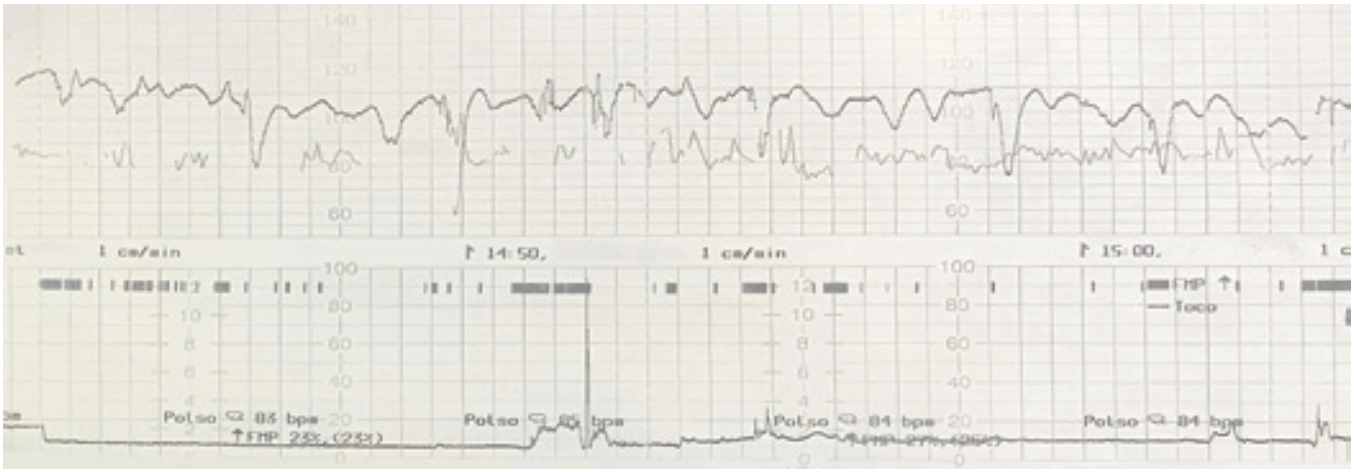

Fig. 1. Electronic fetal monitoring documenting an ominous pattern (agonal) according to ACOG Class III classification.
Obr. 1. Elektronické monitorování plodu dokumentující nepříznivý (agonální) stav podle klasifikace ACOG III. třídy.

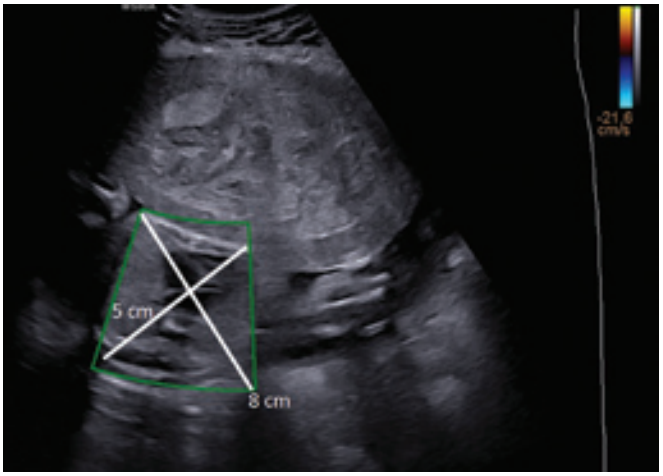

Fig. 2. Transabdominal ultrasound performed with a Hera WS80A apparatus (Samsung Corp., Seoul, South Korea): the green ROI (region of interest) shows a retroplacental hematoma measuring 8 × 5 cm.
Obr. 2. Transabdominální ultrazvuk provedený na přístroji Hera WS80A (Samsung Corp., Soul, Jižní Korea): zelená ROI (oblast zájmu) ukazuje retroplacentární hematom o rozměrech 8 × 5 cm.

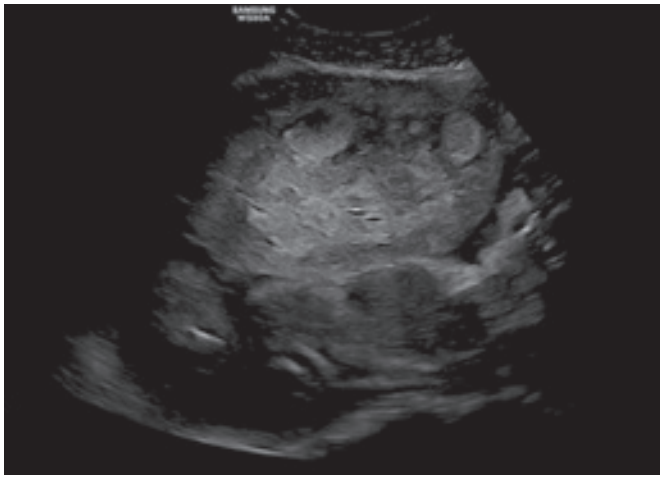

Fig. 3. Detail of the voluminous retroplacental hematoma measuring 8 × 5 cm on transabdominal ultrasound performed with a Hera WS80A apparatus (Samsung Corp., Seoul, South Korea).
Obr. 3. Detail objemného retroplacentárního hematomu o rozměrech 8 × 5 cm na transabdominálním ultrazvuku provedeném přístrojem Hera WS80A (Samsung Corp., Soul, Jižní Korea).

ment of retroplacental clots, resulting in decreased oxygen delivery at the maternal-fetal interface [5].

Case presentation

A 20-year-old primigravida at 30 weeks' gestation presented with mild to moderate bilateral lumbar pain resembling renal colic in a previously reported uneventful pregnancy. Obstetrical examination revealed a non-contracted uterus, closed cervix, and no vaginal bleeding. As per protocol, electronic fetal monitoring (EFM) was performed and showed an ominous pattern (agonal) consistent with American College of Obstetricians and Gynecologists (ACOG) class III classification (Fig. 1) [6].

Immediate transabdominal ultrasound showed acute loss of fetal heartbeat, while examination of the placenta revealed retroplacental hemorrhage measuring 8 × 5 cm involving the entire placental bed, resulting in complete detachment of the placenta to the decidua (Fig. 2, 3). The amniotic fluid was characterized by a large amount of hyperechogenic debris and sludge.

An emergency cesarean section was performed, and although no third trimester hemorrhage was seen clinically, the postpartum hemorrhage management protocol was activated to prevent subsequent obstetric complications. After a low segmental uterine incision, multiple clots were evacuated and the

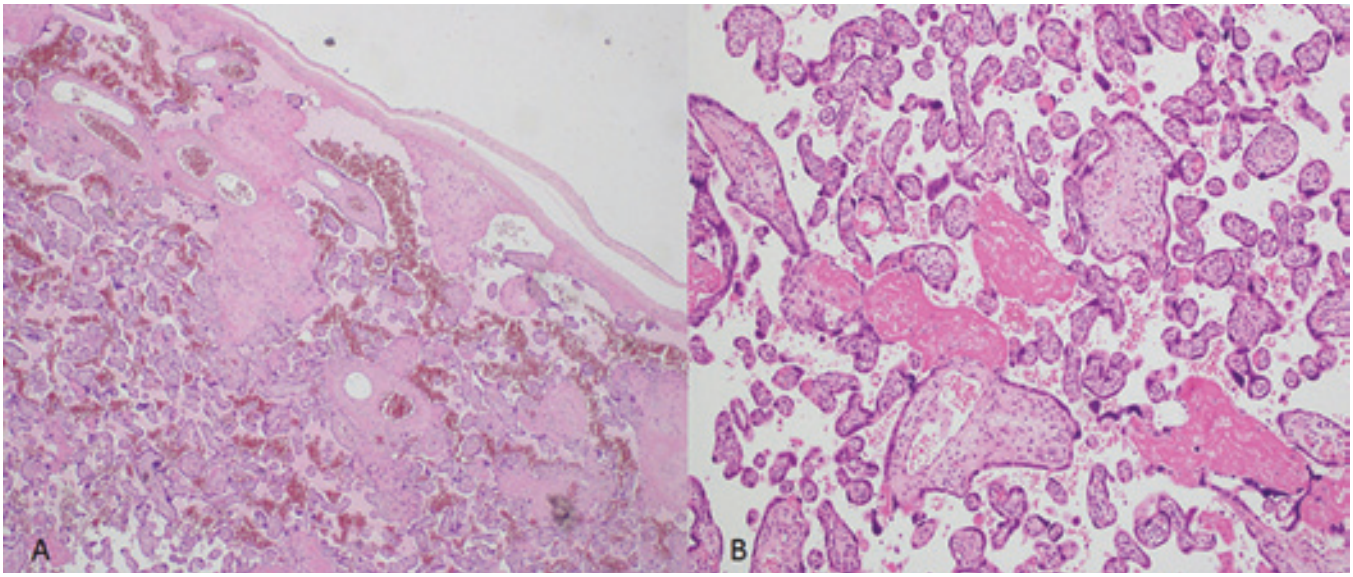

Fig. 4. Histological examination of the placenta showed thinned and stacked hypercapilarized villi with syncitial buds and foci of fibrinoid necrosis in the presence of hyaline streaks on both maternal (A) and fetal (B) sides (Hematoxylin Eosin, HPF ×100).

Obr. 4. Histologické vyšetření placenty ukázalo ztenčené a na sebe navrstvené hyperkapilarizované klky se syncitiálními pupeny a ložisky fibrinoidní nekrózy v přítomnosti hyalinních pruhů na mateřské (A) i fetální (B) straně (hematoxylin eozin, HPF ×100).

placenta was seen to be completely detached from the myometrium. Histological examination of the placenta documented thinning and accumulation of hypercapillarized villi with syncytial buds and foci of fibrinoid necrosis in the presence of hyaline streaks on both the maternal (A) and fetal side (B) (Fig. 4).

The fetus was delivered, intubated, and resuscitated without success. A B-Lynch suture procedure was performed along with administration of oxytocin 20 UI i.v. (intravenous) and metilergometrin 2 ampoules i.m. (intramuscular). The B-Lynch procedure was followed by placement of a Bacri balloon filled with 180 mL saline at the time of uterine closure. Misoprostol 200 µg 4 tablets p.r. (per rectum) was also administered at the end of the cesarean section and the Bacri balloon was removed after 24 h. The woman had a favorable outcome with normal laboratory tests (including red blood cell and platelet counts and coagulation factors) and was discharged five days after surgery. The woman underwent gynecological follow-up, which showed a complete recovery with a normal-appearing uterus. She gave birth to a healthy newborn weighing 2,910 g by planned cesarean section at 38 weeks' gestation 2 years later.

Discussion

In the vast majority of cases, placental abruption occurs at the level of the maternal vessels located in the basal decidua, specifically at the interface with the chorionic villi; rarely, abruption may originate from the fetal-placental vessels. The secondary formation of a hematoma may lead to an autolytic process or may develop through the deciduo-chorionic interface until the entire placenta is completely detached from the myometrial wall. This process may result in abnormal placental gas exchange, which may jeopardize fetal well-being. The typical maternal clinical presentation of abruptio placenta is characterized by vaginal bleeding, usually accompanied by acute abdominal pain and increased uterine tone with tachysystole (increased uterine contractions), while the reduced/altered gas exchange is usually associated with EFM abnormalities. Although several variables have been recognized as predisposing factors, such as advanced maternal age, Asian race, poor obstetric history, multiparity, and pre-eclampsia [7], our index case was not associated with any risk factors. The young mother had an uneventful pregnancy, normal arterial blood pressure, no smoking habit or cocaine abuse, no hypocromic microcytic anemia, no thrombophylaxis, and no abdominal trauma [8–10].

In our case, the woman presented only with mild to moderate atypical lower abdominal pain referred bilaterally to the lumbar region, overlapping those of renal colic, but with a negative Giordano maneuver. In addition, vaginal examination documented the absence of painful uterine contractions, vaginal bleeding, and blood pressure was within the normal range.

EFM showed an ominous pattern (agonal) consistent with an ACOG class III classification [6], and the emergency transabdominal ultrasound allowed the detection of a massive abruptio pla-

centa with a retroplacental hematoma measuring 8 × 5 cm. It is worth mentioning that although obstetric ultrasound has been shown to increase the detection rate of abruptio placenta, the absence of ultrasound diagnostic cluster(s) of the condition does not per se rule out the possibility of abruptio placenta [11]. Emergency cesarean section and management of the woman using the protocol used for mothers with postpartum hemorrhage has made it possible to prevent serious maternal complications associated with this condition, such as disseminated intravascular coagulopathy, hemorrhagic shock, and end-organ damage [12–14].

During a cesarean section, the development of a so-called Couvaliere's uterus [15] was promptly treated with uterine massage, B-Lynch suturing associated with Bacri balloon positioning [16,17], and oxytocin administration. The association of a B-Lynch procedure with the Bacri balloon has been validated by medical literature, which reports hemostatic improvement in such cases [18].

In conclusion, we have presented a case of acute, massive Abruptio placenta in an asymptomatic young primigravida resulting in fetal stillbirth. This clinical presentation is of great importance for obstetricians, medico-legal practitioners, and health care providers highlighting the key concept that even in the absence of clinical risk factors, obstetric complication(s) may occur and the application of protocols is mandatory to prevent, if possible, adverse perinatal outcome and medical life-threatening complications for the maternal-fetal binomial.

References

1. Gude NM, Roberts CT, Kalionis B et al. Growth and function of the normal human placenta. Thromb Res 2004; 114(5–6): 397–407. doi: 10.1016/j.thromres.2004.06.038.
2. Tonni G, Bonasoni MP, Araujo Júnior E. Physiopathology. In: Nardozza L, Araujo Júnior E, Rizzo G et al (eds). Fetal Growth Restriction. 1st ed. Cham: Springer 2018: 41–64.
3. Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. Acta Obstet Gynecol Scand 2011; 90(2): 140–149. doi: 10.1111/j.1600-0412.2010.01030.x.
4. Ananth CV, Keyes KM, Hamilton A et al. An international contrast of rates of placental abruption: an age-period-cohort analysis. PLoS One 2015; 10(5): e0125246. doi: 10.1371/journal.pone.0125246.
5. Brosens I, Puttemans P, Benagiano G. Placental bed research: I. The placental bed: from spiral arteries remodeling to the great obstetrical syndromes. Am J Obstet Gynecol 2019; 221(5): 437–456. doi: 10.1016/j.ajog.2019.05.044.
6. ACOG Practice Bulletin No. 106: Intrapartum fetal heart rate monitoring: nomenclature, interpretation, and general management principles. Obstet Gynecol 2009; 114(1): 192–202. doi: 10.1097/AOG.0b013e3181aef106.
7. Brandt JS, Ananth CV. Placental abruption at near-term and term gestations: pathophysiology, epidemiology, diagnosis, and management. Am J Obstet Gynecol 2023; 228(5S): S1313–S1329. doi: 10.1016/j.ajog.2022.06.059.
8. Ananth CV, Lavery JA, Vintzileos AM et al. Severe placental abruption: clinical definition and associations with maternal complications. Am J Obstet Gynecol 2016; 214(2): 272.e1–272.e9. doi: 10.1016/j.ajog.2015.09.069.
9. Odibo AO, Cahill AG, Stamilio DM et al. Predicting placental abruption and previa in women with a previous cesarean delivery. Am J Perinatol 2007; 24(5): 299–305. doi: 10.1055/s-2007-981430.
10. Oyelese Y, Ananth CV. Placental abruption. Obstet Gynecol 2006; 108(4): 1005–1016. doi: 10.1097/01.AOG.0000239439.04364.9a.
11. Glantz C, Purnell L. Clinical utility of sonography in the diagnosis and treatment of placental abruption. J Ultrasound Med 2002; 21(8): 837–840. doi: 10.7863/jum.2002.21.8.837.
12. Hall DR. Abruptio placentae and disseminated intravascular coagulopathy. Semin Perinatol 2009; 33(3): 189–195. doi: 10.1053/j.semperi.2009.02.005.
13. Benz R, Malär AU, Benz-Wörner J et al. Traumatic abruption of the placenta with disseminated intravascular coagulation. Anaesthesist 2012; 61(10): 901–905. doi: 10.1007/s00101-012-2084-3.
14. Chauveau D, Pirson Y, Le Moine A et al. Extrarenal manifestations in autosomal dominant polycystic kidney disease. Adv Nephrol Necker Hosp 1997; 26: 265–289.
15. Dashraath P, Wong YC. Couvelaire uterus. N Engl J Med 2020; 383(20): 1973. doi: 10.1056/NEJMicm2010749.
16. Allam MS, B-Lynch C. The B-Lynch and other uterine compression suture techniques. Int J Gynaecol Obstet 2005; 89(3): 236–241. doi: 10.1016/j.ijgo.2005.02.014.
17. B-Lynch C, Coker A, Lawal AH et al. The B-Lynch surgical technique for the control of massive postpartum haemorrhage: an alternative to hysterectomy? Five cases reported. Br J Obstet Gynaecol 1997; 104(3): 372–375. doi: 10.1111/j.1471-0528.1997.tb11471.x.
18. Price N, Whitelaw N, B-Lynch C. Application of the B-Lynch brace suture with associated intrauterine balloon catheter for massive haemorrhage due to placenta accreta following a second-trimester miscarriage. J Obstet Gynaecol 2006; 26(3): 267–268. doi: 10.1080/01443610600555634.

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