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Pneumoperitoneum Due to Spontaneous Uterine Perforation Caused by Pyometra: A Rare Finding and A Diagnostic Challenge

Sohail Ahemed Rao

Doctor, RNT, Medical College, Udaipur

ABSTRACT

Background: Spontaneous perforation of the uterus resulting in generalized peritonitis in postmenopausal women is a very rare entity usually caused by pyometra and is associated with high morbidity and mortality. The clinical picture of uterine perforation and hollow viscus perforation is similar which makes it difficult to diagnose preoperatively. A correct and definitive diagnosis can be made with laparotomy or laparoscopy.

Case: We report a case of a 64-years-old female patient who presented with pain abdomen and distension and inability to pass flatus/motion with signs suggestive of acute generalized peritonitis and genital prolapse with pneumoperitoneum underwent Total Abdominal Hysterectomy with bilateral salpingo-oophorectomy.

Results: Despite the surgical intervention, Total Abdominal Hysterectomy with bilateral salpingo-oophorectomy, and use of several antibiotics, this patient did not improve and died post-operatively**.**

Conclusions: This case report aims for awareness of the many etiologies for peritonitis is of great importance and to alert surgeons to the possibility that uterine perforation secondary to pyometra also shows air under the diaphragm. Correct diagnosis and proper treatment are essential for the survival of patients.

Keywords: Pyometra, Uterine perforation, Pneumoperitoneum, Postmenopausal

INTRODUCTION

Pyometra is defined as a chronic inflammatory process of the endometrium with the accumulation of purulent exudates in the uterine cavity caused by interference with its natural drainage. [1] It is an uncommon condition with a reported incidence ranging from 0.1% to 0.5% and an incidence approaching 13.6% in postmenopausal women [1,2,3] It is associated with benign or malignant gynecological tumors, colorectal tumors, radiation cervicitis, congenital anomalies, puerperal infections and intrauterine devices. [4] Pyometra develops gradually and with progression it will lead to enlargement of the uterus, causing degenerative changes that may rarely lead to sloughing of the uterine wall with subsequent spillage of contents into the abdominal cavity. [5] Pyometra with accompanying necrosis of the uterine wall can lead to spontaneous uterine perforation with diffuse peritonitis, with a reported incidence of 0.01-0.05%.[1] Pneumoperitoneum is seen in hollow viscus perforation, and penetrating trauma, after laparotomy and laparoscopy. However, pneumoperitoneum in a case of uterine perforation is a very rare presentation. [1,2] Gangrenous Uterine perforation is an uncommon condition due to the rich vascular supply of the uterus.

Uterine perforation is usually seen at fundus (77%) but may occur anteriorly (4%). Uterine perforation causes severe morbidity and mortality, and requires prompt management which can improve outcomes. [6] We report a case of a 64-year-old postmenopausal multiparous woman with pneumoperitoneum due to uterine perforation caused by gangrenous anterior uterine wall.

CASE REPORT

A 64-year-old postmenopausal multiparous woman presented in the emergency department with a history of pain abdomen and distension for 3 days and inability to pass flatus/motion for 2 days. Abdominal pain was sudden in onset, generalized, and increasing in intensity associated with 2 episodes of non-bilious vomiting. The patient was a known case of hypertension for 1 year and was not on any medication. History of tubectomy was present 15 years back and attained menopause 9 years back. Previous menstrual history was normal. No history of previous IUD insertion and vaginal pessaries used by the patient. She had not undergone endometrial biopsy or dilatation curettage operations before. The above history was narrated by the patient herself and her husband.

CLINICAL EXAMINATION

At presentation pulse rate of the patient was 110/min, blood pressure of 92/68 mmHg, respiratory rate 24/min Spo2 was 98% at room air. The patient was in Grade 3 hypovolemic shock but was responding to commands, and was able to give history. The patient was resuscitated with IV fluids and investigated further for the cause of hypovolemic shock. Per abdomen, examination revealed generalized guarding and rigidity suggestive of peritonitis. Bowel sounds were sluggish. Per vaginal examination reveals genital prolapse. Per rectum examination failed to reveal any abnormality.

INVESTIGATIONS

On workup, Hb- 14.5 g/dl, TLC- 15,880/mm3, Platelet counts- 2,21,000/mm3, PT/INR-14.2/1.08, RBS- >500 mg/dl, serum urea- 99.6 mg/dl, serum creatinine- 2.1 mg/dl, serum albumin- 1.9 gm/dl, serum sodium- 125.9 mmol/L, serum potassium- 4.4 mmol/L, serum chloride- 83.70 mmol/L, serum amylase- 14, serum lipase- 9, HbA1c- 12.7. HIV, HBsAg, Anti-HCV- Non-reactive.

Chest x-ray and x-ray FPA erect and supine showed air under the right side of the diaphragm (Figures 1 & 2). USG whole abdomen was done was suggestive of a mildly dilated fluid-filled distended bowel loop with diffuse circumferential mild thickening of bowel wall seen throughout of abdomen and pelvis associated with sluggishly peristaltic bowel loop and omental thickening with mesenteric fat infiltration. A mild to moderate amount of free fluid was seen in the peritoneal cavity with internal echoes within, findings in favor of Peritonitis. Bulky uterus with heterogenous predominantly hypoechoic thickened endometrium with internal echoes within and chronic cystitis and minimal reactionary left pleural effusion.

Figure.1 X-ray showing air under diaphragm

Figure.2

The patient was taken up for exploratory laparotomy with a preoperative diagnosis of hollow viscus perforation after correction of hypovolemia and hyperglycemia.

Intra-operative findings:(Figure 3)

1. Gangrenous uterus with perforation measuring approx. 4*3 cm at the fundus and anterior uterine wall with bilateral ovary inflamed and edematous.
2. 2 liters of foul-smelling frank pus present freely in the peritoneal cavity.
3. Visualized bowel loops appeared inflamed and edematous with no bowel perforation.
4. No intrauterine foreign bodies found.

Figure.3 Intra-operative pictures showing perforation over the fundus and anterior wall of the uterus with gangrenous changes and a sample of pus.

SURGICAL PROCEDURE

Under general endotracheal anesthesia, Exploratory laparotomy was done with drainage of peritoneal collection and then total abdominal hysterectomy with bilateral salpingo-oophorectomy was performed, thorough peritoneal wash given with normal saline, and closure was done after placing bilateral flank drains. The intraoperative and immediate postoperative period was uneventful. Unfortunately, the patient went into multi-organ dysfunction and arrhythmia, could not recover from shock, and died on the 1st postoperative day. Pus culture shows the growth of Staphylococcus aureus. The histopathological report shows dense and diffuse lymphomononuclear infiltration throughout the myometrium and dilated and congested blood vessels also seen as suggestive of ischemic necrosis uterus. (Fig. 4)

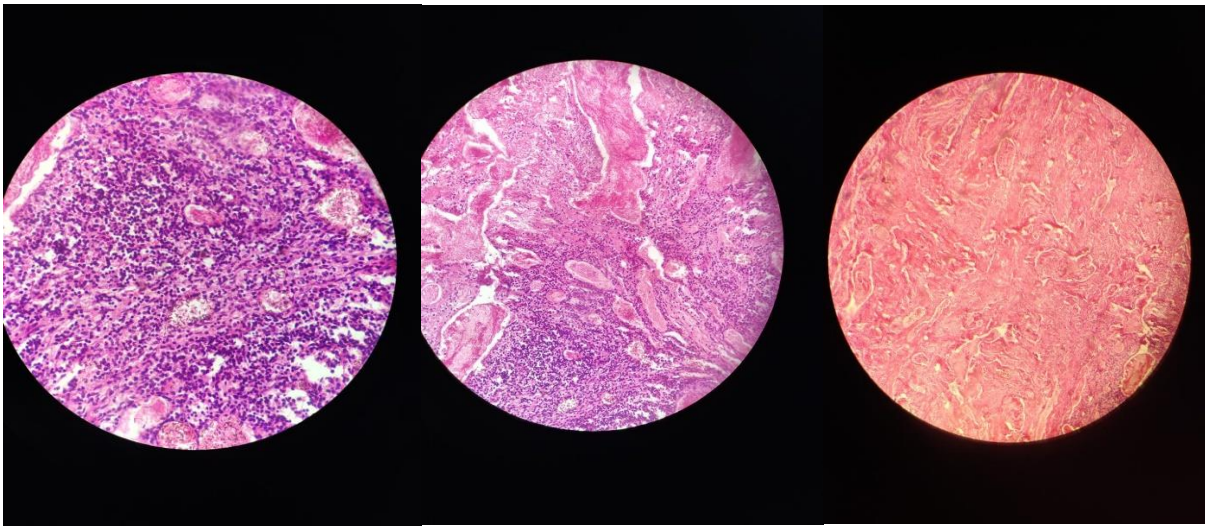

Fig.4 Histological examination showing lymphomononuclear infiltration

DISCUSSION

Pneumoperitoneum is a diagnostic finding of hollow viscus perforation. It is also seen in penetrating abdominal trauma, after laparotomy and laparoscopy. However, uterine perforation presenting with pneumoperitoneum is extremely rare. Pyometra, although rare in the general population, is found more frequently in postmenopausal women as a result of occlusion of the cervical canal by malignant or benign tumors, surgery, radiotherapy, and senile cervicitis. [7,8] The classical triad includes suprapubic pain, postmenopausal vaginal bleeding, and vaginal pus discharge, and. [7,9] However, more than 50% of all cases are asymptomatic. [7,10,11] Although atrophic endometrium is a common cause, perforation is usually seen in the presence of serious causes such as cervical or endometrium carcinoma or a forgotten intrauterine device. Malignant disease is present in 35% of cases. [7] In our patient there was no evidence of malignancy during surgery, she had no intrauterine device and had not undergone endometrial biopsy or dilatation curettage operations before. Therefore, the most probable cause of pyometra was postmenopausal changes and stenosis of the cervix causing stagnation of discharge resulting in anaerobic infection causing perforation at fundus and anterior uterine wall.

Type 2 diabetes mellitus, underlying fecal or urinary incontinence, immobility, poor hygiene, immunocompromised, increased sexual activity, genital atrophy, and cervical insufficiency associated with increased risk of rupture. The most common organisms in pyometra are the flora of the genitourinary tract such as Escherichia coli, Bacteroides, Staphylococcus, Streptococcus, and other anaerobes. In our

case, pus culture shows Staphylococcus aureus, which is consistent with expected organisms from perforated pyometra.

PID has a rather remarkably varied etiology, the pathogens responsible including Neisseria gonorrhoeae, Chlamydia trachomatis, aerobic and anaerobic gram-positive and gram-negative organisms, and possibly mycoplasmas. [12] The cornerstones of treatment remain early recognition and aggressive treatment with total hysterectomy with bilateral salpingo-oophorectomy, broad-spectrum antibiotics, thorough abdominal toileting, and postoperative ICU admission for close monitoring. [13]

CONCLUSION

Surgeons have to be aware of many etiologies of peritonitis and cautious before labeling pneumoperitoneum on imaging as only due to hollow viscus perforation especially, in a female patient with acute generalized peritonitis. Detailed history goes a long way in helping diagnose the condition even with the availability of modern diagnostic radiological investigations which may mislead clinicians as evident in our case. Early recognition and timely intervention hold the key. Total abdominal hysterectomy with bilateral salpingo-oophorectomy, thorough peritoneal toileting, and broad-spectrum antibiotic coverage is the treatment of choice.

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