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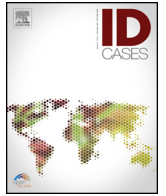
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## Pyometra due to *Pseudomonas aeruginosa*

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### ABSTRACT

Pyometra is an unusual presentation of uterine infection, this condition is characterized by purulent fluid within the uterine cavity. In this report we describe pyometra due to *Pseudomonas aeruginosa* in a 90-year-old woman who presented with abdominal pain, nausea with emesis and diarrhea. She was evaluated at an outside emergency department and computed tomography (CT) revealed a large, complex, cystic mass measuring 9.2 cm (cm) in greatest diameter. Given her age, the diagnosis of malignancy was entertained. She was referred to gynecologic-oncology service for evaluation and underwent exploratory laparotomy with total abdominal hysterectomy and lysis of adhesions. Intraoperative findings were consistent with pyometra. Cultures ultimately grew *Pseudomonas aeruginosa*. She initiated on antibacterial therapy and was discharged to a rehabilitation facility.

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### Case report

A 90-year-old woman with a past medical history significant for hypertension, hyperlipidemia, hypothyroidism and obesity presented to an outside emergency department with a two-week history of lower abdominal pain, pelvic cramping, nausea with occasional emesis and diarrhea. Initial evaluation included an abdominal and pelvic CT scan (Figs. 1 and 2) that revealed a large, complex cystic mass measuring 9.2 cm in greatest diameter. The mass was felt to arise from the uterus. Given her age, malignancy was considered. In addition, there were image findings of colon wall thickening in the descending and sigmoid colon consistent with colitis. Laboratory studies were remarkable for leukocytosis of 21.7 k (normal: 3.5–10.3<sup>3</sup>/uL) and an elevated creatinine of 1.63 mg/dL (normal: <=1.30 mg/dL). She was afebrile and the remainder of her vital signs were normal. She was admitted for treatment of colitis and acute kidney injury due to pre-renal dehydration. Normal saline and ertapenem were administered. Obstetrics service felt she would need elective surgical management and she was released home.

Approximately two weeks after her initial presentation she was admitted to our facility for elective surgical intervention. She was not acutely ill. She had no systemic symptoms at that time. She underwent exploratory laparotomy with total abdominal hysterectomy. Her prior surgical history included two cesarean sections, tubal ligation, and a partial hysterectomy with removal of one ovary

remotely. She required extensive lysis of adhesions. Large pyometra was found intra-operatively. There was no evidence of entero-uterine fistula. Fluid was sent for gram stain and culture. Gram stain showed only polymorphonuclear cells. Cultures grew *Pseudomonas aeruginosa*, however, growth was not quantified. Blood cultures were sterile. Pathologic evaluation revealed xanthogranulomatous endometritis, multiple leiomyomata, adenomyosis, and chronic cervicitis. No evidence of malignancy was found. The infectious diseases consultation was asked to assist with care. She was placed on cefepime and metronidazole. She improved well enough for discharge to an acute rehabilitation facility. Unfortunately, she passed away from unclear causes 3 weeks later.

### Discussion

Pyometra is an unusual presentation of intrauterine infection [1,2]. Pathophysiology is felt to be related to uterine outflow tract obstruction [3]. While common in animals, human incidence is estimated at 0.1–0.5% of gynecologic patients [1,4,5]. In fact, one series reported only 81 cases between 1949–2015 [4]. Given such rarity, it may be an easily missed diagnosis. Risk factors include advanced age, post-menopausal status, uterine tumors, radiation cervicitis, atrophic cervicitis, and prior intrauterine device (IUD) use [1–10]. Pyometra due to colouterine fistula has also been reported in some prior cases [6].

Presentation is variable and often nonspecific. In addition, up to 50% of patients will be asymptomatic [1]. Common symptoms included abdominal pain, fevers, nausea, and nausea. A triad of post-menopausal bleeding, vaginal discharge, and abdominal pain has been described [1–5]. Diagnosis includes imaging and laboratory

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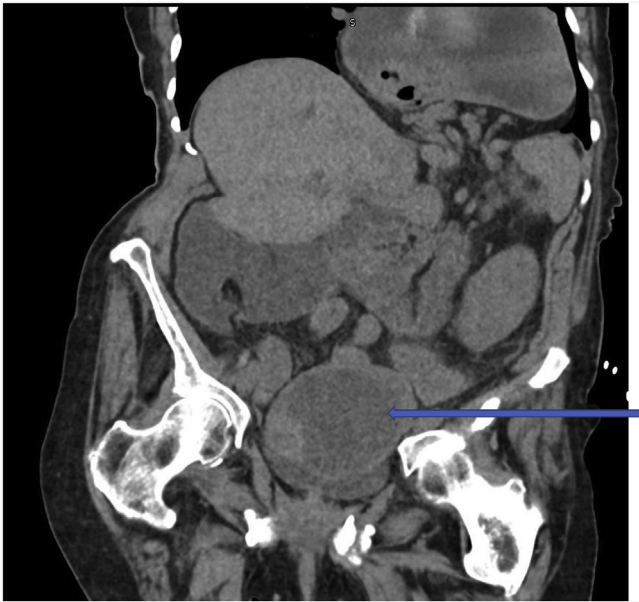


Fig. 1. Blue arrow. Large complex cystic pelvic mass on CT pelvis coronal view.

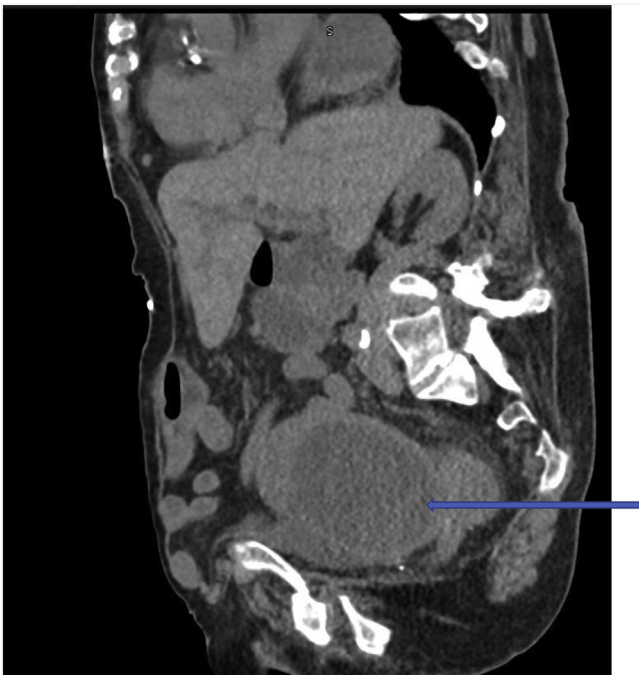


Fig. 2. Blue arrow. Large complex cystic pelvic mass on CT pelvis sagittal view.

evaluation. Treatment requires surgical drainage and antimicrobials. Complications include sepsis, uterine rupture, and peritonitis. Mortality for ruptured pyometra is quite high at 20–40% [1–4].

Typically, the infection is poly-microbial with enteric gram-negative rods and anaerobes dominating [3,5,7]. Literature reviews found no cases of isolation of *Pseudomonas* from a pyometra [1,2]. We had considered that possibly prior treatment with ertapenem had selected for *Pseudomonas*, however, she had been off antimicrobials for two weeks prior to surgery. To our knowledge this may be the first case of pyometra due to *Pseudomonas*. In summary, pyometra is a rare entity and should be considered in the differential of patients with known risk factors presenting with abdominal and pelvic complaints. Antimicrobial coverage should be broad to include anaerobic and aerobic gram-negative rods including *Pseudomonas*.

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#### Conflicts of interest

No authors have any conflicts of interest.

#### IDCases author statement

Nathan McLeod, MD—Primary and corresponding author, responsible for writing and revising manuscript.

Allison Lastinger, MD—Secondary author, responsible for reviewing and revising manuscript.

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