

FULL PAPER

Rupture of tubo-ovarian abscess in second trimester of pregnancy: A case report at Dr. Soetomo Hospital Surabaya

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The aim of this study is to report a case of a tubo-ovarian abscess (TOA) in pregnancy. TOA is a complex infectious mass of the adnexa that develops as a consequence of pelvic inflammatory disease, mostly found in reproductive age women. However, incidences in pregnant woman are considering extremely rare. The recent study regarding TOA in pregnancy was conducted in 2021 with only 40 cases reported. It risks a maternal morbidity, mortality, and fetal jeopardy. To conduct this study, the case was a 28 years-old woman, 24/25 weeks primigravidae presenting at Dr. Soetomo Hospital emergency room with chief complaints abdominal pain, fever, and abdominal tenderness. Laboratory examination revealed leukocytosis, elevated CRP, and Procalcitonin. Abdominal MRI showed a right adnexal mass measuring $\pm 7.2 \times 5.1 \times 2.9$ cm. Emergency laparotomy was performed due to the presence of peritonitis, a ruptured TOA and appendix inflammation were found. Abscess drainage followed by cyst wall excision, irrigation, and appendectomy were done. Microbiological culture was performed on abdominal pus samples taken during surgery. A histopathological and microbiological examination confirmed the diagnosis of TOA. The TOA occurrence in pregnancy is hardly recorded due to its low prevalence. Diagnosing during pregnancy can be difficult due to the similarity of symptoms and laboratory findings with other illnesses. Although rare, TOA in pregnancy can cause a poor prognosis for both the pregnant mother and the fetus. Diagnosis is also not easy because of its rarity. Making a prompt diagnosis can help to improve the outcomes.

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KEYWORDS

PID; TOA; rupture of tubo-ovarian abscess; pregnancy.

Introduction

The term "Pelvic Inflammatory Disease" (PID) refers to the inflammatory condition affecting the upper genital tract in women, resulting from an infection [1]. PID primarily affects young women who are sexually active. It might be acute, chronic, or subclinical and often underdiagnosed. Neglected PID can result in persistent pelvic pain, infertility, ectopic

pregnancy, and intra-abdominal infections such as tubo-ovarian abscess (TOA) and may resulting in patient morbidity [2]. TOA in pregnancy is rarely documented due to its rare incidence, challenging diagnostic and etiological determination [3]. Delay in diagnosis may contribute to adverse pregnancy outcomes such as miscarriage, premature delivery, chorioamnionitis, fetal or even maternal mortality [4,5].

Experimental

Research method

A 28-year-old, 24/25 week gestation primigravidae presented at the emergency room complaining of stomach pain and fever on the day she was admitted. Physical examination shows 130-135 beats/min tachycardia and 37.4 °C fever, with tenderness

in the right lower quadrant of the abdomen. Abdominal ultrasound revealed an intrauterine fetus without any other abnormality. Laboratory examination revealed leukocytosis, elevated C-reactive protein, and procalcitonin. Abdominal Magnetic Resonance Imaging showed a right adnexal mass measuring $\pm 7.2 \times 5.1 \times 2.9$ cm with adhesion to the small and large bowel surrounding, as displayed in Figure 1.

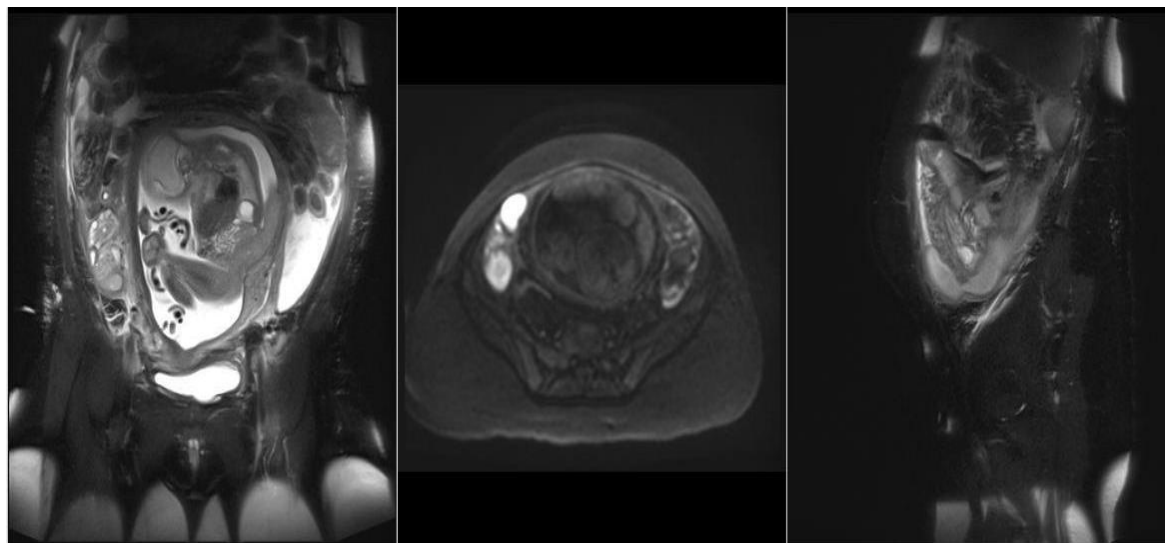


FIGURE 1 Magnetic resonance images of ovarian abscess. Abdominal MRI showed a single fetus with breech presentation (yellow star) along with an irregular cystic lesion in the pelvic cavity measuring 7.2 x 5.1 x 2.9 cm, which suspected tubo-ovarian abscess (red arrow)

An emergency laparotomy was performed, and a midline incision was made up to 5 cm above the umbilicus. A ruptured right TOA with ± 150 cc of purulent foul fluid leaking the pelvic cavity was visible with fourth-grade adhesion to the lateral of the uterus, bowel, and omentum, consistent with the MRI finding; inflammation of the appendix was also found during surgery. During the surgical procedure, we collected purulent material from the

abdominal cavity and performed a microbiology culture. In addition, we removed the remaining cyst wall and conducted a histopathological examination. The surgery was conducted collaboratively with the digestive surgery department due to the presence of inter-intestinal adhesions and an inflamed appendix. The digestive surgeon performed adhesiolysis and appendectomy, as depicted in Figure 2.

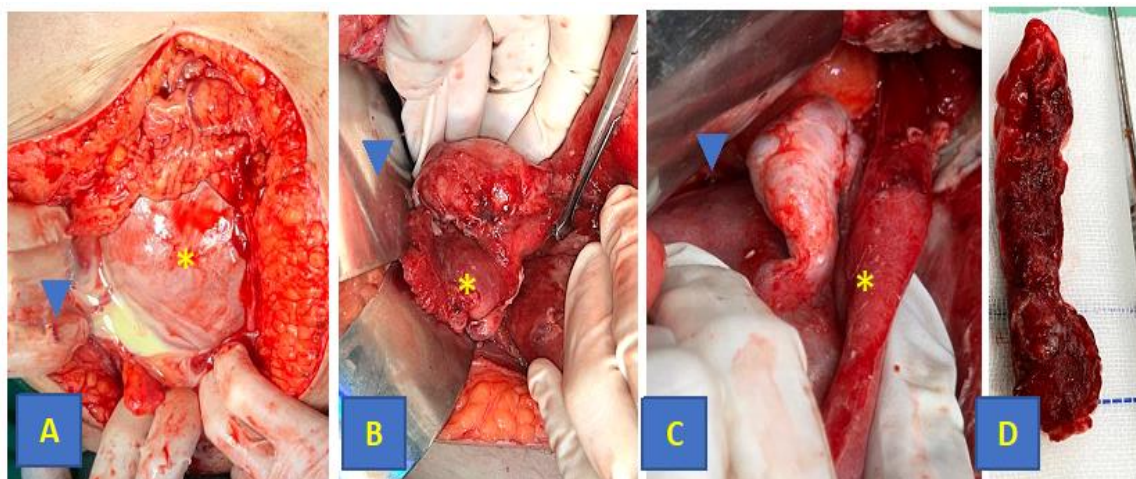


FIGURE 2 The images of laparotomy findings. (A) A gravid uterus (yellow star) and pus leakage in the pelvic cavity (blue arrow); (B) inflammation and redness can be seen in the right ovary (blue arrow) and the right tuba falopii (yellow star); (C) the left ovary (blue arrow) and left fallopian tube (yellow star) appear normal with no abnormalities; and (D) an inflamed appendix

The surgery went without any significant difficulties and was followed by seven days of post-operative antibiotics Cefoperazone-Sulbactam, and Metronidazole administration. Laboratory evaluation results show a reduction in leukocyte count, CRP, and procalcitonin levels. The patient was discharged on the fifth day following the surgery with favorable maternal and fetal status. The pregnancy was continued, with special attention noted to the antenatal care. Histopathological and microbiological studies confirmed the TOA diagnosis.

Discussion

The TOA occurrence during pregnancy is extremely uncommon [6]. This rare diagnosis may be attributed to its low prevalence, diagnostic complexity, and difficulties, and issues in identifying its underlying cause. A case report and literature review conducted in 2021 reported that there were only 40 TOA reported cases during pregnancy since 1951 [7]. It is widely believed that pregnancy serves as a protective barrier that hinders the entry of microorganisms into the uterine cavity [8]. During pregnancy, a natural process occurs when the mucus plug and decidua work together to prevent infection from spreading

upward into the uterus. This protective mechanism typically occurs after 12 weeks of gestation [3,9].

Typically, these abscesses occur as a delayed consequence of PID. Pathogens originating from a cervical or vaginal infection initially move upwards to the uterus and pass through the fallopian tubes and enter the peritoneal cavity, resulting in the formation of an isolated mass. Peritonitis is present in most cases [10]. Furthermore, TOA can occur due to the expansion of an infected neighboring organ, commonly the appendix, the appendix was implicated in 50% of the patients with TOA and considered a potential origin of infection [11], and less frequently from the transfer of infection from a distant source, or in conjunction with malignancy of the pelvic organs [12]. In our case, the potential development of the abscess is due to the transmission of infection from neighboring organs, specifically the appendix. We eliminate the chance of ascending infection, which is the most prevalent cause of PID, due to the patient being in the second trimester of pregnancy and having an unbroken amniotic membrane, which could serve as a barrier against the onset of ascending infection. However, it was not possible to completely rule out the presence of

salpingitis or a PID before the pregnancy. The presence of adhesion between the bowel, uterus, and omentum during surgery suggests that the condition has occurred for a chronic period [13].

While it is common for a pregnant patient with a pelvic abscess to exhibit signs of infection such as fever, lower abdominal discomfort, sepsis, and acute abdomen, the possibility of a TOA causing these symptoms is often overlooked due to its infrequent incidence [14-16]. Abdominal pain experienced during pregnancy must be distinguished from a range of potential differential diagnosis, including the natural effects of pregnancy and pathological disorders that may or may not be related to pregnancy [17]. Physical and laboratory examination are important. In order to enhance the precision of diagnosis and avoid incorrect diagnoses, it is crucial to employ imaging modalities such as ultrasonography, magnetic resonance imaging (MRI), or computed tomography (CT). In this particular case, we performed an MRI not only because it does not only utilize ionizing radiation, is safe for use throughout all trimesters of pregnancy, and has demonstrated no known adverse effects on the infant, but also because its sensitivity and specificity for identifying TOA are superior to those of other modalities [18,19].

The primary approach to managing women with a suspected TOA is determined by clinical findings. Despite the fact that antibiotics are the primary treatment for TOA, with success rates approaching 70%, many patients, particularly those with larger abscess formation, do not exhibit a favorable response to antibiotics and necessitate surgical intervention [20]. In conditions of systemic sepsis, it is imperative to administer suitable resuscitation and expedite surgical intervention, while simultaneously initiating broad-spectrum intravenous antibiotics [21]. In these cases, urgent laparotomy is considered in response to signs of sepsis and

peritonitis caused by TOA rupture. This condition is a critical medical situation with the potential to cause significant morbidity and mortality [22]. Histopathological and microbiological examinations were performed to confirm the diagnosis in this patient. Purulent fluid microbiology culture results showed the growth of *Escherichia coli* bacteria. Histopathology results showed chronic suppurative inflammation consistent with an abscess.

Currently, the patient is 32 weeks pregnant, with the mother and fetus in good health, according to the present antenatal record. There were no significant complaints related to her pregnancy. She can continue her pregnancy with routine antenatal care with an obstetrician. This case shows that prompt diagnosis and appropriate decisions can provide a good prognosis for the mother and fetus.

The incidence of a pelvic abscess during pregnancy is rare. Comprehensive medical history, physical examination, and utilization of imaging techniques are necessary to get a precise diagnosis and timely intervention, each of these factors is essential for achieving favorable outcomes for both the mother and the fetus [23,24].

Conclusion

The TOA occurrence during pregnancy is rather uncommon, yet it has the potential to result in adverse outcomes for both the mother and the fetus. The diagnosis is also challenging, and making a prompt diagnosis can improve the outcome for both the mother and the fetus. Pregnancy can be continued with close monitoring during antenatal care.

Acknowledgments

The author would like to thank all parties who contributed to the preparation of this article.

Funding

The publishing of this case report was not sponsored by any external funding.

Author's Contribution

All the authors contributed to the study from the conceptual framework, data gathering, and analysis until the study's results were interpreted upon publication.

Conflicts of Interest

The author reports no conflicts of interest in this work.

Ethical Consideration

The ethical approval is obtained from informed consent the patient already signed, and we cover any personal information regarding the patient's identity to keep it anonymous and preserve confidentiality.

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How to cite this article: Rachma Wulan Pratiwi Suherman, Rizki Pranadyan, Rupture of tubo-ovarian abscess in second trimester of pregnancy: A case report at Dr. Soetomo Hospital Surabaya. *Journal of Medicinal and Pharmaceutical Chemistry Research*, 2024, 6(10), 1631-1636. **Link:** https://jmpcr.samipubco.com/article_196001.html