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Pyometra: An Atypical Cause of Abdominal Pain

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Abstract

Pyometra, a purulent infection of the uterus, is a rare cause of a very common complaint—abdominal pain. Risk factors include gynecologic malignancy and postmenopausal status. The classically described presentation includes abdominal pain, fever, and vaginal discharge. In this article, we present an atypical presentation of nonperforated pyometra in an 80-year-old female who was admitted to the internal medicine inpatient service. She initially presented with nonspecific subacute right lower quadrant abdominal pain. Physical examination did not demonstrate vaginal discharge. Laboratory evaluation failed to identify an underlying etiology. Computed tomography scan of the abdomen and pelvis with oral and intravenous contrast demonstrated a 6.5 × 6.1 cm cystic containing structure within the uterine fundus, concerning for a gynecologic malignancy. Pelvis ultrasound confirmed the mass. Endometrial biopsy did not reveal underlying malignancy, but instead showed frank pus, leading to the diagnosis of pyometra. This report illustrates that pyometra should be considered in the differential diagnosis of lower abdominal pain in elderly women.

Keywords

pyometra, abdominal pain

Case Presentation

An 80-year-old female presented to the hospital with subacute right lower quadrant abdominal pain. The patient noted constant aching pain for 1 week that waxed and waned, intermittently sharp and intense. The pain was not affected by oral intake, though she has had decreased appetite over the past few days due to nausea without vomiting. She denied any associated fevers, chills, chest pain, flank pain, dyspnea, orthopnea, palpitations, or lower extremity swelling. Her last bowel movement occurred the morning of admission and was described as normal without blood or melena. She denied any urinary complaints, flank pain, or vaginal discharge. Past medical history was pertinent for heart failure with reduced ejection fraction, atrial fibrillation, diverticulitis, and hypertension. Surgical history included a cholecystectomy, partial colectomy for diverticulitis, and an implantable cardioverter-defibrillator. Social history revealed no tobacco, alcohol, and illicit drug use. She had not been sexually active in the past 30 years.

On admission to our institution, vital signs demonstrated a temperature of 97.2 °F, heart rate 59 beats per minute, blood pressure of 132/53 mm Hg, respiratory rate of 16 breaths per minute, and an O_2 sat of 95% on room air. On examination, she was well-appearing without acute distress. Her heart was regular rate and rhythm with evidence of an implantable cardioverter-defibrillator that was palpated in the left upper chest with no tenderness, erythema, or other signs of infection. On inspection, her abdomen revealed well-healed cholecystectomy and colectomy scars. She had mild tenderness of the right lower quadrant without rebound or guarding. Her bowel sounds were normal and active. Murphy's sign was negative, as were Rovsing's and the obturator sign. Pelvic examination demonstrated an enlarged and slightly tender uterus, which reproduced her presenting complaint.

Complete blood count demonstrated white blood cells 17.9 k/mm^3 (82% neutrophils), hemoglobin 11.9 g/dL, and platelets 225 000/mm^3. Metabolic panel was normal with the exception a bicarbonate of 19 mmol/L with anion gap 11. Liver tests demonstrated a total bilirubin 0.5 mg/dL, aspartate aminotransferase 19 IU/L, alanine aminotransferase 16 IU/L,

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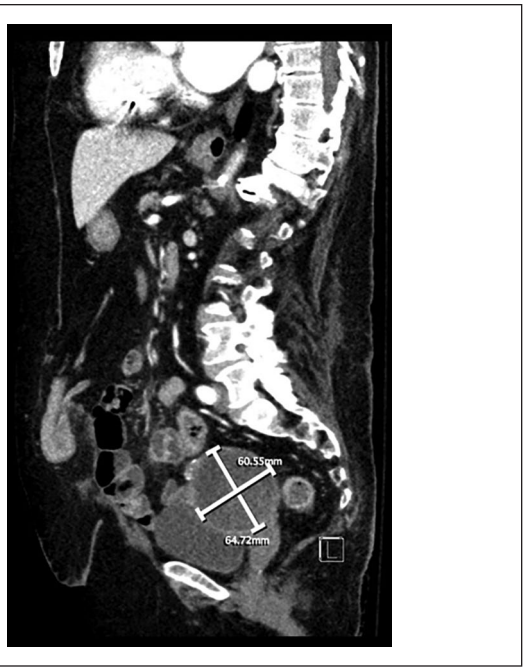

Figure 1. Sagittal view of CT abdomen pelvis demonstrating the 6.5 × 6.1 cm structure in the uterine fundus.

and alkaline phosphatase 67 IU/L. Lipase was 8 U/L. Urinalysis showed 3 white blood cells/high-power field, with negative nitrite and negative leukocyte esterase, and 6 red blood cells/high-power field. Urine was also tested for *Chlamydia trachomatis* and *Neisseria gonorrhea* via polymerase chain reaction, and both were negative. Her stool was also tested with a polymerase chain reaction for *Clostridioides difficile*, which was negative.

Computed tomography scan of the abdomen and pelvis with oral and intravenous contrast demonstrated no abnormality within the hepatobiliary, gastrointestinal lumen, or urologic systems. It did demonstrate a 6.5 × 6.1 cm cystic containing structure within the uterine fundus (Figure 1). Given the patient's age, this nonspecific finding was concerning for an underlying gynecologic malignancy. Pelvic ultrasound performed transabdominally and transvaginally demonstrated the same heterogeneous, partially cystic mass in the uterine fundus, which measured 6 cm in greatest dimension and demonstrated peripheral vascularity and tiny calcifications. An endometrial biopsy was performed, and frank pus was removed from the uterus, which led to the diagnosis of pyometra. The patient was initially treated with cefotetan 2 g intravenously every 12 hours along with doxycycline 100 mg orally every 12 hours. She was taken to the operative room on hospital day 3 for dilation and curettage, where an additional 60 mL of pus was drained from the uterus with tissue sent for pathology. A Malecot drain was placed at that time. Operative cultures (aerobic and anaerobic) returned positive for mixed gram-negative and gram-positive organisms containing several types of *Escherichia coli* and *Streptococcus anginosus* complex in equal quantities, without *Pseudomonas aeruginosa, Staphylococcus aureus, Beta-hemolytic streptococcus*, or anaerobes. Pathology specimen demonstrated a scant fragment showing chronic endometritis with extensive neutrophilic exudate and necrosis. No interepithelial lesion or malignancy was seen. Given the polymicrobial culture, she was transitioned to empiric intravenous ertapenem 1 g daily to complete a 14-day course per recommendations of the infectious disease team. She was discharged on hospital day 5 with her drain in place. The drain was removed in follow-up on postoperative day 7.

As an outpatient, she did well with no recurrence of her abdominal pain following completion of her antibiotic regimen. Follow-up transvaginal ultrasound demonstrated almost complete resolution of the previously characterized heterogeneous mixed solid cystic mass within the uterine fundus that represented pyometra. A small amount of heterogeneous fluid remained within the uterine cavity along with calcifications throughout the uterine wall, findings consistent with postoperative changes of a dilation and curettage. No evidence of a uterine mass or malignancy was seen.

Discussion

Our patient presented with nonspecific right lower quadrant abdominal pain. Abdominal pain of the right lower quadrant has a broad differential diagnosis. Appendicitis or infectious disease of the colon are common culprits. Inflammatory bowel disease may affect predominantly a localized area of intestine. Diverticulitis may present with right-sided abdominal pain, especially among Asian populations.[1] Particularly among older adults, constipation, fecal impaction, and acute urinary retention should be considered. Other causes originating from the urinary tract may include nephrolithiasis, pyelonephritis, or cystitis. Malignancy of the gastrointestinal or genitourinary tract may also present with abdominal pain. Other diseases in the genital tract include ovarian torsion or pelvic inflammatory diseases. Complications of pregnancy, including ectopic pregnancy, may lead to abdominal pain.

Interestingly, our patient's final diagnosis was pyometra, a purulent infection of the uterus. The incidence of pyometra among gynecologic patients is reported to be 0.038% to 0.5%.[2] The vast majority of cases occur in postmenopausal women after the sixth decade[3] with a mean age of approximately 72 years.[2,4] The incidence increases to 1.5%-4% in the setting of uterine or cervical malignancy.[5] While the classically described presentation includes abdominal pain, fever, and vaginal discharge/vaginal bleeding,[6] clinical presentation varies. It has been reported that over 50% of women with unperforated pyometra may be asymptomatic.[7] Combining multiple case reports for a total of 93 patients, only 15 (16.1%) patients with unperforated pyometra

presented with abdominal pain,[2,4,8] as in our case. The most common complaint on presentation was vaginal bleeding or discharge, seen in 79 patients (84.9%). Fever was present in only 9 patients (9.7%). A grave complication of untreated pyometra is uterine rupture, which may be life-threatening. Analyzing the same combined case series, the incidence of spontaneous rupture was found to be 10.6%. Patients with rupture often present with an acute abdomen, and mortality even in the modern era is reported to be 30%.[9]

The major etiologies of pyometra include malignancy, radiotherapy, congenital uterine anomalies, and foreign body (including intrauterine device).[2,4,10,11] Malignancy, in the combined case series, was discovered in 17.3% of patients.[2,4,8] Fortunately, no signs of cancer were found in our patient on pathologic review of operative tissue, nor on follow-up imaging. Idiopathic pyometra has been associated with advanced age (especially thought to be related to genital tract atrophy related to menopause), systemic diseases leading to immune dysfunction (including diabetes mellitus),[4] immobility, and incontinence.[12] The most common pathogens associated with pyometra include *Escherichia coli, Bacteroides fragilis*, and *Streptococcus* species, with the majority of cultures growing multiple bacteria.[2,4,8] In our patient, blood cultures were negative and intraoperative cultures were polymicrobial including *Escherichia coli* and *Streptococcus*.

Diagnosis of pyometra is made with imaging and tissue sampling demonstrating frank pus.[4] Treatment of pyometra consists of antibiotic therapy and drainage. The most common antibiotic regimen, prescribed in the series by Lui, et al, was amoxicillin/clavulanic acid, though they reported no significant difference in efficacy with metronidazole or cefuroxime.[8] Drainage is suggested as first-line treatment[2] to prevent perforation,[4] sometimes with a uterine catheter left in place to facilitate further drainage. Pyometra has been reported to recur in 22% of cases,[13] though retrospective data suggest no difference in recurrence with or without a remaining catheter during initial drainage.[2]

In conclusion, our patient presented with subacute right lower quadrant abdominal pain and was found to have pyometra. Of note, the lack of fever and vaginal discharge in our patient illustrates an atypical presentation of this rare disorder. The diagnosis is often made with pelvic ultrasonography. Drainage of the purulent accumulation with antibiotics to cover enteric gram negatives and anaerobes are the treatment of choice. While pyometra is a rare cause of abdominal pain, it should be considered in the differential diagnosis in females of advanced age with lower abdominal pain.

Author Contributions

Leonidas Walthall: Drafting of the manuscript; critical revision of the manuscript for important intellectual content.

Marc Edward Heincelman: Drafting of the manuscript; critical revision of the manuscript for important intellectual content, supervisory.

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Ethics Approval

Our institution does not require ethical approval for reporting individual cases or case series.

Informed Consent

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References

1. Swanson SM, Strate L. Acute colonic diverticulitis. *Ann Intern Med*. 2018;168:ITC65-ITC80.
2. Chan LY, Lau TK, Wong SF, Yuen PM. Pyometra. What is its clinical significance? *J Reprod Med*. 2001;46:952-956.
3. Agarwal R, Suneja A, Sharma A, Vaid NB. An unusual etiology of spontaneous pyometra perforation; a case report. *J Reprod Infertil*. 2011;12:235-238.
4. Ou YC, Lan KC, Lin H, Tsai CC, ChangChien CC. Clinical characteristics of perforated pyometra and impending perforation: specific issues in gynecological emergency. *J Obstet Gynaecol Res*. 2010;36:661-666.
5. Muram D, Drouin P, Thompson FE, Oxorn H. Pyometra. *Can Med Assoc J*. 1981;125:589-592.
6. Yadav P, Datar N, Poddar P, Chawan K, Saraogi R. Huge pyometra in a postmenopausal age: a diagnostic dilemma. *Int J Reprod Contracept Obstet Gynecol*. 2015;4:1549-1551.
7. Geranpayeh L, Fadaei-Araghi M, Shakiba B. Spontaneous uterine perforation due to pyometra presenting as acute abdomen. *Infect Dis Obstet Gynecol*. 2006;2006:60276.
8. Lui MW, Cheung VY, Pun TC. Clinical significance of pyometra. *J Reprod Med*. 2015;60:329-332.
9. Chan LY, Yu VS, Ho LC, Lok YH, Hui SK. Spontaneous uterine perforation of pyometra. A report of three cases. *J Reprod Med*. 2000;45:857-860.
10. Tai CC, Lien WC, Wang HP, Liu KL. Early diagnosis of gas-forming pyometra in an aged patient can prevent mortality. *Am J Emerg Med*. 2007;25:126-127.
11. Li CH, Chang WC. Spontaneous perforated pyometra with an intrauterine device in menopause: a case report. *Jpn J Infect Dis*. 2008;61:477-478.
12. Akazawa K, Takamori H, Yasuda H. Clinico-statistical study on pyometra in high-aged outpatients [in Japanese]. *Nihon Sanka Fujinka Gakkai Zasshi*. 1991;43:1539-1545.
13. Rasmussen KL, Petersen AC. Pyometra without accompanying malignant uterine disease [in Danish]. *Ugeskr Laeger*. 1990;152:1822-1823.