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CASE REPORT

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A fatal outcome following uterine perforation and pelvic abscess after hysterosalpingography: A case report

Esther Nyambura[1], Khushboo Sonigra[1*], Oscar Mwangi[1], Evyonne Mutabari[1], Kireki Omanwa[1]

1. Department of Obstetrics and Gynecology, University of Nairobi, Nairobi, Kenya

***Correspondence:** khushys90@gmail.com

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Abstract

Background: Hysterosalpingography (HSG) is a widely used diagnostic tool in infertility evaluation. Although generally safe, it carries a rare risk of severe complications, including infections.

Case presentation: A 43-year-old gravida 1 para 1, with secondary infertility for 15 years, presented with generalized body malaise, dyspnea, easy fatiguability, progressive abdominal pain, and noticeable abdominal swelling. The patient developed a pelvic abscess secondary to uterine perforation, two weeks after HSG. Despite antibiotic therapy and surgical drainage, her condition progressively deteriorated, culminating in septicemia and death.

Conclusion: Although rare, severe complications of HSG, such as uterine perforation and pelvic abscess, can be fatal. Early recognition and multidisciplinary management are essential to improve outcomes.

Keywords: Acinetobacter baumannii, media, hysterosalpingography, infertility, pelvic abscess, postoperative complications

Introduction

Hysterosalpingography (HSG) is an outpatient fluoroscopic procedure used to evaluate the uterine cavity and tubal patency using oil- or water-soluble contrast agents (1). It provides information on cervical dimensions, uterine morphology, tubal patency, and, in select cases, peritubal adhesions (2). Contraindications include pregnancy, unexplained vaginal bleeding, pelvic infection, and allergy to contrast agents (1). Active menstruation is considered a relative contraindication (1–3). While prophylactic antibiotics are not universally administered before the procedure, they may be considered for individuals with a prior history of pelvic inflammatory disease or if dilated tubes or peritubal adhesions are identified during the study, as these findings have been associated with an elevated risk of post-procedural infections (3). Complications arising from HSG are exceedingly rare and encompass infection, allergic reactions, and syncope (1). There have been isolated case reports of shock and cerebral embolism associated with the use of oil-soluble contrast media (4). This is a case of a 43-year-old woman, para 1+0 with secondary infer-

tility who exhibited a pelvic abscess after undergoing hysterosalpingography.

Case presentation

A 43-year-old gravida 1 para 1, with secondary infertility for 15 years, was under follow-up at the infertility clinic of Kenyatta National Hospital (KNH). She presented with generalized malaise, dyspnea, easy fatiguability, progressive abdominal pain, noticeable abdominal swelling, fever, and constipation. She denied respiratory and cardiovascular symptoms. Two weeks earlier, she had undergone HSG, which demonstrated uterine fibroids and bilateral terminal hydrosalpinx. Her past medical history was unremarkable. On admission, she was febrile (38.2°C) but hemodynamically stable. The abdominal examination revealed generalized tenderness and distension without guarding, and the respiratory examination showed tachypnea with basal crepitations. Pelvic and breast examinations were unremarkable. Laboratory investigations revealed anemia (hemoglobin 8 g/dl, reference 12-15 g/dL), microcytosis (mean cell volume 70 fL, reference 83-101 fL), leukocytosis (white blood count 21.3 x 10^9/L, reference 4–10 x 10^9/L), and neutrophilia (16.8 x 10^9/L (2–7 x 10^9/L). C-reactive protein was markedly elevated (148.34 mg/L, reference 0-4.0 mg/L). Liver and kidney function tests, and coagulation profile were normal. COVID-19 antigen testing was negative. Abdominopelvic ultrasonography suggested intestinal obstruction and multiple uterine fibroids, the largest measuring 2.7 x 2.2 cm. A computed tomography (CT) pulmonary angiogram showed bibasal pneumonia with mild bilateral pleural effusions and patchy ground glass opacifications suggestive of interstitial pneumonitis.

The patient was admitted to the critical care unit with a working diagnosis of sepsis secondary to pneumonia and partial intestinal obstruction. She was managed by a multidisciplinary team including gynecologists, intensivists, general surgeons, and pulmonologists. Initial treatment included supplemental oxygen (10 L/min by non-rebreather mask), empiric intravenous (IV) amoxicillin-clavulanate 1.2g twice daily, IV metronidazole 500mg three times daily, subcutaneous clexane 40mg daily, IV paracetamol 1g three times daily, and bowel rest with supportive therapy. Blood cultures subsequently grew coagulase-negative Staphylococcus resistant to amoxicillin-clavulanate, prompting a switch to IV clindamycin 600mg three times daily.

Despite therapy, she developed progressive abdominal distention and guarding. Repeat blood tests showed persistent anemia and hypoalbuminemia (22.9 g/L, reference 35-54 g/L). Liver enzymes were deranged with elevated γ-glutamyl transferase (116.9 U/L, reference 11-52 U/L) and alkaline phosphatase (309.5 U/L, reference 42–141 U/L). Abdominopelvic CT revealed multiple peripherally enhancing loculated intra-abdominal and pelvic collections with air–fluid levels, peritoneal fat stranding, and para-aortic and pelvic adenopathy, consistent with pelvic and intra-abdominal abscesses. She underwent exploratory laparotomy, which revealed extensive adhesions, and a bulky uterus with a 0.5-cm perforation on the left lateral wall. Drainage of the pelvic abscess, peritoneal lavage, adhesiolysis, and repair of the uterine perforation were performed. Intraoperative pus culture grew Escherichia coli sensitive to meropenem. Postoperatively, she received IV meropenem 1g, three times daily, IV albumin 100 mL daily, and total parenteral nutrition.

Five days later, due to persistent abdominal distention and active drainage, she underwent repeat peritoneal lavage with reinsertion of an abdominal drain and temporary Bogota bag placement. Subsequent cultures grew Acinetobacter baumannii resistant to multiple antibiotics, including meropenem. Subsequently, the patient was reviewed by the infectious disease team, and she was started on IV colistin (loading dose of 9 million units, followed by 3 million units three times daily and IV tigecycline (100mg loading dose, then 50mg twice daily. Her clinical condition deteriorated. She was then transferred to the intensive care unit for intubation and further care. She ultimately succumbed due to cardiorespiratory arrest secondary to septicemia.

Discussion

Hysterosalpingography is an established procedure in infertility evaluation but carries a small risk of complications (4). The most common adverse events are mild pelvic infections, reported in 0.3-1.3% of cases, which typically respond to outpatient therapy (5). Severe infections, although rare, can result in pelvic abscess, sepsis, and death (2-3). Our observations have highlighted a discernible increase in post-HSG infections. In this case, uterine perforation during HSG likely facilitated bacterial invasion, compounded by preexisting hydrosalpinx and uterine fibroids. A similar trajectory was described in a 38-year-old who became ill three days after HSG, exhibited illness three days post-HSG, and died

of diffuse peritonitis 14 days later (6). These cases, with earlier case reports and case series, underscore that post-HSG infections, although uncommon, can culminate in mortality (5,7). Numerous cross-sectional studies have further described the varying infection rates following HSG (3,5,6,8,9).

The infection rate following HSG is influenced by several factors: undiagnosed pelvic inflammatory disease, especially in women with hydrosalpinx; the vaginal microbial composition, particularly virulent pathogens such as Group A Streptococcus; patient immune status; and pelvic abnormalities such fibroids (3,7). In our case, HSG revealed hydrosalpinx, and concurrent uterine fibroids may have contributed to uterine perforation, ultimately leading to the formation of a pelvic abscess.

Clinical instability or deterioration may indicate the rupture of a pelvic abscess, as observed in our patient. These abscesses are typically polymicrobial, involving both aerobic and anaerobic organisms from the lower genital tract, and require prompt parenteral antibiotics (10). Surgical drainage is indicated in unstable patients or those unresponsive to antibiotics (10). Despite receiving both surgery and antibiotics, our patient deteriorated, with delayed recognition of uterine perforation, abscess development, and sepsis likely contributing to her death.

This case highlights that although rare, serious infections can complicate HSG. Pre-HSG genital swabs and prophylactic antibiotics—including coverage for group A Streptococcus—should be considered in women with hydrosalpinx, suspected PID, immune suppression, or significant comorbidities (9). Positive swabs should be treated before proceeding. Finally, this case underscores the importance of vigilance, early recognition of complications, and multidisciplinary collaboration among gynecologists, radiologists, and surgeons to improve outcomes in complex cases.

Conclusion

Although rare, severe complications of HSG, such as uterine perforation and pelvic abscess, can be fatal. Early recognition and multidisciplinary management are essential to improve outcomes.

Conflicts of interest

The authors have no conflicts of interest to declare.

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Consent for publication

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