Bladder Perforation as a Complication of Tubo-ovarian Abscess: A Case Report and Review of the Literature

ARTICLE INFO

Article Type

Case Report

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Received: 07 November 2024

Accepted: 30 November 2024

e Published: 22 January 2025

Article History

ABSTRACT

Tubo-ovarian abscess (TOA) can be considered one of the important outcomes of pelvic inflammatory disease (PID) and it usually occurs in women of reproductive age. TOA is mostly an encapsulated infectious inflammatory process that most frequently involves the ovary and the fallopian tube. TOA can cause various complications and may create a condition that is life-threatening for patients and eventually lead to surgery.

Case Presentation

A 47-year-old female patient (G2P2L2) was referred to a gynecological center due to generalized abdominal pain. CT The scan showed a solid cystic mass in the midline of the pelvis, and in the MRI, a tubular lesion was reported in favor of a tubo-ovarian abscess. the patient was treated with antibiotics and a drain under ultrasound guidance was placed to drain the abscess. Purulent secretions were coming out of the drain site, which gradually decreased in volume and suddenly increased and had a serous appearance. the patient's Foley catheter was removed on the 5th day of drain placement and with the reduction of secretions. Urological consultation was recommended to do IVP and the damage to the bladder wall was confirmed. Due to the damage to the bladder, the patient was a candidate for cystoscopy. According to the operation's description, the catheter's tip inside the bladder was visible. For patients who have an abscess and are drained by a catheter, the existence of a Foley catheter is necessary to make the bladder empty when inserting or relocating the catheter or until the time the catheter is removed.

Keywords: Catheter, Foley Catheter; Complication; Tubo-Ovarian Abscess (TOA)

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[DOI: 10.66224/sjrm.9.3.183]

Introduction

Tubo-ovarian abscess (TOA) can be considered one of the important outcomes of pelvic inflammatory disease (PID) and it usually occurs in women of reproductive age, but with less prevalence, it's also seen in children and older women (1, 2). TOA is mostly an encapsulated infectious inflammatory process that most frequently involves the ovary and the fallopian tube (3). Studies have shown that TOA can cause various complications such as Large Bowel Obstruction, hepatic portal venous gas, Pneumoperitoneum, sepsis, perforation of the sigmoid colon, and Ovarian vein thrombosis (1-7). TOA can cause various complications and may create a condition that is life-threatening for patients and eventually lead to surgery (3). The surgery itself can also cause problems in these patients. we report a rare case of TOA who was referred to us with abdominal pain.

Case Presentation

A 47-year-old female patient (G2P2L2) with a history of 2 episodes of NVD has had generalized abdominal pain since about 40 days before visiting this center, which worsened during the 2 days before visiting this center. Among the accompanying symptoms, she mentions fever and loss of appetite during the last 2 days. The patient does not mention any medical history. On the day of visiting this center, the patient was diagnosed with high blood sugar accidentally. At the time of the visit, the patient had (T=38) and tachycardia (PR=120). In the abdominal examination, a mass extending to the umbilical region was palpated, and according to these conditions, an ultrasound was performed for the patient, and a tubular structure 132 x 129 x 85 mm with a volume of 760 ccs was reported in favor of the hematosalpinx or pyosalpinx, and CT The scan performed showed a solid cystic mass measuring 151x119 mm in the midline of the pelvis, and in the MRI, a tubular lesion of 160x116 mm was reported in favor of a tubo-ovarian abscess. Diagnosed with a TOA, the patient was treated with antibiotics (ciprofloxacin, vancomycin, meropenem), and on 29 October 2021, a drain under ultrasound guidance was placed to drain the abscess. And during hospitalization due to high BS, the patient was treated with insulin.

Purulent secretions were coming out of the drain site, which gradually decreased in volume. Seven days after the drainage of the abscess and the placement of the drain, an ultrasound check was performed again to check the size of the abscess, and the pyosalpinx was almost resolved and less than 20 ccs of residue remained. On the 7th day, drain secretions suddenly increased and had a serous appearance. So that the patient has discharged 2200 cc of secretions from the drain site within 24 hours. With the suspicion of bladder damage, it was requested to check the amount of liquid Cr discharged from the patient's drain and urine at the same time, and the results of urine Cr: 78.5 and fluid Cr: 75 were reported. Urological consultation was done with the suspicion of bladder damage by catheter, and to confirm the diagnosis, it was recommended to do IVP and finally, the damage to the bladder wall was confirmed.

It should be noted that the patient's Foley catheter was removed on the 5th day of drain placement and with the reduction of secretions. Due to the damage to the bladder, the patient was a candidate for cystoscopy. According to the operation's description, the catheter's tip inside the bladder was visible and about 5 cm long. A Foley catheter was placed again in the direction of the patient. 2 days later, the Foley tube and catheter were removed and the patient was discharged in good general condition and with stable vital signs.

Discussion

A TOA known as an inflammatory mass, involves the ovary, fallopian tube, and sometimes bowel and bladder (1). TOAs are mostly seen as a complication of PID in women of reproductive age but also bowel pathologies such as Crohn's, appendicitis, and diverticulitis can cause this complication (7). Various factors such as increased numbers of sexual partners, a prior history of PID, and age between 15 and 25 can be related to the TOAs (7).

Long-term use of the IUD and sexually transmitted infections (STI) can cause chronic pelvic infection, and one of its complications can be considered as a TOA (1). For TOAs when the abscess is uncomplicated and small, medical treatment is used (1). Percutaneous drainage can be used as long as the abscess has not yet ruptured. Surgical treatment can also be one of the treatment options, such as when medical treatment is unsuccessful or the abscess gets complicated e.g., peritonitis, ongoing sepsis, and other complications due to rupture (1).

TOAs can lead to various complications and in a literature review conducted from 1990 to 2023 in PubMed in English, case reports related to these complications were collected. These reported complications can be classified into two categories including intestinal and inflammatory complications. The present case might initiate a third category of the urinary system.

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Table-1

Author	Age	Complication	presentation	treatment
Arab M et al., 2022		Enterance of the drain into the bladder	generalized abdominal pain	Foley catheter placement, removal of the catheter from the bladder
Paige J. DeBlieux et al.,(4) 2022	41	Cecal Perforation Secondary to Large Bowel Obstruction	diagnosis of unilateral TOA	colorectal surgery percutaneous drainage
Sunny Onyeabor et al., (1) 2015	44	hepatic portal venous gas	Abdomen tenderness and history of repeated loose non-bloody stool	exploratory laparotomy, and treatment for septic shock
Fabiola Aguilera et al., (3) 2018	63	Pneumoperitoneum	unilateral lower quadrant abdominal pain and vomiting	laparotomy supra-cervical hysterectomy and BSO
Kuan-Yi Chen et al., (2) 2019	91	sepsis	Sepsis	unilateral salpingo-oophorectomy and antibiotic treatment
RAVI K. PRAKASH et al .,(5) 2010	22	Perforation of the sigmoid colon	unilateral adnexal mass and increased CA 125 and positive stool occult blood	left salpingo-oophorectomy , sigmoid colectomy
S. Abdelmoula-Marzouki et al., (8) 2003	30	ruptured Tubo-ovarian actinomycosis in the sigmoid colon		salpingo-oophorectomy and partial sigmoid resection
P. D. Maldjian et al .,(6) 1997	47	Ovarian vein thrombosis	pelvic pain, fever, nausea &vomiting	Anticoagulant / antibiotics/Surgery
Pomeranz et al .,(9) 1997	15	Relapsing Henoch-Schönlein Purpura	Unilateral lower quadrant abdominal pain	salpingo-oophorectomy
Jessica L Feuerstein et al ., (7) 2018	45	Sepsis after *Bacteroides Fragilis* TOA needs Hysterectomy and BSO surgery	unilateral lower quadrant pain, fever, leucocytosis	hysterectomy with bilateral salpingo-oophorectomy

Intestinal complications include Cecal Perforation Secondary to Large Bowel Obstruction (4), Perforation of the sigmoid colon (5), and Tubo-ovarian actinomycosis ruptured in the sigmoid colon (8). In cases of TOAs, as in the mentioned cases, its complications can involve the surrounding structures such as the intestine and eventually lead to its rupture and as a result, in suspected patients about TOAs, It's important to consider to surrounding organs and structures (4, 5, 8).

Inflammatory complications include Pneumoperitoneum (3), sepsis (2), Ovarian vein thrombosis (6), Relapsing Henoch-Schönlein Purpura(HSP) (9), Sepsis after Bacteroides Fragilis TOA need Hysterectomy and BSO surgery (7), and hepatic portal venous gas (1). In the case of relapsing of Henoch- Schönlein purpura although probably the formation of the abscess has initiated with ovarian involvement in HSP and infection plays a probable role in the pathogenesis of HSP and the fact that the exacerbations of the patient stopped after the eradication of the disease, may confirm the same subject (9). In the case of ovarian vein thrombosis, there are two possibilities for ovarian vein involvement, the first is possibly by direct involvement of the ovarian vein by the adjacent tubo-ovarian abscess or by exploding via communicating channels of thrombophlebitis that started in uterine veins (6). In the case of Sepsis after Bacteroides Fragilis TOA, the important issue is that in cases where the size of the mass is large and the pathogen origin of this abscess is not gynecological, for example, it is gastroenterological, the probability that the patient will need surgery is more, and to predict the response to antibiotics, this origin is also important (7).

Urinary system complication in the present case was due to the neighboring bladder with the abscess. This was a case presented as an abscess that was a candidate for drainage. The unusual complication of this patient was the entrance of the catheter located in the abscess into the bladder. This catheter entered into the bladder which was not empty, probably when the surgeon assumed that the catheter was not working and relocated it or two days later when a full bladder came close to the catheter tip and entrance to the bladder happened and urine started to drainage by catheter. During these two periods and in the course of hospitalization, the patient had no Foley catheter so the bladder was probably full, and as a result, the catheter entered the bladder. This complication, although not life-threatening, resulted in prolonged hospital stay, and more investigation including IVP and cystoscopy.



Figure 1. tip of the catheter

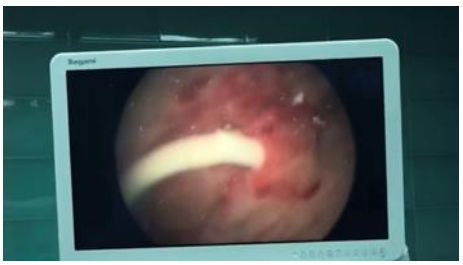


Figure-2. Site of catheter entrance in bladder

Conclusion

The most important conclusion that can be drawn from this case is that for patients who have an abscess and are drained by a catheter, the existence of a Foley

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catheter is necessary to make the bladder empty when inserting or relocating the catheter or until the time the catheter is removed.

Acknowledgments
Imam Hossein Medical Center nursing and radiology staff are appreciated for their cooperation in the management and preparation of case file.

Ethical Issue
There was no ethical issue in this review.

Conflict of Interests
There was no conflict of interest in this study.

Source of Funding
No fund is planned in this case report.

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