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RUPTURED ECTOPIC PREGNANCY PRESENTING AS ACUTE APPENDICITIS WITH A FALSE NEGATIVE URINE PREGNANCY TEST IN A LIMITED RESOURCE SETTING: A CASE REPORT

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Abstract

Background: Ectopic pregnancy is a potentially life-threatening condition that requires prompt diagnosis and management. However, its clinical presentation can be variable and may mimic other causes of acute abdomen, particularly in limited resource settings. The presence of a false-negative urine pregnancy test further complicates the diagnostic process. **Case Presentation**: A 30-year-old woman presented to the emergency department with a 2-day history of right lower abdominal pain accompanied by fever, nausea, vomiting, and fatigue. She reported irregular menstrual cycles and a history of vaginal spotting one week prior, with a negative home urine pregnancy test. On examination, the patient was hemodynamically unstable, with hypotension, tachycardia, and signs of peritoneal irritation, including positive McBurney and psoas signs. Laboratory findings showed mild anemia and leukocytosis. Based on clinical findings, an Alvarado score of 8/10 suggested probable acute appendicitis. However, bedside ultrasonography revealed significant free intraperitoneal fluid and a right adnexal mass consistent with ectopic gestation. The patient was diagnosed with ruptured ectopic pregnancy with hypovolemic shock. Initial management included fluid resuscitation followed by referral to a higher-level facility for definitive surgical treatment. **Discussion**: This case highlights the diagnostic challenge of ectopic pregnancy, particularly when classical symptoms are absent and urine pregnancy tests yield false-negative results. Limited access to advanced diagnostic tools, such as serum β-hCG, further complicates decision-making in primary care settings. Bedside ultrasonography plays a crucial role in early detection and differentiation from other causes of acute abdomen. **Conclusion**: Ectopic pregnancy should always be considered in women of reproductive age presenting with acute abdominal pain, regardless of urine pregnancy test results. Strengthening the diagnostic capacity of general practitioners, particularly in basic obstetric ultrasonography, is essential to improve early recognition and reduce morbidity and mortality in resource-limited settings.

Key words: Ruptured ectopic pregnancy; Acute abdomen; Appendicitis mimic; Point-of-care ultrasound

INTRODUCTION

Ectopic pregnancy is defined as the implantation of a fertilized ovum outside the normal uterine cavity, most commonly occurring within the fallopian tubes. Despite representing only 1% to 2% of all pregnancies, ectopic pregnancy is a primary cause of maternal morbidity and mortality in the first trimester if management is delayed or inadequate [1]. The prevalence of this condition has shown an increasing trend globally, influenced by risk factors such as pelvic inflammatory disease, previous tubal surgeries, and the use of assisted reproductive technologies [2]. In clinical practice, a ruptured ectopic pregnancy represents a true surgical emergency that requires immediate intervention to prevent fatal intra-abdominal hemorrhage [3].

The clinical diagnosis of ectopic pregnancy is often challenging due to its diverse presentation, which frequently mimics other medical conditions. Although the classic triad consists of abdominal pain, amenorrhea, and vaginal bleeding, many patients present with non-specific symptoms that can be easily misinterpreted as acute appendicitis [4]. Furthermore, the common reliance on point-of-care urine pregnancy tests as a primary screening tool in emergency settings may be misleading when results are negative. Studies have shown that false-negative results occur in approximately 1% to 1.6% of cases, often due to low beta-hCG levels or the "hook effect," potentially leading to dangerous delays in appropriate surgical management [5,6].

In limited resource healthcare settings, particularly in areas with a shortage of obstetric specialists, general practitioners often serve as the first line of defense in identifying obstetric emergencies. This challenge is further compounded by limited access to advanced diagnostic modalities, including quantitative serum β-hCG testing and formal radiologic imaging. As a result, timely diagnosis often depends heavily on clinical judgment and the availability of basic diagnostic tools. In recent years, the use of bedside ultrasonography by general practitioners has emerged as a valuable and practical solution in such settings. This modality enables early identification of key findings suggestive of ectopic pregnancy, such as free intraperitoneal fluid and adnexal masses, even before confirmatory laboratory tests are available [7].

CASE(S) PRESENTATION

A 30-year-old woman with no history of comorbidities or prior surgery presented to the Emergency Department with a chief complaint of right lower abdominal pain for two days prior to admission. The pain was accompanied by fever, nausea, vomiting, and fatigue. The patient denied any vaginal bleeding or discharge but reported experiencing vaginal spotting for three days one week prior to admission, along with a negative home urine pregnancy test performed the day before presentation. She did not use contraception and reported irregular menstrual cycles. Her obstetric history included two spontaneous pregnancies resulting in live births without complications and no history of ectopic pregnancy. She also reported a prior episode of lower abdominal pain associated with foul-smelling vaginal discharge that improved with treatment approximately one year earlier.

On physical examination, the patient appeared hemodynamically unstable, with marked tenderness on both superficial and deep abdominal palpation. Signs of peritoneal irritation were present, including positive McBurney and psoas signs, as well as rebound tenderness. Additional findings included diaphoresis, pallor, hypotension (85/62 mmHg), tachycardia (121 beats per minute), fever (38°C), and a visual analog scale (VAS) pain score of 8–10. Within 20 minutes, her blood pressure further declined to 75/50 mmHg, indicating worsening hemodynamic compromise.

Gynecological examination revealed a livid cervix with a closed external cervical os, no evidence of abnormal vaginal discharge, and minimal vaginal bleeding. On vaginal toucher examination, the vaginal mucosa was smooth, and the cervix was soft. Cervical motion tenderness (portio rocking pain) was present, and bulging of the pouch of Douglas was noted, suggesting the presence of intra-abdominal pathology.

Laboratory investigations showed leukocytosis with a white blood cell count of 11,500/μL and a hemoglobin level of 10.5 g/dL, while other laboratory parameters were within normal limits. The urine pregnancy test was negative, and serum β-hCG testing was not available at the facility. Based on the clinical presentation and laboratory findings, the patient had an Alvarado score of 8 out of 10, indicating a high probability of acute appendicitis.

A bedside ultrasonographic examination performed by a general practitioner demonstrated a large amount of free intraperitoneal fluid. Additionally, a 2 cm cystic mass was identified in the right adnexal region, resembling a gestational sac with a fetal pole. These findings were highly suggestive of an ectopic pregnancy.

A bedside ultrasonographic examination performed by a general practitioner demonstrated the absence of a target sign in the McBurney region, reducing the likelihood of

acute appendicitis. Instead, there was a significant amount of free intraperitoneal fluid observed in the right lower quadrant, partially containing internal mobile echoes, as presented in **Figure 1**. Furthermore, the uterus appeared enlarged with a thickened wall structure, and a cystic lesion measuring approximately 2 cm was identified in the right adnexal region. This lesion resembled a gestational sac containing a fetal pole, which is highly suggestive of an ectopic pregnancy, as shown in **Figure 2**.

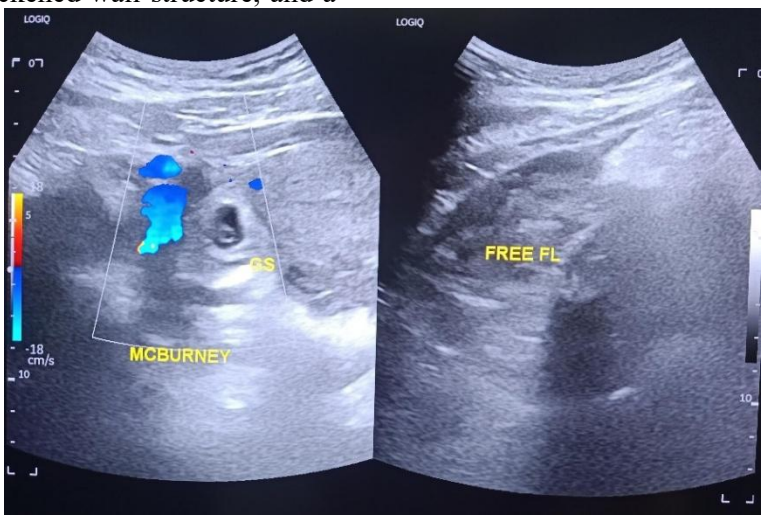

Figure 1. Absence of target sign in the McBurney region with significant free intraperitoneal fluid and internal mobile echoes in the right lower quadrant.

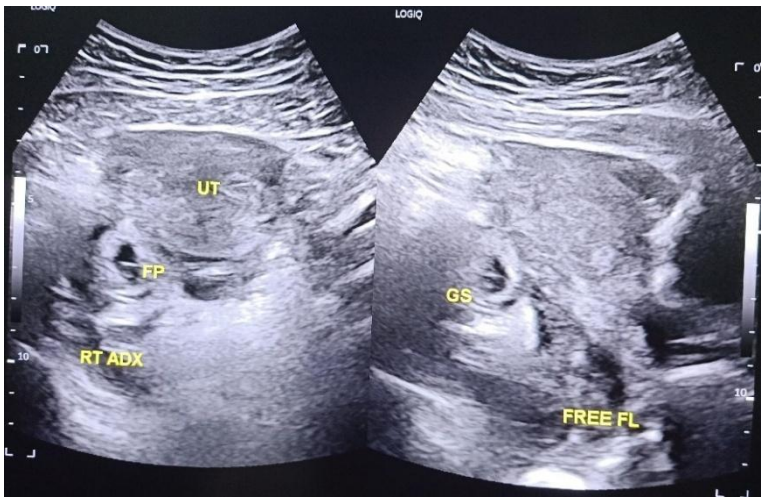

Figure 2. Enlarged uterus with a 2 cm right adnexal cystic structure resembling a gestational sac with a fetal pole.

The patient was diagnosed with a ruptured ectopic pregnancy complicated by hypovolemic shock. Initial management included fluid resuscitation with 1000 cc of Ringer Lactate solution to stabilize her condition. Following stabilization, the patient was referred to a higher-level healthcare facility with specialized obstetric and gynecological services, as these were not available at the initial hospital.

DISCUSSION

Ruptured ectopic pregnancy (REP) occurs when a fertilized ovum implants outside the uterine cavity, most commonly within the fallopian tube, eventually leading to tubal rupture and potentially life-threatening intra-abdominal hemorrhage. Although REP accounts for only approximately 1%–2% of all pregnancies, it remains a major contributor to maternal morbidity and mortality in the first trimester

when diagnosis and management are delayed [1,8]. The underlying pathophysiology involves trophoblastic invasion into the tubal wall, which lacks the decidual capacity necessary to support normal embryonic growth. As the gestational tissue expands, progressive distension increases intraluminal pressure, ultimately resulting in rupture of the tubal serosa and acute hemoperitoneum requiring urgent intervention [7,9].

A clinical diagnostic challenge in this case was the negative urine pregnancy test, a phenomenon reported in approximately 1.6% of ectopic pregnancies. False-negative results may arise from several mechanisms, including diluted urine samples, low β-hCG production from small or poorly developed villous tissue, also decreased hormone secretion due to trophoblastic degeneration [5,6]. Additionally, the "hook effect," in which excessively high concentrations of β-hCG saturate assay antibodies and produce falsely negative results, may also contribute to diagnostic error [9]. This case underscores the limitation of relying solely on qualitative urine testing. In situations where clinical suspicion remains high, further evaluation with serum β-hCG measurement or repeat testing is essential to avoid missed or delayed diagnosis [10].

The clinical presentation of REP can closely resemble acute appendicitis, as demonstrated in this patient, who had an Alvarado score of 8/10, indicating a probable diagnosis of appendicitis. Both conditions commonly present with right lower quadrant abdominal pain, fever, nausea, and signs of peritoneal irritation such as positive McBurney and psoas signs. The close anatomical relationship between the right fallopian tube and the appendix increases the risk of diagnostic anchoring, which may delay recognition of an underlying obstetric emergency. Therefore, ectopic pregnancy must always be considered a key differential diagnosis in women of reproductive age presenting with acute abdomen, regardless of initial test results [4, 11].

The patient was in grade III hypovolemic shock, necessitating immediate and aggressive fluid resuscitation to preserve organ perfusion. Standard management involves rapid administration of isotonic crystalloid fluids, such as Ringer's Lactate, at an initial dose of approximately 20 mL/kg, typically totaling 1–2 liters [12]. In this case, administration of 1000 mL of Ringer's Lactate successfully stabilized the patient's hemodynamic status, serving as a critical bridge to definitive care. Continuous monitoring of vital signs and hemodynamic parameters is essential to evaluate the effectiveness of resuscitation prior to transfer or surgical intervention [12,13].

Definitive management of ruptured ectopic pregnancy is primarily surgical, particularly in patients with hemodynamic instability or evidence of significant hemoperitoneum. While medical management with methotrexate may be considered in carefully selected stable patients with unruptured ectopic pregnancy. The presence of rupture and active intra-abdominal bleeding necessitates urgent surgical intervention, either via laparotomy or laparoscopy, to achieve hemostasis [3,14]. In resource-limited settings, the immediate priority is stabilization followed by referral to a higher-level facility equipped with obstetric and gynecological surgical capabilities. Early recognition and timely surgical management are crucial in reducing morbidity and preventing mortality [1,14].

General practitioners play a pivotal role as frontline providers in recognizing and managing obstetric emergencies, particularly in resource-constrained environments. The integration of basic obstetric ultrasound training in recent years has significantly enhanced their ability to evaluate acute abdominal conditions at the bedside. In this case, the use of point-of-care ultrasonography enabled the identification of free intraperitoneal fluid and a right adnexal mass measuring approximately 2 cm with a fetal pole, which was critical in establishing the correct diagnosis [15]. This case highlights that the combination of clinical vigilance and accessible diagnostic tools is essential to overcome misleading findings and ensure timely, life-saving management.

CONCLUSION

Ruptured ectopic pregnancy is a life-threatening obstetric emergency that requires a high index of clinical suspicion, especially when presenting with atypical symptoms that mimic other acute abdominal conditions such as appendicitis. This case demonstrates that a negative urine

pregnancy test does not definitively rule out the diagnosis, as false-negative results can occur due to low β-HCG levels, diluted urine, or the hook effect. The integration of bedside ultrasonography by general practitioners serves as a vital diagnostic tool in resource-limited settings, enabling the rapid identification of free intraperitoneal fluid and adnexal masses even in the absence of specialist services. Ultimately, early hemodynamic stabilization through aggressive fluid resuscitation and prompt referral for definitive surgical intervention are paramount to ensuring patient survival and improving maternal outcomes.

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ETHICAL DECLARATION

Ethical approval for this case report was obtained from the Institutional Ethics Committee of Saiful Anwar Hospital.

CONFLICT of INTEREST

There is no conflict of interest

FUNDING

There is no funding resources

PATIENT CONSENT

Written informed consent was obtained from patient by the authors to publish the written case report and show the accompanying figure

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