Ectopic gestational-sac encapsulated in an ovarian cyst: A case report

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ABSTRACT

Ovarian pregnancy is a rare and life-threatening condition accounting for 0.63% of all ectopic gravidae. In this case report, we present a 30-year-old woman with gravida 3; para 2 + 0 (2 alive) who attended our facility for a routine ultrasound scan. She complained of non-acute abdominal pain with no vaginal bleeding; she had a positive β -HCG test (Beta Human Chorionic Gonadotropin). Ultrasonography revealed a huge left ovarian mass 49mm in diameter, with an embedded decidua of a gestational sac 20mm, and a live foetal pole with a Crown-Rump Length (CRL) of 11mm corresponding to 7weeks + 1-day gestational age. Oophorectomy later confirmed the ultrasonographic diagnosis of ovarian pregnancy. Ovarian pregnancy is an uncommon but serious condition that requires fast intervention to prevent rupture and massive haemorrhage. This case shows that early diagnosis, ectopic-variation awareness, intervention and patient counselling would ultimately improve maternal health outcomes in women of reproductive age.

Keywords: ectopic, ovarian, pregnancy, ultrasound, women, Rwanda

Introduction

Ovarian pregnancy is a rare form of ectopic gravidae. Incidence ranges from 0.6% to 1% of all reported ectopic gestations or 1 in 8,000 to 40,000 live births.[1] Diagnosis is based on histopathological, radiologic and surgical records.[1] Common risk factors for ectopic pregnancy are previous hormonal treatment, Assisted Reproductive Techniques (ART) and Intra Uterine Device (IUD) use.[2] In most cases, ovarian pregnancies 'self-terminate' with a rupture in the first trimester, and risk of a life threatening massive internal haemorrhage.[3]

Ultrasonography is vital for supporting the diagnosis through the detailed analysis of the anatomy of organs or visceral-region involved. However, some conditions require increased attention. For instance, foetal euthyroid goitre, can unusually present as a homogenous anterior neck mass in a 34-week pregnancy as discussed by Neto et al.,[4] or in the case of a ruptured advanced tubal ectopic pregnancy which rarely presents as a foetus floating in a fluid collection in the left adnexal region.[5] Therefore, the accurate location and nature of an ectopic pregnancy, requires meticulous attention to detail, and an understanding of

normal anatomy visualized by ultrasound.

Tubal ectopic pregnancies are more frequent than mural or intrabdominal ectopic pregnancies.[6] Mural ectopic pregnancies are defined as an uncommon type of ectopic pregnancy where the embryo implants in the muscular wall of the uterine myometrium instead of the endometrial cavity. This condition is different from more common types of ectopic pregnancies such as tubal gravidae, where the embryo implants in a fallopian tube. Abdominal ectopic pregnancy is a dangerous and rare condition involving a fertilized egg implanted outside the uterus, within the abdominal cavity. This can be primary or secondary to a recent rupture; implantation sites include the mesentery, intestines and peritoneum. It carries a high risk of haemorrhage and maternal mortality.[6,17] Due to the location of tubal ectopic pregnancies, a patient may have symptoms mimicking other conditions like gastroenteritis or pathologic-cysts. In the literature,[7] there are reported unusual presentations of tubal ectopic pregnancies; just like gastroenteritis appearing similar to an adnexal mass in CT. Others are unilateral uterine bleeding prone to the 'pitfall' of wrong diagnosis of being an adnexal ectopic pregnancy.[8] Therefore, ectopic pregnancies may not only be confusing on ultrasound scans but also in their clinical presentation of signs and symptoms. They may mimic multiple diseases, such as echinococcal cysts, gastroenteritis or abnormal uterine bleeding with a halo.

Frequently, conditions may be undiagnosed because of unusual and misleading presentations. For instance, the detection of small, retained products-of-conception in miscarriages can be missed by ultrasound. In other cases, intrauterine pregnancies and ectopic pregnancies may be indistinguishable.[9] Ultrasonography is regarded the gold standard diagnostic tool for ectopic pregnancies and related conditions but nevertheless misdiagnoses still occur.[10] To reduce misdiagnoses, patient preparation is essential to improve the success rates in transabdominal and trans-pelvic ultrasound examinations.[11]

In addition to careful analysis of ultrasound images to avoid diagnostic errors in ectopic pregnancies, it is important to share clinical experiences of unusual presentations to increase awareness among clinicians and sonographers of atypical presentations.

Case Report

A 30-year-old biparous woman came to our hospital complaining of pelvic pain with amenorrhoea for two months. Blood tests confirmed a positive pregnancy test, albeit with a lower level of serum β -HCG titres. Ultrasound examination revealed a gestational sac (GS) with a well-defined oval anechoic lesion with double hyperechoic walls and intrinsic echogenic content comprised of foetal parts (Figures 1a, 1b) and located within the left ovary.

The patient was referred to an obstetrician for surgery which was conducted the next day. We sought informed consent from the patient for the purposes of publishing this case report and received ethical approval from the Kampala International University Teaching Hospital, Uganda.

Figure 1a shows a transabdominal sonogram of the left ovary demonstrating the gestational sac (GS) as a well-defined round anechoic lesion. CRL= 11.0mm, GSD= 20mm, GA= 7weeks + 1 day. There are thick double hyperechoic walls with internal echogenic-parts determined as the foetal pole (FP) and located inside the large left ovarian cyst (CY), averaging 49mm in diameter. The foetal pole (FP) is viable with no evidence of bleeding or occurrence of Anembryonic Pregnancy (Blighted Ovum). It was noted that there was a thicker bilateral distance (between right and left sides) and a 'sunken' crown-rump tissue as opposed to being 'suspended'. Note that the ovarian stroma surrounding the ovarian cyst has a soft tissue echo-pattern. A second ultrasound scan before elective surgery confirmed this same diagnosis of cystic ectopic gravidae.

Figure 1b shows cystic ectopic pregnancy inside a cystic sac. This is the same sonogram (as Figure 1a) without the legends to clearly delineate the longitudinal anatomy.

Figure 2 shows a normal intra-uterine (UT) pregnancy; a pelvic sonogram shows an oval decidua gestational sac diameter (GSD) embedded with hyperechoic rim and a viable foetal pole. CRL of foetal pole is 20.7 mm corresponding to 8 weeks + 2 days / note foetal heart rate = 158bpm seen in the top left corner.

Discussion

Ultrasonography for the identification of ectopic pregnancies is a cornerstone of obstetric practice. As highlighted in this case report of a 30-year-old woman with G3P2 + 0 (2 alive), the intricate nature of ultrasound imaging can yield both precise diagnoses (Figure 1a) and potential misinterpretations. Ectopic pregnancies, particularly those occurring in the adnexa, present diagnostic challenges due to their atypical presentations and the overlapping symptoms with other conditions,

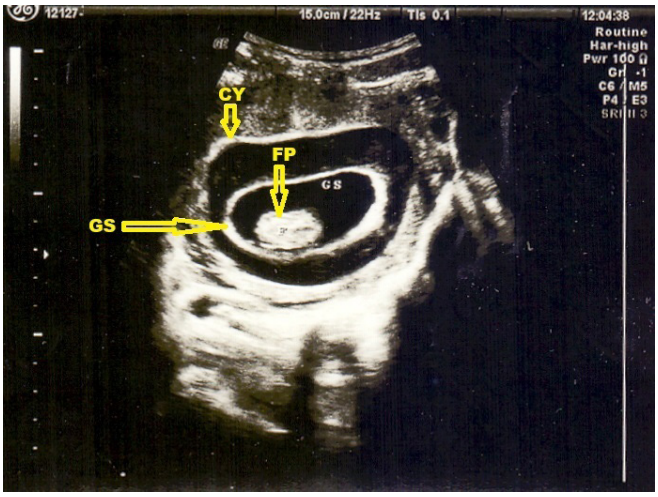

Figure 1a. Left ovarian ectopic pregnancy. Gray scale sonographic image showing clear evidence of left ovarian ectopic pregnancy. Visualization of the embryo in the ovary mimics a corpus luteum cyst. No perisac haemorrhage seen; the right adnexa appeared normal and otherwise unremarkable.

Figure 1b. Central anechoic gestational sac in the left ovary. Unlabelled mirror image of 1a; Note the central anechoic gestational sac of the left ovary measuring 52mm x 48mm in polar diameter. Observe the embedded intact gestational sac (20mm) containing a foetal pole. Ultrasound revealed a regular shaped and empty uterus (not shown).

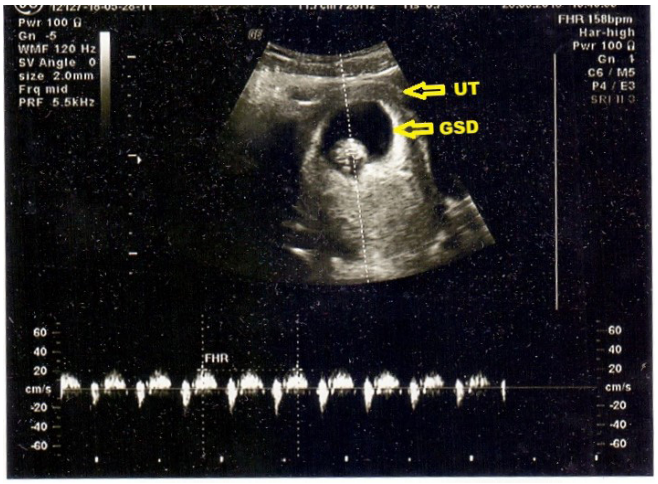

Figure 2. Normal ultrasound of a gravid uterus. Ultrasound image of a live foetal pole with cardiac activity. The Pouch of Douglas is free of fluid.

such as ovarian cysts or causes of acute abdominal pain.[12] This case highlights the complexities involved, as the ectopic pregnancy was identified within a large ovarian cyst, a scenario that is not commonly encountered.

Typically, ectopic pregnancies are associated with implantation within the fallopian tubes. However, they can also occur in the ovaries or abdominal cavity.[13] In this case (Figure 1a), the ultrasound findings revealed a gestational sac within an anechoic lesion in the left ovary. The presence of a well-defined oval anechoic lesion with double hyperechoic walls and intrinsic echogenic content shows a dual structural confluence between decidua tissue of the ectopic pregnancy and the ovarian cyst. Such complexities require a high level of ultrasonographic skill, particularly in distinguishing between a normal pregnancy and an ectopic one amidst confounding factors.[14] It can also be misdiagnosed as a cyst enveloping a foreign body.

Patients often present with symptoms that mimic other conditions, such as gastroenteritis or abnormal uterine bleeding, leading to clinical misdiagnosis.[7] The literature underscores the necessity for healthcare providers to maintain a high index of suspicion for ectopic pregnancies, especially in women of childbearing age presenting with abdominal pain and amenorrhoea. This case report serves as a reminder of the importance of thorough clinical evaluation and the need for practitioners and sonographers to remain vigilant in their assessments.

Patient preparation is an important aspect influencing the accuracy of ultrasound examinations, particularly in obstetric scans. For transvaginal sonography, a patient is advised to empty her bladder before the procedure to allow for optimal visualization of pelvic structures. For transabdominal sonography, patients are instructed to arrive with a full bladder, which helps to elevate the uterus and improve image quality. They may also be advised to avoid consuming certain foods that could cause gas,

as this can hinder the clarity of the ultrasound images. Inadequate patient preparation can lead to suboptimal imaging, thus hindering the diagnostic process.[15]

The complexity of diagnosing ectopic pregnancies is illustrated by various challenging scenarios. For instance, a 30-year-old woman presenting with an ovarian cyst had ultrasound imaging revealing a gestational sac within the cyst (Figures 1a & 1b), complicating the diagnosis as it could easily be misinterpreted as a simple cyst rather than an ovarian ectopic pregnancy. A normal intra-uterine gestation with viable foetal pole is shown in Figure 2. Another case report[7] was of a patient diagnosed initially with gastroenteritis. A CT scan revealed a ruptured ectopic pregnancy, underscoring the need for radiologic vigilance in women of reproductive age presenting with gastrointestinal symptoms. Additionally, ectopic pregnancies can mimic abnormal uterine bleeding, leading to a host of wrong conclusions such as complex-fibroids, dermoid-cysts, adnexal masses which delays appropriate treatment. These examples highlight the critical importance of thorough clinical evaluation and maintaining a high index of suspicion for ectopic pregnancies in atypical presentations.

Furthermore, our case indicates the need for continuing education and the review of case studies among ultrasound practitioners. Familiarity with a diverse range of presentations enhances diagnostic skills and reduces the likelihood of misinterpretation.[16] In agreement with a report from Ukwenya et al[17] ectopic gravidae (tubal, peritoneal or cystic) may be challenging to diagnose if the urinary bladder is flaccid. Documenting and sharing experiences contribute to the collective knowledge base, facilitating better recognition of atypical presentations in future clinical practice. Timely intervention is essential, as the risk of rupture increases with delayed diagnosis, potentially leading to life-threatening complications. Ambiguous ultrasound results, such as a gestational sac that does not clearly indicate whether it is intrauterine (Figure 2) or ectopic (Figure 1), necessitate advanced skills in image interpretation to avoid mismanagement.

Conclusion

Ultrasound scanning remains the gold standard for diagnosing ectopic pregnancies, but it is fraught with challenges. The complexities involved in interpreting ultrasound images necessitate thorough clinical evaluation and a commitment to continuous learning. By fostering a culture of attention to detail and ongoing education, healthcare providers can significantly improve diagnostic accuracy, ultimately enhancing patient outcomes in cases of ectopic pregnancy.

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