

SEPTIC PERITONITIS SECONDARY TO A RUPTURED ENDOMETRIOMA - A CASE
REPORT

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ABSTRACT

Endometriomas are cysts formed by the products of haemorrhaging ectopic endometrial tissue. Rupture of these cysts is a rare occurrence, with an estimated incidence of less than 3%.^[1] Presentation with septic peritonitis secondary to cyst rupture is extremely uncommon.^[1] We report the case of a 28year old female presenting with septic peritonitis secondary to a ruptured endometrioma.

KEYWORDS: Septic peritonitis, endometrioma, diagnostic laparoscopy.

INTRODUCTION

Endometriomas, also described as chocolate cysts are cysts formed by the products of haemorrhaging ectopic endometrial tissue.^[1] These ovarian cysts are a subtype of endometriosis.^[2] The prevalence of endometriosis is approximately 10% of women during reproductive age, a number that might be underestimated.^[3] In approximately 17-44% of the patients with endometriosis, endometriomas are formed.^[4] Although uncommon, these endometriomas can rupture, with an estimated incidence of less than 3% of these patients. Rupture of these cysts can present with abdominal pain and nausea, and mimic other acute intra-abdominal pathology in patients presenting with acute abdominal pain and signs of septic shock.^[1]

We describe the case of a 28year old female presenting with septic peritonitis secondary to an endometrial rupture.

CASE REPORT

A 28year old female was admitted via the Emergency Department with a history of acute pain in the lower abdomen. Although present in the entire lower abdomen, the patient described the pain as being localised to the right iliac fossa and was accompanied by a syncopal episode and subjective fever, the patient denied any other symptoms. The patient had no relevant medical or surgical history and she took no regular medications.

Physical examination demonstrated tenderness in the entire lower abdomen, with peritonism in the right iliac fossa. There was voluntary guarding, local rebound tenderness, and Rovsing's sign was positive. Admission

bloods demonstrated raised inflammatory markers and a neutrophil leucocytosis (white cell count 23.7, neutrophils 21.3, C-reactive protein 8.5). A urine sample demonstrated no indication of a urinary tract infection, and a beta human chorionic gonadotropin (hCG) was negative.

A pelvic ultrasound was performed, which demonstrated a lesion in the left ovary, possibly an endometrioma or haemorrhagic cyst and pelvic free fluid. The ultrasonographer described peri-procedural tenderness in the right lower quadrant and a visible tubular structure of 6mm at this location, that may represent the appendix (figure 1). A specialist gynaecology opinion was sought with the opinion that the patient's symptoms were unlikely to be primarily from her cyst or endometrioma. This highlights the diagnostic complexity of this case. As such, a computed tomography (CT) scan was performed (figure 2). This demonstrated a normal appendix and an acute inflammatory process in the pelvis, more marked in the left iliac fossa with fat stranding and free fluid, suggestive of pelvic peritonitis. The patient was admitted for intravenous fluids and antimicrobials. Unfortunately, her condition deteriorated overnight, and she developed four quadrant peritonitis. Upon repeat review her pulse had increased to 90 beats per minute and her blood pressure showed a mild drop to 96/62 mmHg. Despite antimicrobial therapy, a significant raise in the inflammatory parameters was seen (white cell count 23.7, C-reactive protein 209).

With this clinical deterioration and a yet undetermined clinical diagnosis, the patient was brought to theatre for a diagnostic laparoscopy (figure 3). Fibrous, brown

material was visualised throughout the abdominal cavity, as well as purulent fluid. The entire bowel was inspected, and a rectal air leak test was performed to establish rectal and distal sigmoid colon integrity and to exclude faecal content within the brown material. The gynaecologists were invited to join in the procedure and performed a left ovarian cystectomy via a lower midline laparotomy. Additionally, an appendicectomy was performed for a mildly inflamed appendix however this was thought to be most likely secondary inflammation. Perioperative cultures were taken and specimens were sent for

pathology.

Our patient made a rapid recovery and was discharged home three days post-operatively. Histopathology of the ovarian cystectomy and appendix demonstrated ovarian cyst wall with features in keeping with endometrioma, and a benign appendix with mild acute inflammation of the serosa without transmural appendicitis, which was deemed to be reactive. Cultures remained sterile and ultrasound follow up eight weeks later demonstrated normal ovaries.



Figure 1: Ultrasound imaging demonstrating tubular structure in right lower abdomen at the location of periprocedural tenderness.



Figure 2: CT imaging, sagittal view - Demonstrating an acute inflammatory process in the pelvis, more marked in the left iliac fossa with fat stranding and free fluid, suggestive of pelvic peritonitis.

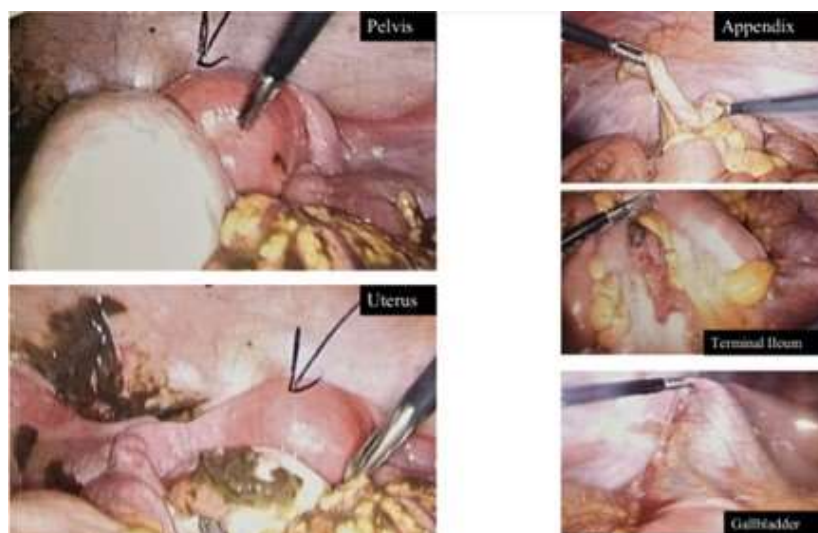


Figure 3: Intra-operative findings demonstrating ruptured chocolate cysts in the pelvis, RIF, LIF and right upper quadrant.

DISCUSSION

Septic peritonitis secondary to ruptured endometrioma is a rare occurrence. Diagnosis and appropriate treatment of this clinical presentation is, as with any form of septic peritonitis, of great importance.

The prevalence of endometriosis is approximately 10% in women of reproductive age, a number that may be underestimated. This underestimation is due to difficulty in diagnosis, as a diagnostic laparoscopy is required for confirmation of the diagnosis.^[3]

Endometriosis is characterised by the presence of endometrial tissue outside its normal uterine borders. Multiple sequelae of this disease have been described. Pain and infertility are the most common complaints.^[5] Endometrioma is a common clinical manifestation of the disease and is caused by ectopic endometrial tissue within the ovary, leading to cysts formed by the degenerating haemorrhagic products of this tissue. In about 3% of the cases, these cysts may rupture, which can lead to spillage of their contents into the peritoneal cavity.^[1] When there is spillage of septic material into the abdominal cavity, this will lead to septic peritonitis, as was observed in the case described above.

Different theories for the development of a spontaneous infection of an endometrioma have been described in current literature. Immunological changes take place in the ectopic endometrial tissue, including increased concentrations of macrophages, neutrophils and specific cytokines and growth factors. These inflammatory reactions may predispose for de novo infections.^[6] Another theory is that the wall of an endometrioma is thin and weaker than healthy ovarian tissue. This might then be more susceptible to bacterial invasion. Lastly, the haemorrhagic contents of endometriomas are an excellent culture medium, which may facilitate the spread of infection.^[7] These factors may explain why the incidence of tubo-ovarian abscesses in patients with

endometrioma has been found to be over 10-fold higher than in those without.^[8]

In the case that we describe above, both ultrasound and computed tomography images were obtained. Although showing indicators for the eventual pathology, these modalities did not confirm the diagnosis pre-operatively and a diagnostic laparoscopy was required to obtain a final diagnosis.

A large multicentre study carried out by van Holsbeke et al. showed that the most reliable ultrasound findings in premenopausal women included ground glass echogenicity of the cyst fluid, one to four locules and no papillations with detectable blood flow. These findings corresponded with a positive predictive value of 88.6%, a sensitivity of 67.9% and a specificity of 97.8%.^[9] In terms of computed tomography findings in the case of ruptured endometrioma, multilocular or bilateral ovarian cysts with a thick wall and loculated ascites confined to the pelvic cavity with pelvic fat infiltrations have been found to be significant signs.^[10]

This case highlights the diagnostic dilemmas present in such cases of what is a rare cause of septic peritonitis. The use of diagnostic adjuncts must be swift and the consideration for laparoscopy with the involvement of multiple specialities at an early stage is essential.

CONCLUSION

Ruptured endometrioma can be a rare cause of septic peritonitis that is not always readily recognised on regular imaging.

Grant

None.

CONFLICTS OF INTERSET

We the authors of this case report have no conflicts of interest to declare.

REFERENCES

1. Evangelinakis N, Grammatikakis I, Salamalekis G, et al. Prevalence of acute hemoperitoneum in patients with endometriotic ovarian cysts: a 7-year retrospective study. *Clin Exp Obstet Gynecol*, 2009; 36: 254–5.
2. Yiu-Tai Li. Ruptured ovarian endometriotic cysts. *Taiwanese Journal of Obstetrics & Gynaecology*, 2012; 51: 327.
3. Shafrir AL, Farland LV, Shah DK, Harris HR, Kvaskoff M, Zondervan K, et al. Risk for and consequences of endometriosis: A critical epidemiologic review. *Best Pract Res Clin Obstet Gynaecol*, Aug. 2018; 51: 1–15. DOI:10.1016/j.bpobgyn.2018.06.001
4. Hoyle AT, Puckett Y. Endometrioma. [Updated 2023 Jun 5]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK559230/>
5. Vercellini P, Viganò P, Somigliana E, Fedele L. Endometriosis: pathogenesis and treatment. *Nat Rev Endocrinol*, May 2014; 10(5): 261-75. doi: 10.1038/nrendo.2013.255. Epub 2013 Dec 24. PMID: 24366116.
6. Lebovic DI, Mueller MD, Taylor RN. Immunobiology of endometriosis. *Fertil Steril*, Jan. 2001; 75(1): 1-10. doi: 10.1016/s0015-0282(00)01630-7. PMID: 11163805.
7. Chen MJ, Yang JH, Yang YS, Ho HN. Increased occurrence of tubo-ovarian abscesses in women with stage III and IV endometriosis. *Fertil Steril*, Aug. 2004; 82(2): 498-9. doi: 10.1016/j.fertnstert.2004.01.032. PMID: 15302314.
8. Kubota T, Ishi K, Takeuchi H. A study of tubo-ovarian and ovarian abscesses, with a focus on cases with endometrioma. *J Obstet Gynaecol Res.*, Oct. 1997; 23(5): 421-6. doi: 10.1111/j.1447-0756.1997.tb00867.x. PMID: 9392906.
9. Van Holsbeke C, Van Calster B, Guerriero S, Savelli L, Paladini D, Lissoni AA, Czekierdowski A, Fischerova D, Zhang J, Mestdagh G, Testa AC, Bourne T, Valentin L, Timmerman D. Endometriomas: their ultrasound characteristics. *Ultrasound Obstet Gynecol*, Jun. 2010; 35(6): 730-40. doi: 10.1002/uog.7668. PMID: 20503240.
10. Lee YR. CT imaging findings of ruptured ovarian endometriotic cysts: emphasis on the differential diagnosis with ruptured ovarian functional cysts. *Korean J Radiol.*, Jan-Feb. 2011; 12(1): 59-65. doi: 10.3348/kjr.2011.12.1.59. Epub 2011 Jan 3. PMID: 21228941; PMCID: PMC3017885.