Medical and Research Publications
International Open Access

Case Report **Journal of MAR Gynecology (Volume 4 Issue 3)**

Spontaneous Rupture of Pyometra with Bacterial Peritonitis - A Diagnostic Challenge

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Received Date: December 16, 2022

Published Date: January 01, 2023

Introduction

Pyometra is defined as a collection of purulent material in the uterine cavity due to compromise in the natural drainage of uterine cavity. Incidence of pyometra accounts to 0.1% to 0.5% in gynecologic patients **[**1**]**. The main cause of pyometra is occlusion of the cervical canal secondary to benign or malignant cervical or endometrial lesions and consequences of their treatments, cervicitis, after vaginal surgery, puerperal infection, and congenital cervical anomaly **[**2**]**.

Spontaneous perforation of pyometra and subsequent diffuse peritonitis are also very rare with an incidence of about 0.01%–0.05% **[**1**]**. It usually develops in elderly women and may or may not be associated with malignancy. Also, the risk factors may include a misplaced or forgotten IUCD, incontinence, diabetes, and long-term intrauterine device use.

Cases of spontaneously perforated pyometra not associated with malignancy have better prognosis than those with malignancy. However, because such patients are elderly, under poor general conditions, and often have unfavorable prognosis need intensive pre- and postoperative care.

The classic triad of symptoms in patients with pyometra consists of purulent vaginal discharge, postmenopausal bleeding, and lower abdominal pain. However, more than 50% of all patients with non-ruptured pyometra are asymptomatic **[**4**]**. Spontaneous perforation is a very rare complication of pyometra, but it must be considered in the differential diagnosis of peritonitis in elderly gynaecological patients.

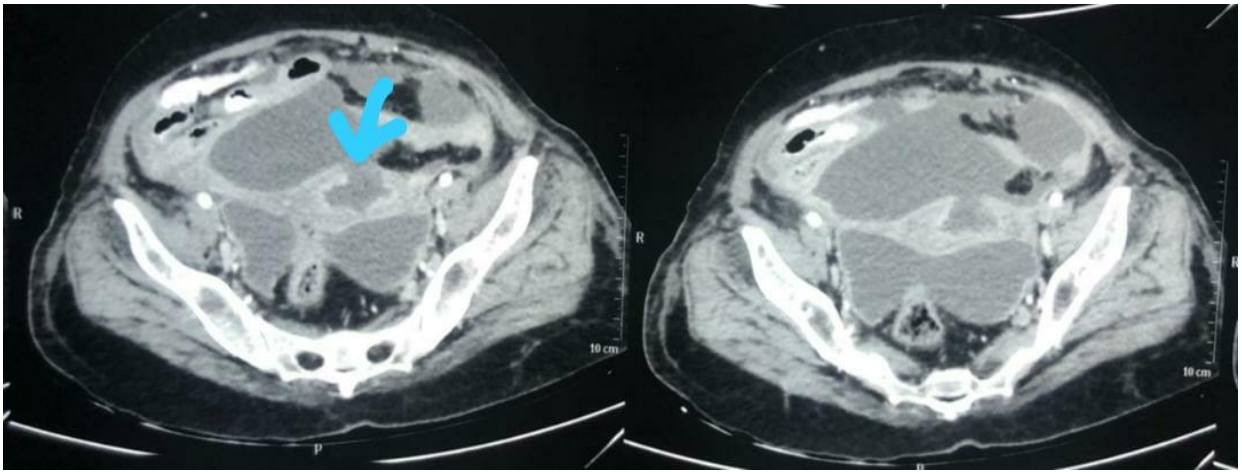
Early diagnosis is very important in starting immediate treatment, thus reducing morbidity and mortality. The mortality rate of uterine perforation caused by pyometra is 15%.in majority of cases the cause of death is multiple organ dysfunction due to sepsis **[**6**]**. We are reporting a rare case of spontaneous rupture of pyometra followed by diffuse peritonitis who came in casualty in septic shock.

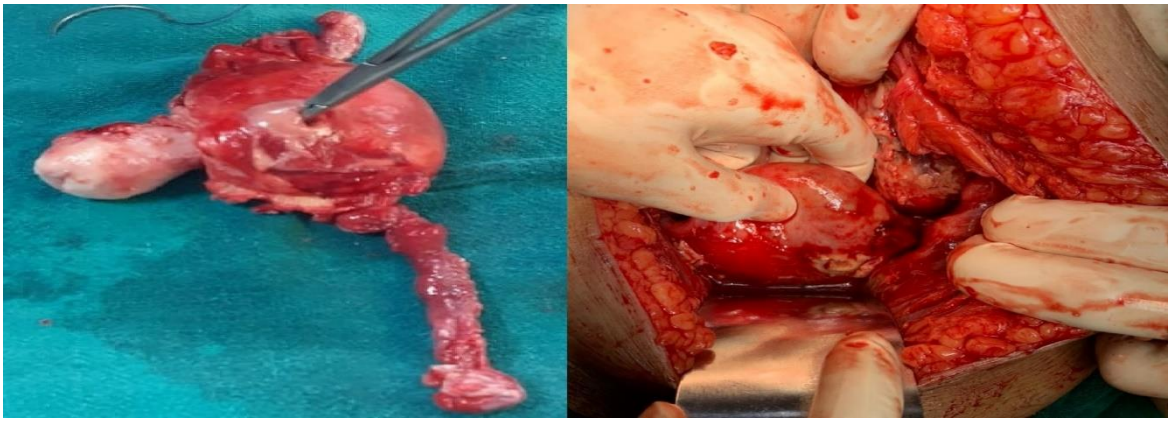
Case Report

A 62-year-old multiparous postmenopausal patient presented to emergency department with complaints of pain in abdomen for one day, fever associated with chills and rigors and not able to pass urine for one day which was relieved on catheterization in emergency. She had never experienced abdominal pain or discomfort earlier. Her gynecological history was unremarkable. All previous 4 deliveries were normal, no history of operative intervention. Patient was sick looking with poor GCS and her vital parameters were BP 80/60mmHg pulse rate 120/min, respiratory Rate 20/min SPO2 100% on room air. Cardiovascular and Neurological examination was normal. On per abdominal

examination there was no palpable mass however diffuse tenderness, guarding rigidity was present. On per speculum examination cervix was stenosed with minimum white discharge through external os. On per vaginal examination cervix was flushed with vagina, size of uterus cannot be made out. Bilateral fornixes were free, no tenderness or mass felt. Laboratory investigations revealed WBC 25100 with neutrophilic leukocytosis, platelet count 3.33lac/mm3, INR 1.11, BUN 77mg/dl, creatinine 2.16, mg/dl, ESR 90mm, RBS 520mg/dl. COVID 19 test was negative. Peritoneal fluid cytology, was negative for AFB staining and culture was negative, blood and urine cultures were collected. Transabdominal ultrasound revealed moderate free fluid with thick echoes in peritoneal cavity with mild collection in endometrial cavity and endometrium was thin. Patient was diagnosed as sepsis with septic shock with AKI with peritonitis with type 2 diabetes mellitus. Patient was shifted to MICU for stabilization, on day 3 of hospitalization patient had fever spikes. After stabilization patient underwent CT whole abdomen and pelvis which revealed uterine perforation with moderate ascites.

Patient was taken for exploratory laparotomy. 300 cc of pus was drained, multiple pockets of pus were seen in peritoneal cavity all the loculi broken and pus sent for culture and sensitivity. A 1 x 2 cm uterine Perforation was seen in the anterior wall. No evidence of malignancy was found. Small and large Bowel were examined in entirety without significant pathology. Total abdominal Hysterectomy with bilateral salpingoophorectomy was performed. On histopathology endometrium was replaced by necroinflamatory infiltrate comprising of mixed Inflammation, fibrinous exudates and granulation tissue. Myometrium perforation was identified. Postoperatively patient was put on injectable antibiotics. Immediate postoperative period was uneventful. Patient was discharged on 10th post-operative day and wound was healthy.





Discussion

Uterine perforation is usually seen at the fundus (77%) but may rarely occur anteriorly (4%) **[**6**]**. Our patient presented with features of generalized peritonitis and CT scan showed perforated pyometra at the anterior wall of uterus with gross, septated pelvic and intra-abdominal fluid collection which depicts the rarity of the site. Usual Symptoms include abdominal pain (97.6%), fever (54.8%), and vomiting (31%) **[**6**]**.

The most frequent preoperative diagnoses are generalized peritonitis, pneumoperitoneum and perforated gastrointestinal tract, which lead to a misdiagnosis of gastrointestinal perforation and a correct diagnosis can only be made by laparotomy **[**8**]** However, a delayed diagnosis of perforated pyometra may lead to increased morbidity and mortality.

To our knowledge, Ultrasonography is the first investigation which has high sensitivity in assessing pyometra but has limited role in the diagnosis of perforated pyometra due to its ability to predict the extent of the uterine breach. Additional diagnostic radiographic evaluation use for acute abdomen is total abdomen CT scan and magnetic resonance imaging techniques of pelvis.

Sagittal and coronal reformats in multi-detector computerized tomography are very helpful in depicting the site and size of uterine breach by demonstrating the resultant intra-abdominal collections thus playing an important role in the diagnosis of ruptured pyometra. Only a single case was reported that spontaneous ruptured pyometra was diagnosed preoperatively on dynamic transvaginal sonography till date **[**11**]**. CT features of perforated pyometra have been described in only 2 cases in which CT suggested the diagnosis and surgical intervention was performed which depict the uncertainty in establishing the diagnosis **[**9**]**. As perforations are rarely diagnosed preoperatively a strong clinical suspicion, early diagnosis, immediate laparotomy, peritoneal lavage and drainage followed by total hysterectomy is a must for improving the prognosis of the patient.

It has been estimated that the mortality from spontaneous perforation of pyometra is more than 40%, thus urgent surgical management including hysterectomy with bilateral salpingoophorectomy are warranted. **[**4**]** The most probable cause of pyometra in our case was postmenopausal changes and stenosis of cervix and most importantly the immunocompromised state due to elderly Type 2 diabetes mellitus with poor glycemic control.

Conclusion

Spontaneous perforation of uterus due to pyometra should be included in the differentials of post menopausal patients presenting with acute abdomen often mimicking gastrointestinal perforation despite it being a rare entity. A Ruptured Pyometra which usually presents as diffuse peritonitis and patient being in septic shock carries grave risk of mortality and morbidity in case of delay in the diagnosis. The patients present with diffuse abdominal peritonitis and gynecologic symptoms are less frequent, which makes preoperative diagnosis difficult. This life threatening entity can be appositely handled by strong clinical suspicion, early intervention, and extensive preoperative and post-operative care.

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