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A case of spontaneous heterotopic pregnancy in natural conception complicated with hemoperitoneum

Muhammad Aziz [a,b,c,*], Julio Arronte [a,d]

[a] Family Medicine Center, West Kendall Baptist Hospital, Baptist Health South Florida, Miami, FL, USA
[b] Florida International University, Department of Humanities, Health, and Society (HHS), Herbert Wertheim College of Medicine, Miami, FL, USA
[c] Center for Healthcare Advancement & Outcomes, Baptist Health South Florida, Miami, FL, USA
[d] West Kendall OBGYN, West Kendall Baptist Hospital, Miami, FL, USA

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ABSTRACT

Heterotopic pregnancy, defined as simultaneous intrauterine and ectopic gestations, is an uncommon occurrence in women who conceive without assisted reproduction techniques. We present the case of 28 years old female with strong family history of multiple gestations, who presented with acute severe abdominal pain and diagnosed with spontaneous heterotopic pregnancy in natural conception. Ectopic pregnancy was successfully removed surgically to conserve the uterine pregnancy. After one week, patient presented with vaginal bleeding and diagnosed with missed abortion and lost her desired uterine pregnancy. This case report discusses the significance of early diagnosis and treatment of heterotopic pregnancy to avoid both fetal and maternal morbidity and mortality. Practitioners should carry a high index of suspicion for heterotopic pregnancy in patients presenting with common symptoms and carry a family history of multiple gestation pregnancies.

1. Introduction

Heterotopic pregnancy is the concurrent development of both intrauterine and ectopic pregnancies. It is associated with significant morbidity and mortality for both mother and fetus including hypovolemic shock, fetal loss and maternal mortality, and early diagnosis is critical [1]. While the majority of extra-uterine pregnancies are found within the fallopian tubes, those located within the abdomen increase the risk of maternal mortality up to 90 times greater than that of a normal intrauterine pregnancy [1, 2]. While being relatively uncommon in spontaneous conception with 1 in 30,000 cases reported, the incidence of heterotopic pregnancy increases to 1 in 3900 when conception is enhanced with various assisted reproduction techniques (ART) including in vitro fertilization, super ovulation, and intrauterine insemination. Additionally, other important risk factors for the development of heterotopic pregnancy includes a family history of multiple gestations, endometriosis, tubal disease, history of pelvic inflammatory disease, elevated levels of female hormones, embryo transfer technique, or increased number of transferred embryos [3, 4]. The current case is a rare occurrence of heterotopic pregnancy complicated with Hemoperitoneum in a patient with natural conception and a strong family history of multiple gestation pregnancies. The patient was also reported to be born as a consequence of a multiple gestation pregnancy.

2. Case report

Patient is a 28 year old Hispanic female with a past medical history of abdominal liposuction and tonsillectomy who presented to the emergency room (ER) with complaints of acute severe abdominal pain, dyspnea associated with chest pressure, chills, sweats, cough, rhinorrhea, back pain, and pelvic pain. At presentation, the patient stated that she was 7 weeks pregnant conceived spontaneously without use of assisted reproduction techniques. Family history revealed multiple gestation pregnancies in numerous family members including her grandmother, mother and twin sister. A stat EKG, cardiac troponin, and pancreatic function tests were negative. Quantitative hCG was 111,360.0 MIU/ML, confirming pregnancy. A transvaginal ultrasound showed one gestational sac with fetal cardiac activity of 93 betas per minutes in the endometrial cavity with mean crown-rump length of 6 weeks 0 days (Figure 1). A second gestational sac in the right adnexa with a fetal pole and cardiac motion was also seen with mean crown-rump length corresponding to 7 weeks 3 days (Figure 2). A presumed diagnosis of heterotopic pregnancy was made and confirmed upon repeat ultrasound.

* Corresponding author.
E-mail address: maziz@fiu.edu (M. Aziz).

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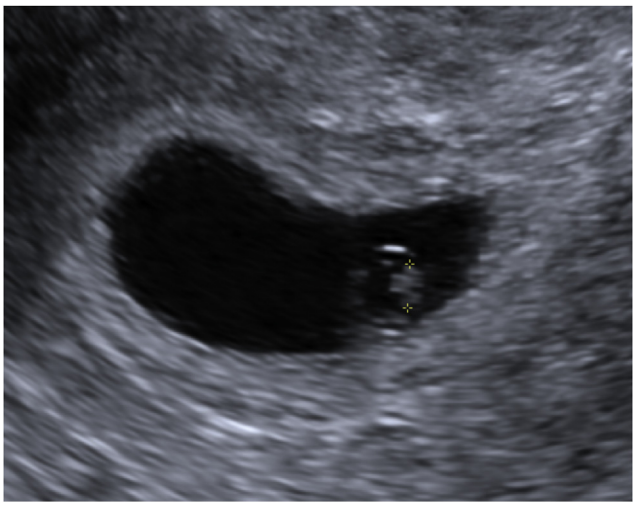

Figure 1. Pregnancy in uterus.

The patient was counseled extensively regarding the diagnosis of heterotopic pregnancy and she discussed the risks and benefits of each treatment option with her provider. Having voiced that this was a desired pregnancy, the patient opted to preserve the intrauterine pregnancy and to proceed with removal of the ruptured ectopic. The surgical procedure consent process was completed and a laparoscopy with right partial salpingectomy, lysis of adhesions, and evacuation of hemoperitoneum was performed successfully. The uterus was not explored in order to maintain intrauterine pregnancy viability. Preoperative diagnosis was pelvic pain, and heterotopic pregnancy with an intrauterine pregnancy and a suspected right ruptured ectopic pregnancy. Postoperative diagnosis was the same along with confirmed right ruptured ectopic pregnancy and hemoperitoneum. The pathology report showed right fallopian tube with products of conception containing chorionic villi admixed with focally organizing blood clot, proteinaceous debris, scant mucin and blood consistent with tubal ectopic pregnancy. The patient was discharged home in stable condition on post-operative day 1 with the recommendation to follow up with her obstetrician as outpatient. A few days after initial discharge from the hospital, the patient returned to the ER with complaints of vaginal bleeding. On exam, she was suspected to have a missed abortion and diagnosis was confirmed with stat transvaginal ultrasound revealing no intrauterine cardiac activity. At this moment she had lost her desired intrauterine pregnancy. A dilatation and curettage was performed without complications and pathology report showed portions of necrotic decidua, endometrium and chorionic villi consistent with a missed abortion.

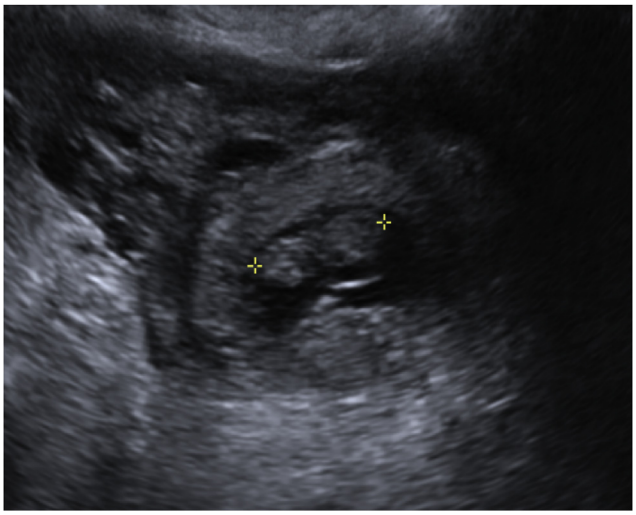

Figure 2. Pregnancy in right adnexa.

2.1. Ethical approval/Patient consent

Patient was informed in detail about the writing of the case report and possibility of future publication of patient's clinical history without sharing patient identification information. Patient is fully aware of this case report research work and patient has provided permission to write this case report.

3. Discussion

The diagnosis of a heterotopic pregnancy poses unique therapeutic challenges. Clinically, it manifests nonspecifically with abdominal pain, vaginal bleeding, and spotting which presents similarly to both normal pregnancies and abnormal obstetrical complications. It can also present as an adnexal mass in the setting of an enlarged gravid uterus with or without peritoneal irritation [1, 5]. Diagnosis is often delayed due to early visualization of an intrauterine sac with late detection of any adnexal abnormalities [1]. An intrauterine gestation should not rule out a simultaneous extra-uterine pregnancy, and a detailed history and physical examination is of crucial importance to explore all possible risk factors related to heterotopic pregnancy [5]. Patients with a history of previous tubal damage, ectopic pregnancy, assisted reproduction techniques (ART), or a family history of multiple gestations should raise clinical suspicion and warrants further investigation when presenting with symptoms of heterotopic pregnancy.

Management includes minimally invasive methods of terminating the extra-uterine sac while taking measures to preserve the intrauterine pregnancy [4, 6]. Research has compared the use of surgical and medical management in the treatment of heterotopic pregnancy. While salpingectomy through laparoscopy or laparotomy definitively treats the ectopic pregnancy and is recommended in cases of pregnancy rupture, the risk of hemorrhage requiring hysterectomy is possible, compromising the current intrauterine gestation and any future desire of the patient to conceive [7]. Surgery may also lead to a spontaneous abortion of the viable uterine pregnancy as seen in this case. Medical treatment options include an ultrasound-guided injection of potassium chloride into the corneal sac or fetal heart which allows the patient to avoid both surgery and anesthesia. It should be noted that a higher abortion rate of the intrauterine pregnancy was documented in patient undergoing medical versus surgical management in proportions of 50%–13% [8, 9]. Although the incidence of heterotopic pregnancy has increased tremendously over the last decade due to the use of ART, other possible causes of heterotopic pregnancy should not be ignored in clinical practice [8, 10]. According to US statistics, about two-thirds of the increase in the twin birth rate in the last three decades is likely associated with ART and non-ART infertility treatments while the remaining one third is related to other factors including family history of multiple gestation, exogenous hormones, diet, and race [5, 9, 11]. In current case study, the patient did not seek any ART but did report a strong family history of multiple gestation pregnancies and a history of abdominal liposuction. This case signifies the importance of gathering a complete family history, including multiple gestations in women of childbearing age and counseling them regarding the potential benefits and risks of carrying multiple gestations.

Additionally, women with an increased risk of conceiving multiple gestational pregnancies should have close monitoring and frequent prenatal visits throughout the duration of their pregnancy [7].

4. Conclusion

This case report discusses the significance of early diagnosis and treatment of heterotopic pregnancy to avoid both fetal and maternal

morbidity and mortality. Although heterotopic pregnancy in natural conception is a rare event than one as a consequence of assisted reproduction techniques, but the outcomes are same if heterotopic pregnancy occurs. Practitioners should carry a high index of suspicion for heterotopic pregnancy in patients with intrauterine pregnancy presenting with acute abdominal pain, abdominal tenderness, and or free fluid in the abdominal cavity. Our case study signifies that such differential diagnosis further narrows down to heterotopic pregnancy in those patients who also have risk factors for the heterotopic pregnancy.

Declarations

Author contribution statement

All authors listed have significantly contributed to the investigation, development and writing of this article.

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Competing interest statement

The authors declare no conflict of interest.

Additional information

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References

[1] S.H.M. Siraj, W.W. Wee-Stekly, B.S.M. Chern, Heterotopic pregnancy in a natural conception cycle presenting as acute abdomen: a case report and literature review, Gynecol. Minim. Invas. Ther. 3 (2014) 100–102.
[2] V. Mihmanli, A. Kilickaya, N. Cetinkaya, et al., Spontaneous heterotopic pregnancy presenting with hemoperitoneum, J. Emerg. Med. 50 (2016) 44–46, 2015/10/07.
[3] P.J. Cheng, H.Y. Chueh, J.T. Qiu, Heterotopic pregnancy in a natural conception cycle presenting as hematometra, Obstet. Gynecol. 104 (2004) 1195–1198, 2004/11/02.
[4] S. Farnaghi, A. Kothari, Heterotopic pregnancy: a report of two cases, Australas J. Ultrasound Med. (2013) 30–36.
[5] S. Ooki, Estimation of the contribution of assisted and non-assisted reproductive technology fertility treatments to multiple births during the past 30 years in Japan: 1979-2008, Twin Res. Hum. Genet. 14 (2011) 476–483, 2011/10/04.
[6] J.B. Li, L.Z. Kong, J.B. Yang, et al., Management of heterotopic pregnancy: experience from 1 tertiary medical center, Medicine (Baltim.) 95 (2016), e2570.
[7] NICE Clinical Guidelines, Multiple Pregnancy-The Management of Twin and Triplet Pregnancies in the Antenatal Period, National Collaborating Centre for Women's and Children's Health (UK), 2011. https://www.ncbi.nlm.nih.gov/books/NBK83105/.
[8] G. Barrenetxea, L. Barinaga-Rementeria, A. Lopez de Larruzea, et al., Heterotopic pregnancy: two cases and a comparative review, Fertil. Steril. 87 (2007) 417, e419-415. 2006/11/01.
[9] J.A. Martin, B.E. Hamilton, M.J. Osterman, Three Decades of Twin Births in the United States, 1980-2009. NCHS Data Brief, 2012, pp. 1–8, 2012/05/24.
[10] T. Felekis, C. Akrivis, P. Tsirkas, et al., Heterotopic triplet pregnancy after in vitro fertilization with favorable outcome of the intrauterine twin pregnancy subsequent to surgical treatment of the tubal pregnancy, Case Rep. Obstetr. Gynecol. 2014 (2014) 356131.
[11] C. Hoekstra, G. Willemsen, T.C.E.M. van Beijsterveldt, et al., Familial twinning and fertility in Dutch mothers of twins, Am. J. Med. Genet. Part A 146A (2008) 3147–3156.