



# Salmonella tuboovarian abscess

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### Abstract

Salmonella is an extremely rare cause of tuboovarian abscesses. A 33 year old female presented with 1 week of fevers, diarrhea, and abdominal pain. Imaging showed a right adnexal lesion concerning for a tuboovarian abscess. Drainage of the abscess revealed chocolate-colored fluid. Despite antibiotics and drain placement, she remained febrile and developed an acute abdomen. She then underwent a diagnostic laparoscopy, pelvic irrigation, and ovarian cyst drainage. Culture of the abscess drainage and intraabdominal fluid collected from surgery grew out pan-sensitive Salmonella. Our patient likely had Salmonella enterocolitis with bacterial translocation to an ovarian endometrioma. Drain placement resulted in cyst rupture and subsequent purulent peritonitis. Women with symptoms of pelvic inflammatory disease and enterocolitis should be screened for enteric pathogens including Salmonella.

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### Introduction

Pelvic Inflammatory Disease (PID) can be caused by gonococcal or non-gonococcal organisms. Approximately 85% of cases are caused by sexually transmitted pathogens including Neisseria gonorrhoea, Chlamydia trachomatis, and bacterial vaginosis-associated organisms. However, less than 15% are associated with enteric or respiratory pathogens that have colonized the genital tract. Salmonella species more commonly infects the gastrointestinal system causing gastroenteritis, but there have been a growing number of accounts of Salmonella infecting the female genital tract. Here we report a case of a woman found to have a tuboovarian abscess caused by Salmonella. Institutional review board ruled that approval was not required for this study.

### Case Report

A 33 year old female presented to the Emergency Department with a 1 week history of fevers, diarrhea, and abdominal pain. She had recently travelled to South East Asia one month prior to presentation. She appeared clinically unstable with pulse 120 beats per minute, blood pressure 87/52, temperature 38.5 C, and tachypnea without hypoxia. Her abdomen was mildly distended and diffusely tender to palpation in bilateral lower quadrants. A midline abdominal mass was palpable extending to the umbilicus. Pelvic examination revealed scant bright red blood in the vaginal vault due to menses, and no adnexal masses were appreciated.

Laboratory values were notable for a white blood cell count

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of 22,500/uL, 36% bandemia, and a lactate of 4.2 mmol/L. Computed Tomography (CT) showed a 11 x 8 cm cystic, thick-walled mass in the right adnexa (Figure 1). Urine, blood, and stool cultures were all negative. Given concern for a tuboovarian abscess, she was treated empirically with cefotetan and doxycycline. On hospital day 1 she continued to have fevers, tachycardia, and worsening leukocytosis with a white blood cell count of 26,200/uL. Due to lack of improvement in clinical state, she underwent a CT-guided drain placement. Approximately 200mL of viscous, chocolate-colored fluid was aspirated. Given the consistency of the fluid aspirate, an ovarian endometrioma was suspected to be associated with the tuboovarian abscess. Culture of the abscess drainage grew out pan-sensitive Salmonella. Microbial analysis for gonorrhea, chlamydia, syphilis, hepatitis B, hepatitis C, HIV, *C. difficile*, acid fast bacilli, *Giardia*, cryptosporidium, fungus, and protozoa were all negative. Antibiotics were switched to ciprofloxacin and metronidazole. Despite antibiotics and drain placement, she continued to have fevers to 39.4 C and subsequently developed an acute abdomen. Repeat CT revealed interval development of 3 new abdominal and pelvic fluid collections consistent with abscesses, measuring up to 13 cm in greatest dimension (Figure 2).

On hospital day 5, she underwent a diagnostic laparoscopy, pelvic irrigation, and ovarian cyst drainage. Culture of the intraabdominal fluid collected from surgery was consistent with the initial aspirate cultures, growing Salmonella. The patient significantly improved postoperatively, and she remained afebrile for 48 hours before being discharged home.

### Discussion

Salmonella is the most common cause of community-acquired bloodstream infections in resource-poor countries [1]. Collectively there are two main subtypes of Salmonella infections, typhoidal and nontyphoidal Salmonella. Typhoidal Salmonella affects 21.7 million people and causes 216,000 deaths per year [2]. Presenting symptoms include enteric fever, constipation, bloody diarrhea, and diffuse abdominal pain [1]. Nontyphoidal Salmonella, is also a major cause of diarrhea worldwide. In 2010, an estimated 3.4 million people suffered from nontyphoidal diarrhea, and approximately 681,000 died that year [3]. Patients with nontyphoidal Salmonella present with a self-limiting enterocolitis, transmitted by feces-contaminated food or water [1].

Salmonella can infect and cause abscesses in essentially any organ, but to our knowledge only thirteen describe infection targeting endometriomas [4-7]. Salmonella has been known to spread to the ovaries through direct contact with inflamed bowel, by hematogenous spread, or via an ascending infection [6]. Occasionally infection may be accompanied by transient bacteremia, which can seed other organs including bones, lung, heart, spleen, and urinary tract [8]. Our patient was found to have a large endometrioma, which likely predisposed her to develop a tuboovarian abscess.

Though ciprofloxacin is the preferred treatment for nontyphoidal salmonellosis, the majority of Salmonella PID cases require concurrent surgical management. Kostiala et al. performed multiple culdocenteses for likely therapeutic and diagnostic purposes, and ultimately a laparotomy for persistent ovarian enlargement. Others performed a laparotomy due to persistent febrile illness and abdominal pain [4-6]. The initial size of our patient's endometrioma and subsequent development of sepsis and an acute abdomen warranted surgical ex-

ploration.

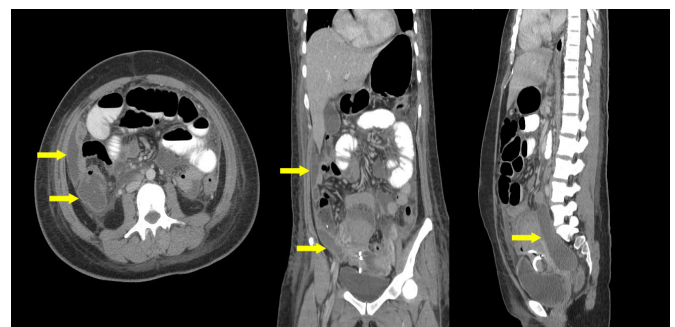
### Conclusion

Our patient likely had Salmonella enterocolitis with bacterial translocation to a right ovarian endometrioma. Drain placement resulted in cyst rupture and subsequent purulent peritonitis. Women with symptoms of pelvic inflammatory disease and enterocolitis should be screened for enteric pathogens including Salmonella.

### Figures



**Figure 1:** Initial computed tomography of a right adnexal 11 cm x 8 cm cystic, thick-walled lesion.



**Figure 2:** Repeat computed tomography following drain placement demonstrating interval development of abdominal and pelvic abscesses (arrows) in axial, coronal, and sagittal views.

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