



Hemoperitoneum In a Gravid Female Secondary to Endometriosis

Dr. Sonia Arnowalt¹ (Specialty doctor), Dr. Deepa Pai Nadkarni¹ (Junior Clinical Fellow), Dr. Sujatha Kumari¹ (Consultant Obs & Gyn), Dr. Sujeewa Fernando¹ (Consultant Obs & Gyn).

1. Department of Obstetrics and Gynaecology, Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board, North Wales.

Corresponding Author: Dr. Sonia Arnowalt, Department of Obstetrics and Gynaecology, Wrexham Maelor Hospital, Betsi Cadwaladr University Health Board, North Wales.

Copy Right: © 2022 Dr. Sonia Arnowalt, This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received Date: July 18, 2022

Published Date: August 01, 2022

Abstract

Spontaneous hemoperitoneum in pregnancy (SHiP) is a less frequently occurring condition that can result in life-threatening complications to both mother and fetus with late detection. Endometriosis is proved to be a predisposing factor leading to the development of SHiP. Through our case, we aim to emphasize the importance of diagnosing and treating this condition as early as possible. A pregnant woman with a previous history of cesarean birth was presented with acute generalized pain abdomen during the start of the third trimester of her pregnancy. An emergency operative delivery was performed, suspecting a dehiscent scar, uterine rupture, or antepartum hemorrhage due to abruptio placentae given nonreassuring CTG and tender abdomen. Spontaneous hemoperitoneum secondary to intra-peritoneal bleeding from endometriotic implants was detected intraoperatively. The case was managed successfully with optimal maternal and fetal outcomes.

Preoperative diagnosis is challenging to the obstetrician as most of the time patient will not show features of hemorrhagic shock. Many times, diagnosis is reached only at the time of surgery due to the lack of specific symptoms. Obstetricians should keep a high suspicion of endometriosis-induced SHiP when gravid women show clinical features of peritoneal irritation, particularly during the later weeks of pregnancy.

Background

Endometriosis is usually observed in 10 – 20 % of women [1]. It is highly estrogenic–dependent resulting in the development of ectopic endometrial implants not only in the pelvis but also outside the pelvis like over the scars [2]. The main symptom of endometriosis is pain. It could be related to menstrual periods, sex especially with deep penetration, micturition and defecation, chronic pelvic pain, and heavy menstrual bleeding [3]. It is associated with infertility in around 50% of cases [4]. A significant number of patients can achieve pregnancy due to advancements in the treatment of endometriosis.

Over the years, many authors have opinionated that endometriotic implants both in and out of the uterus may undergo pregnancy-induced changes, making the women vulnerable to fatal obstetric complications [5]. The complications in pregnancy are attributed to the hormonal and immunological nature of endometriosis. It is observed that during pregnancy, endometriotic implants enlarge by 20%. This is explained by the pregnancy changes of the endometrium like decidualization or the resultant bleeding from the ectopic endometrium. Different mechanisms involved are altered eutopic endometrium with molecular and functional abnormalities, changes in the junctional zone myometrium, and failure of deep placentation⁵. Hypertensive disorders of pregnancy particularly preeclampsia, antepartum hemorrhage due to the low-lying placenta or abruptio placentae, delivery before 37 weeks, emergency operative births, and stillbirth are more reported by women with a history of endometriosis as evidenced by the literature [6].

One of the rare but serious complications of endometriosis reported is SHiP [5-12]. It is associated with endometriosis in more than 50 percent of cases [5]. It can occur with all stages of endometriosis and occurs mostly in the second half of pregnancy. As per Brosen et al controlled ovarian hyperstimulation in assisted reproductive techniques (ART) is associated with increased occurrence and severity of SHiP. We report an accidental detection of SHiP when the woman was taken for category one cesarean section.

Case Presentation

A gravida 2 para 1, aged 32 years and a mother of a four-year-old toddler, reported to the obstetric triage room with severe diffuse abdominal pain. She was into 35 weeks of her pregnancy. She had been diagnosed with severe endometriosis from the age of 18 years. She had had a history of two therapeutic laparoscopic surgeries of coagulation and excision of severe endometriosis with adhesiolysis followed by hormonal treatment. She conceived her first pregnancy through in vitro

fertilization treatment and delivered by cesarean section. Index pregnancy was a spontaneous conception after stopping hormonal treatment for 6 months. Her current pregnancy was uneventful till 35 weeks when she presented with acute sharp abdominal pain. The pain was more on the left side of the abdomen.

She presented with altered fetal movements and mild abdominal pain of three-day duration the previous day. There were no triggering events like abdominal injuries, sex, or constipation. Neither symptoms related to bowel and bladder issues nor vaginal bleeding were present. Abdominal examination was normal and revealed no scar tenderness. CTG was reassuring. Full blood count and urinalysis showed normal results. She was admitted for observation and discharged 6 hours later on request, as she was feeling comfortable. However, the pain gradually worsened over the night and she presented 18 hours later with severe generalized sharp abdominal pain. On admission, she scored eight for pain on the pain score scale where ten is taken as a maximum score. Her temperature, blood pressure, and oxygen saturation levels were normal. Maternal tachycardia with a heart rate of 120/min without any pallor was detected. Abdominal examination revealed generalized tenderness with normal uterine activity and contour. It was very difficult to differentiate scar tenderness from generalized abdominal tenderness. Per speculum examination revealed no vaginal bleeding and the cervix was closed. CTG revealed fetal tachycardia, along with shifting of baseline from 160/min to 190/min. Conservative measures were initiated with close monitoring of maternal and fetal parameters. Blood tests ruled out sepsis and there was no drop in her Hb level. As there was no improvement in maternal condition along with persistent fetal tachycardia, suspecting scar rupture or abruptio placentae on the clinical picture, a Category 1 cesarean section was performed.

Intra-operative findings revealed moderate hemoperitoneum. There was generalized oozing from decidualized endometriotic tissue from the dorsal and ventral surface of the uterus. A large number of endometriotic implants were noted on the right half of the uterus resulting in more bleeding from that side. The bleeding was arising from the varicose vessels of the parametrium and it almost mimicked a laceration on the right border of the uterus extending from the cornua up to the lower segment (Figure 1). Both infundibulopelvic ligaments and ovarian ligaments were grossly enlarged and congested. The previous scar was intact. There was no evidence of abruptio placentae. The baby was delivered with good Apgar and normal cord gases. Estimated blood loss was 1000ml. Hemostasis was achieved using electrocautery and sutures. The patient's postoperative course was uneventful. Both mother and baby were discharged safely after 2 days.



Figure 1 Intraoperative findings showed bleeding endometriotic deposits and bleeding from enlarged, congested varicose vessels of the parametrium which were eaten up by the decidualised endometriotic tissues.

Discussion

Accidental detection of hemoperitoneum during the pregnancy period is a very rare event. However, it has been demonstrated to be one of the fatal complications of endometriosis which can cause lethal damage to the mother and baby. The incidence of SHiP in women affected by endometriosis is 0.4%. This condition has been described outside the pregnancy at 61% whereas 18% were detected during the antenatal period, and 21% in the postnatal period [7]. The main clinical features are abdominal pain or discomfort, a drop in Hb level, and signs of fetal distress [8]. Ultrasound examination is useful to identify and quantify the extent of bleeding⁸. MRI lacks specificity and can be interfered with by the presence of a gravid uterus and poor compliance of the patient. The most common differential diagnosis is abruptio placentae, scar rupture, or uterine rupture. The other rare causes of intraperitoneal bleeding are peritoneal pregnancy, appendicular rupture, and rupture of intra-abdominal organs like

the liver and spleen. Hypertensive disorders and complications, acute fatty liver disease, and sepsis can also mimic this condition [9].

The diagnosis of SHiP in our case was unexpected as described in the literature because of its nonspecific presentation. However maternal tachycardia and persistent fetal tachycardia alarms are early features of intraperitoneal hemorrhage. We were able to achieve a good outcome for both mother and baby as prompt treatment was instituted with the differential diagnosis of scar rupture or antepartum hemorrhage due to concealed abruptio placentae. Endometriosis-related intraperitoneal bleeding during pregnancy is secondary to bleeding from endometriotic implants. The pelvic vasculature was made friable and brittle by the endometriotic implants resulting in spontaneous bleeding with mild traction by the enlarging uterus. The three noticeable features that lead to the disintegration and breaking of utero ovarian vasculature are (1) Prolonged and persistent inflammation of endometriosis, converting the vasculature into brittle (2) resultant adhesions may cause more stretching of the vasculatures on an enlarging pregnant uterus and (3) perforation of utero-ovarian vessels by decidualized endometriosis of pregnancy [10]. According to Brosens et al, the major source of the bleeding is veins, around 80%. The other sources are arterial in 16% and of unknown origin in 1% of cases [11]. In 90% of the cases, bleeding originates from the backside of the uterus, parametrium, and or uterosacral ligaments. In our case, the resultant bleeding was from endometriotic deposits and it was mostly venous in origin.

Lier et al were successful to identify a total of 91 cases of SHiP that were reported till 2016 [12]. We also agree with Lier et al who detected a left side preponderance of abdominal pain, as seen in our case. The SHiP does not have any predisposing factors like trauma, recent physical activity, or sexual intercourse, similar to our case which explains its spontaneity in nature. Lier et al opinionated that SHiP can be manifested repeatedly during the same pregnancy or it can recur in future pregnancies. The factors determining the management are clinical features, the nature of intraperitoneal bleeding, and gestational age. According to Lier et al, out of 95% of surgical management done, the indications of surgery mentioned like maternal indications, nonreassuring CTG, or combinations of both were 70 %, 4%, and 26 % respectively. Expectant management was advised for 5% of patients. However, the author was not able to find a relation between the extent of bleeding and the severity of endometriosis. The report emphasizes that surgery is beneficial to establish the cause of bleeding as endometriosis.

Many women with severe endometriosis are highly grateful to modern medicine as they were able to achieve a successful pregnancy with advancements in medical treatment especially assisted reproductive technologies. As a result, future obstetricians can expect more cases of SHiP during their

day-to-day practice. Due to the nonspecific clinical picture and the extreme rarity of the condition, it is very difficult to diagnose SHiP before planning surgical management as in our case. Delayed diagnosis can eventually result in catastrophic maternal and fetal complications. Lier et al described maternal mortality of 26 % and perinatal mortality as 1.7% whereas Brosen et al described maternal mortality as 36% and perinatal mortality as 4 %. We were able to reduce maternal mortality significantly, due to the advancement of surgical intervention, compared with perinatal mortality. Physicians should offer special clinical attention when a gravid female presents with progressive or rapid onset of abdominal pain with a background history of endometriosis. Prompt diagnosis with early treatment will result in a good maternal and fetal outcome.

References

1. Navarro R, Poder L, Sun D, Jha P. Endometriosis in pregnancy. *Abdom Radiol*. 2020 Jun 1;45(6):1741–53. <https://doi.org/10.1007/s00261-020-02486-7>
2. Giudice LC. Clinical practice. Endometriosis. *N Engl J Med*. 2010 Jun 24;362(25):2389–98. <https://doi.org/10.1056/NEJMcpl000274>
3. Vercellini P, Viganò P, Somigliana E, Fedele L. Endometriosis: pathogenesis and treatment. *Nat Rev Endocrinol*. 2014 May;10(5):261–75. <https://doi.org/10.1038/nrendo.2013.255>
4. Holoch KJ, Lessey BA. Endometriosis and infertility. *Clin Obstet Gynecol*. 2010 Jun;53(2):429–38. <https://doi.org/10.1097/GRF.0b013e3181db7d71>
5. Brosens I, Brosens JJ, Fusi L, Al-Sabbagh M, Kuroda K, Benagiano G. Risks of adverse pregnancy outcome in endometriosis. *Fertility and Sterility*. 2012 Jul;98(1):30–5. <https://doi.org/10.1016/j.fertnstert.2012.02.024>
6. Breintoft K, Pinnerup R, Henriksen TB, Rytter D, Uldbjerg N, Forman A, et al. Endometriosis and Risk of Adverse Pregnancy Outcome: A Systematic Review and Meta-Analysis. *Journal of Clinical Medicine*. 2021 Jan;10(4):667. <https://doi.org/10.3390/jcm10040667>
7. Passos F, Calhaz-Jorge C, Graça LM. Endometriosis is a possible risk factor for spontaneous hemoperitoneum in the third trimester of pregnancy. *Fertility and Sterility*. 2008 Jan;89(1):251–2. <https://doi.org/10.1016/j.fertnstert.2007.02.009>

8. Lier M, Malik R, van Waesberghe J, Maas J, van Rumpst–van de Geest D, Coppus S, et al. Spontaneous hemoperitoneum in pregnancy and endometriosis: a case series. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2017;124(2):306–12. <https://doi.org/10.1111/1471-0528.14371>
9. Cozzolino M, Corioni S, Maggio L, Sorbi F, Guaschino S, Fambrini M. Endometriosis-Related Hemoperitoneum in Pregnancy: A Diagnosis to Keep in Mind. *Ochsner J*. 2015;15(3):262–4. <http://www.ochsnerjournal.org/content/15/3/262>
10. Katorza E, Soriano D, Stockheim D, Mashiach R, Zolti M, Seidman DS, et al. Severe intraabdominal bleeding caused by endometriotic lesions during the third trimester of pregnancy. *Am J Obstet Gynecol*. 2007 Nov;197(5): 501.e1-4. <https://doi.org/10.1016/j.ajog.2007.04.030>
11. Brosens IA, Fusi L, Brosens JJ. Endometriosis is a risk factor for spontaneous hemoperitoneum during pregnancy. *Fertil Steril*. 2009 Oct;92(4):1243–5. <https://doi.org/10.1016/j.fertnstert.2009.03.091>
12. Lier MCI, Brosens IA, Mijatovic V, Habiba M, Benagiano G. Decidual Bleeding as a Cause of Spontaneous Hemoperitoneum in Pregnancy and Risk of Preterm Birth. *Gynecologic and obstetric investigation*. 2017;82(4):313-321. <https://doi.org/10.1159/000468933>