ScieniQ Publishers

Japan Journal of Medical Science

Case Report

Blighted Ovum, intrauterine viable gestation and Left Tubal ectopic pregnancy following Invitro-fertilisation- A case report and review of literature

Chidinma Magnus NWOGU[1], Ayodeji Kayode ADEFEMI[2*], Aloy Okechukwu UGWU [3]

[1]Kingswill Advanced Fertility Specialist Hospital, Lagos, Nigeria
[2]Lagos State University Teaching Hospital, Ikeja
[3]Lagos University Teaching Hospital, Idi-Araba

Corresponding author
Ayodeji Kayode Adefemi. Lagos State University Teaching Hospital, Ikeja

Received: 29 July 2024
Accepted : 05 Aug 2024
Published: 09 Aug 2024

Copyright
©2024 Ayodeji Kayode Adefemi
OPEN ACCESS

Abstract

Blighted ovum, otherwise referred to as anembryonic pregnancy, is a common complication following pregnancies conceived via invitro fertilization and embryo transfer (IVF-ET). It occurs when there is a gestational sac with a failed embryo development. On the other hand, the co-existent of viable intrauterine and ectopic pregnancy (heterotopic pregnancy) is rare. However, the advent of assisted reproductive technologies and treatment (ART) has increased the occurrence of heterotopic pregnancies. We present a case of heterotopic pregnancy alongside twin intra-uterine gestation one of which is viable and the other a blighted ovum with the presence of a co-existing uterine fibroid. She had laparotomy and salpingectomy for the ectopic gestation and conservative management of the intra-uterine pregnancies and an eventual live birth of a singleton baby at term. This case report highlights the importance of early ultrasound scan post ART in order to diagnose the different forms of pregnancy and manage them as appropriate.

Keywords: Blighted Ovum, invitro fertilization, Heterotopic pregnancy, Assisted Reproductive Techniques, Vanishing twin syndrom

INTRODUCTION

Heterotopic pregnancy is the co-existence of an intrauterine and an extra-uterine pregnancy and may present with both diagnostic and therapeutic challenges [1,2].

Majority of documented cases of heterotopic pregnancies co-exist with single intra-uterine gestation, however, co-existence with multiple gestation has also been reported but rare [3,4].

Heterotopic pregnancy on its own is very rare in spontaneous conception occurring in 1 in 30,000 pregnancies and rising to 1 in 900 with ovulation induction and as much as 1 in 100 to 1 in 500 with ART [1]. It may co-exist with multiple intra-uterine gestation of which one or more may undergo an early fetal demise.

Vanishing twin syndrome is early spontaneous fetal demise followed by disappearance of one of the twins [5]. It is also known as fetal reabsorption [6], or vanishing fetus. The pattern of fetal resolution could either be the initial presence of two viable embryos with cardiac pulsation sonographically with subsequent spontaneous reduction of one embryo or a single viable embryo co-existing with a non-viable gestational sac at the first scan (blighted ovum or missed abortion) followed by disappearance of the later in the first trimester [7].

The advent and access to ART alongside early detection made possible by advancement and widespread use of transvaginal ultrasonography has not only led to earlier diagnosis and more cases of heterotopic pregnancy but also increased the incidence of the vanishing twin phenomenon from about 12 to as much as 36% in assisted reproductive conceptions [1, 8, 9].

We present a case of a twin pregnancy (intra-uterine viable fetus with a blighted ovum) and left tubal ectopic pregnancy.

Case

Patient was a 40-year -old lady with ten-year history of primary infertility. She had no significant surgical history or medical history besides having had six cycles of intra-uterine insemination. Pre- IVF ultrasound scan revealed a solitary subserous fundal myoma of 5x4cm, although there was no history of heavy menstrual bleeding or painful menses. Her endometrium was normal. Her anti-mullerian hormone was in the range of negligible response. She had a donor oocyte IVF during which three good grade blastocysts were transferred. She had a positive serum pregnancy test 14 days post embryo transfer. On the day of her pregnancy confirmatory ultrasound scan at five weeks post embryo transfer, she presented with right iliac fossa pain of two days duration, but no vaginal bleeding. A transvaginal ultrasound scan done for her revealed a gestational sac with fetal pole and cardiac activity in **the left adnexa** alongside **two intra-uterine gestational sacs** with fetal pole and cardiac activity in one sac and absent fetal pole or cardiac activity in the second intra-uterine sac. There was a subserous fundal myoma of 5cm x 4cm diameter. She had laparotomy via a midline incision to minimize handling and trauma to the uterus especially with the presence of a myoma. Her pre op vital signs includes a heart rate of 100 beats per minute, Blood pressure of 120/70mmHg, respiratory of 18 cycles per minute and oxygen saturation of 98 % on room air. A left salpingectomy was done, with negligible blood loss.

Her post op recovery was uneventful. She was administered luteal phase support using intramuscular gemstone 100mg daily for five days to aid uterine relaxation.

She was subsequently discharged to be followed up every two weeks with serial ultrasound scan which good fetal development of one intra-uterine fetus and gradual and asymptomatic resolution of the co-existing blighted ovum which was no longer visualized by 12 weeks gestation.

She had an uneventful antennal afterwards and had a live birth by an elective caesarean section at 39 weeks.

Transvaginal ultrasound scan showing two intra-uterine gestation, one with a fetal pole and blighted ovum of the other and an ectopic pregnancy with fetal pole on the left adnexa.

Discussion

The societal impact of childlessness on mental health of couples, their personal wellbeing, and continued marital relationship cannot be overemphasized in developing countries where large family size is the expected norm [10]. The economic benefit of IVF-ET abounds to mitigate these couples' suffering. However, these gains brought about by the advent of assisted conception are not without its complications. All fertility treatment options which increases the rate of multiple gestation, so also the proportion of complications which also include ectopic pregnancy, blighted ovum, vanishing twin and heterotopic pregnancy.1 Such is the case of the index patient, who had donor-cycle IVF-ET after ten-years of infertility. The same applies to the early loss of one or more fetus as there are more cases of multiple conceptions in comparison to multiple births [6].

Multiple embryo transfer into the intrauterine cavity during IVF is a key factor implicated both for heterotopic pregnancy and vanishing twin phenomenon. The patient presented in this report has had six failed intrauterine inseminations and subsequently got pregnant following an in-vitro fertilization with donor oocytes during which three blastocysts were transferred. Most heterotopic pregnancies are usually diagnosed early in the first trimester as in the patient presented11. This is because of the early application of ultrasonography with conceptions following assisted reproduction.

A vanishing co-twin in its earliest stages ends up as a blighted ovum or a missed abortion and is hardly visible after the first trimester usually by an asymptomatic resolution or at most present with vaginal bleeding 6. The presence of vaginal bleeding with an intra-uterine gestation irrespective of cardiac pulsation may blunt the suspicion of a co-existing heterotopic gestation.

Abdominal pain and or bleeding per vagina are the commonest presenting symptoms of heterotopic pregnancies while some cases can be asymptomatic [1]. The index patient presented with right iliac fossa pain at 7 weeks of gestation.

Heterotopic pregnancy can present a diagnostic challenge and sometimes result in delayed diagnosis which can be fatal1. This is because it could present with a viable intra-uterine pregnancy with a tubal, cervical, ovarian, or other types of ectopic pregnancy [11]. A high index of suspicion should be anticipated in the event of; assisted reproductive techniques, absence of vaginal bleeding in the presence of signs and symptom of ectopic gestation, even if an intrauterine gestation has earlier been demonstrated sonographically, persisting or rising chorionic gonadotrophins after uterine evacuation for an abortion, or curettage for cervical ectopic pregnancy, when the uterine fundus is larger than for menstrual dates without multiple intra-uterine gestation or pre-existing pelvic mass, presence of more than one corpus luteum in a natural conception [4, 6, 9, 11].

Clinical signs and symptoms of heterotopic pregnancy are usually nonspecific and may be confused other pregnancy complications. The appropriate rise in the b-hCG concentration caused by the intra-uterine gestation makes serial b-hCG non-useful. Early transvaginal sonography as commonly done following ART helps in early diagnosis however identification of an intrauterine gestation(s) irrespective of viability tends to reduce the index of suspicion of an extra uterine gestation especially as any vaginal bleeding could easily be attributed to the threatened miscarriage of a viable gestation or missed abortion if non-viable leading to a delayed diagnosis [12].

Sonographically, a bicornuate uterus with gestation in both cavities may mimic a heterotopic pregnancy just as intrauterine gestation with haemorrhagic corpus luteum can also simulate heterotopic gestation both clinically and sonographically [10,12]. Other abdominal conditions such as presence of a pre-existing adnexal mass, neoplasm, abortion and adnexal torsion are also differentials [11]. There are a number of risk factors for heterotopic pregnancy, such as previous tubal damage, ectopic pregnancy, ovulation induction and ART techniques [1]. Ovulation induction and ART are both a risk for heterotopic ectopic and a vanishing twin phenomenon. Multiple gestations in the setting of advance maternal age is associated with fetal aneuploidy which is a key culprit in vanishing twin phenoemenon [6,7]. Heterotopic pregnancy and vanishing twin phenomenon separately can occur in the absence of any predisposing risk factors, and the detection of the intrauterine pregnancy does not exclude the possibility of the simultaneous existence of heterotopic pregnancy [13]. The risk factors present in our case are those of assisted conception with multiple embryo transfer during IVF.

The aim of management of heterotopic pregnancy is the removal of the extra-uterine variety while taking precautions to minimize any possible threat to the gravid uterus [1]. The non-viable intra-uterine gestation expected to be spontaneously reabsorbed. The surgical removal of the extrauterine gestation either laparoscopically or via laparotomy will depend on patient's clinical state, available resources and skill with minimal manipulation of the gravid uterus [1, 3, 14].

There is increased risk of spontaneous abortion of the intrauterine pregnancy after treatment for the heterotopic pregnancy [14]. Reduction in the risk of spontaneous abortion of the intrauterine gestation employed in this case was taking care to avoid damage to the corpus luteum, minimal handling or manipulation of the gravid uterus, and various prophylactic uterine relaxants to reduce uterine irritability such as progesterone and salbutamol.

Medical management of heterotopic pregnancy by systemic methotrexate

is limited by the safety concerns of the intrauterine gestation [1]. Selective potassium chloride injection has been applied successfully to cases of tubal, cervical, caesarean scar, and cornual or interstitial pregnancies with preservation of the coexistent intrauterine pregnancy [15].

There has been a higher rate of adverse pregnancy outcomes following a diagnosis of vanishing gestation whatever the mechanism might be [9]. The later the demise of a co-twin the more the associated complications and such complications are same as those made more common following IVF conceptions [16].

Conclusion

Heterotopic pregnancy is associated with high risk of maternal morbidity and mortality hence a high index of suspicion is necessary for early and timely diagnosis especially in ART setting. A co-existing vanishing twin in the presence of vaginal bleeding and or abdominal pain could be misleading. Ultrasound scan is an invaluable tool in the diagnosis. Prompt intervention to remove the ectopic component can be lifesaving by preventing tubal rupture and haemorrhagic shock which can be life threatening while the two intrauterine variety are managed expectantly.

Ethical Approval

This study was approved by the research committee of the Kingswill advanced fertility center Lagos, where this patient was managed.

Guarantor

The corresponding author will act as the guarantor for this manuscript.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of manuscripts.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms for the data to be published.

Acknowledgments

We are also grateful to all our nurses and midwives at Kingswill advanced fertility center, Lagos where this patient was managed for their dedication to duty.

Financial support and sponsorship

None.

Conflicts of interest

None.

References

1. Olamijulo JA, Okusanya BO, Adenekan MA, Ugwu AO, Olorunfemi G, Okojie O (2020). Ectopic pregnancy at the Lagos University Teaching Hospital, Lagos, South-Western Nigeria: Temporal trends, clinical presentation and management outcomes from 2005 to 2014. Niger Postgrad Med J. 27: 177-183. doi: 10.4103/npmj.npmj_35_20. PMID: 32687116.
2. Koutras A, Fasoulakis Z, Diakosavvas M, Syllaios A, Pagkalos A, Samara AA, Tsatsaris G, Ntounis T, Theodora M, Sindos M, Kontomanolis EN (2021). Cervical Twin Heterotopic Pregnancy: Overview of Ectopic Pregnancies and Scanning Detection Algorithm. Medicina (Kaunas). 15: 57-969. doi: 10.3390/medicina57090969. PMID: 34577892; PMCID: PMC8471448.
3. Ectopic Pregnancy, textbook of-Williams Obstetrics. 21st ed. Multifetal Ectopic pregnancy 34: 888-889.
4. Fan Y, Du A, Zhang Y, Xiao N, Zhang Y, Ma J, Meng W, Luo H (2022). Heterotopic cervical pregnancy: Case report and literature review. J Obstet Gynaecol Res. 48: 1271-1278. doi: 10.1111/jog.15193. Epub 2022 Feb 21. PMID: 35191138; PMCID: PMC9303410.
5. Almog B, Levin I, Wagman I, Kapustiansky R, Lessing JB, Amit A, Azem F (2010). Adverse obstetric outcome for the vanishing twin syndrome. Reprod Biomed Online. 20: 256-260.
6. Chen P. The vanishing Trilets (2015). Clinics Mother and Child. 12: 196. Doi: 10.4172/2090-7214.1000196.
7. Marton V, Zadori J, Kozinszky Z, Kereszturi A (2016). Prevalence and pregnancy outcomes of vanishing twin pregnancies achieved by in vitro fertilization versus natural conception. Fertil Steril. 106: 1399-406.
8. Pontius E, Vieth JT (2019). Complications in Early Pregnancy. Emerg Med Clin North Am. 37: 219-237. doi: 10.1016/j.emc.2019.01.004. PMID: 30940368.
9. van Oppenraaij, R.H., Jauniaux, E., Christiansen, O.B., et al (2009). Predicting adverse obstetric outcome after early pregnancy events and complications: a review. Hum. Reprod. Update 15: 409–421.
10. Ugwu AO, Igbodike EP, Funtua Anas R, Kusamotu OA, Adefemi A, Anyobode O, Okeke CJ, Umezuluike BS, Shehu JS, Ige S, Harrison NE, Ayeni SA, Okpara AL, Soibi-Harry P, Ngwu HO, Makwe CC, Ugwu EO, Achara JI, Olamijulo JA, Garba S, Garba R, Omisakin SI (2023). A Multicenter Retrospective Cohort Study of the Profile of Seminal Fluid Analyses of Men Seeking Fertility Care at Different Hospitals. West Afr J Med. 28:40: 863-868. PMID: 37639545.
11. Ugwu AO, Makwe CC, Omisakin SI, Ani-ugwu NK, Augustine E, Ojiefoh LG, et al (2021). Successful management of cervical ectopic pregnancy following invitro fertilisation. Hellenic Journal of Obstetrics and Gynecology. 3:20: 221–4.
12. Medvediev MV, Malvasi A, Gustapane S, Tinelli A (2020). Hemorrhagic corpus luteum: Clinical management update. Turk J Obstet Gynecol. 17: 300-309. doi: 10.4274/tjod.galenos.2020.40359. Epub 2020 Dec 10. PMID: 33343977; PMCID: PMC7731611.
13. Ljuca D, Hudi_c I, Hadzimehmedovi_c A (2011). Heterotopic pregnancy in natural conception e our initial experience: case report. Acta Clin Croat. 50: 249-252.
14. Elhadidi A, Alhariri A, Hosny Garib M, Mansour A, Almutiri B (2020). Ruptured Heterotopic Pregnancy: A Rare Encounter in Acute Surgical Care Settings. Cureus. 30:12: e11782. doi: 10.7759/cureus.11782. PMID: 33409029; PMCID: PMC7779178.
15. Yeh J, Aziz N, Chueh J (2013). Nonsurgical management of heterotopic abdominal pregnancy. Obstet Gynecol. 121: 489-495.
16. Sullivan-Pyke CS, Senapati S, Mainigi MA, Barnhart KT (2017). In Vitro fertilization and adverse obstetric and perinatal outcomes. Semin Perinatol. 41: 345-353. doi: 10.1053/j.semperi.2017.07.001. Epub 2017 Aug 14. PMID: 28818301; PMCID: PMC5951714.

Cite this article: Chidinma Magnus NWOGU, Ayodeji Kayode ADEFEMI, Aloy Okechukwu UGWU. (2024) Blighted Ovum, intrauterine viable gestation and Left Tubal ectopic pregnancy following Invitro-fertilisation- A case report and review of literature. Japan Journal of Medical Science 5 (1): 162-164.

Copyright: ©2024 **Ayodeji Kayode Adefemi.** This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.