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Case Report

A case of secondary peritonitis following vaginal delivery treated by pigtail drainage

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ABSTRACT

Acute peritonitis may be classified as primary (spontaneous), where an infection has arisen de novo within the peritoneum, or secondary, where the inflammatory process involving the peritoneum is the result of an identifiable primary process. We present a case of culture-negative secondary peritonitis following vaginal delivery, which is an uncommon presentation. This was treated with intravenous antibiotics and ultrasound-guided pigtail drainage of infected ascitic fluid instead of exploratory laparotomy and peritoneal lavage, as described conventionally.

Keywords: Peritonitis, Paracentesis, Pigtail

INTRODUCTION

One of the most commonly encountered emergent conditions is peritoneal inflammation, or peritonitis.[1] It can be further divided into the two most commonly identified causes: spontaneous bacterial peritonitis (SBP) or secondary peritonitis. SBP is an infection of the ascitic fluid that primarily occurs in the context of liver cirrhosis and has no indication of an intra-abdominal surgical cause.[2] On the contrary, secondary peritonitis is defined as an infection of the ascitic fluid with a positive bacterial culture, an ascitic fluid polymorphonuclear cell count greater than 250 cells/mm^3, and evidence of a surgically treatable intra-abdominal infection source. There are several ways that pathogens can enter the peritoneal cavity: gastrointestinal perforation (such as diverticular or perforated ulcers); exogenous contamination (such as drains, open surgery, or trauma); transmural bacterial translocation without a perforation (such as ischemic bowel, appendicitis, or inflammatory bowel disease); female genital tract infection (such as pelvic inflammatory disease); and haematogenous spread (rare) like septicemia.[3] The distinction is often made based on fluid analysis, imaging, and response to treatment.[4] The classic presentation of peritonitis includes fever, chills, altered mental status, and severe abdominal pain, tenderness, and rigidity. Peritonitis classically presents with severe abdominal pain, abdominal tenderness and rigidity, fever, chills, and altered mental status.[5] Paracentesis should be performed as soon as possible if peritonitis is suspected, since postponing it has been linked to higher mortality.[6] Since most instances are bacterial infections, spontaneous or secondary, empirical broad-spectrum antibiotic therapy is usually started. If antibiotic therapy is unsuccessful, exploratory laparotomy and peritoneal lavage are considered the definitive treatment to identify and clear the source of infection.[7] We presented a rare case of postpartum peritonitis in a previously healthy 31-year-old patient, in which pigtail drainage of the infected peritoneal collection led to a successful outcome.

CASE REPORT

A 31-year-old primigravida female presented to the outpatient department at 34 weeks of gestation with an ultrasound report suggestive of fetal congenital

diaphragmatic hernia (CDH). Her antenatal investigations were within normal limits. Her first trimester biochemical screening and level 2 anomaly scan were normal. She underwent a detailed evaluation for CDH and was found to have left-sided CDH with an observed/expected lung head ratio of 51%, and the couple was prognosticated accordingly. She presented with a complaint of itching over palms and soles at 35+3 weeks and was diagnosed with intrahepatic cholestasis of pregnancy, given raised serum bile acids. She was then admitted at 38+2 weeks for the Induction of labour and had a forceps vaginal delivery with right medio-lateral episiotomy. She delivered a male baby of 3080 grams with an Apgar score of 5 and 7 at 1 and 5 minutes. The baby was intubated and was shifted to the neonatal intensive care unit for further management. On postpartum day 3, she complained of pain in the abdomen, which was insidious in onset and generalized all over the abdomen. It was associated with nausea and vomiting. Her antenatal and postnatal Blood pressure records were normal. On examination, the abdomen was mildly distended, which was being managed conservatively. She was promptly started on injection cefoperazone with sulbactam, intravenous fluids, and analgesics. Over the next 24 hours, the patient had severe abdominal pain and abdominal distension increased. On examination, her heart rate was 110 beats/min, blood pressure of 120/74 mm of Hg, respiratory rate of 26/min, and she was afebrile. The abdomen was tense and tender. On investigation, her haematological parameters showed increased total leukocyte counts, whereas biochemical parameters revealed low total proteins and albumin and increased blood urea and creatinine. Serum amylase and lipase were 44IU/l and 44IU/l, respectively (Table 1). X-ray abdomen erect showed no signs of bowel obstruction, whereas ultrasound revealed gross ascites with normal liver, Gall bladder, and pancreas.

Diagnostic paracentesis was performed, draining one litre of turbid ascitic fluid, which was sent for examination. Ascitic fluid cytology suggested exudative ascites with raised total leukocyte count with neutrophilic predominance; no malignant cells were noted, no organisms were grown, and no acid-fast bacilli were seen (Table 2). A gastroenterology consultation was sought. A nephrology review was also done, given the deranged kidney function test. A provisional diagnosis of Secondary bacterial peritonitis with Acute Kidney Injury in the recovery phase was made. Injection metrogyl was added with renal dose adjustment, along with input-output monitoring and Kidney function monitoring.

On the same day as abdominal distension, an episiotomy gape was also noticed, which was then being dressed daily.

The day after, an NCCT abdomen was done, which was suggestive of infected fluid collection in right subhepatic, left subphrenic, and pelvic locations, following which an ultrasound-guided pigtail catheter was placed and the patient was managed conservatively.

Table 1: Blood investigations of the patient.

Date	Pre delivery	Postpartum day 3	Postpartum day 6
Hemoglobin (g/dl)	10.8	10	9.1
Total leukocyte count (TLC) (ul)	14037	18380	14340
Platelet count (lakh/ul)	4.1	5.4	5.69
Total bilirubin (mg/dl)	0.4	0.17	0.38
SGOT (U/l)	67	28	16
SGPT (U/l)	57	28	17
ALP (U/l)	536	386	256
Total protein (g/dl)		5	
Albumin (g/dl)		2.3	
Globulin (g/dl)		2.8	
Urea (mg/dl)	7	76	38
Creatinine (mg/dl)	0.5	4	1.3
Serum amylase (IU/l)		44	
Serum lipase (IU/l)		44	

SGOT: serum glutamic-oxaloacetic transaminase, SGPT: Serum Glutamic Pyruvic Transaminase, ALP: Alkaline Phosphatase

Table 2: Ascitic fluid examination.

Parameters	Value
Glucose	9 mg/dl
Proteins	706 g/dl
Total leukocyte count (TLC)	16000/mm^3
Differential leukocyte count (DLC)	$N^{90}L^{10}$
Gram stain	3-5 pus cells, no organisms
Culture & Sensitivity	sterile
Adenosine Deaminase (ADA)	29 U/l
Acid Fast Bacilli (AFB)	Negative

Serial USG also revealed an enlarged uterus with mild endometrial fluid containing septations suggestive of endometritis. Hence, a diagnosis of postpartum endometritis with secondary bacterial peritonitis was made. The repeat Ultrasound on postpartum day 9 revealed no abdominal or pelvic collection and hence, the pigtail catheter was removed. The Kidney functions also

improved. The gaped episiotomy healed by secondary intention by post-partum day 26. The patient received intravenous antibiotics for 14 days.

The baby, on the other hand, underwent surgery and recovered well. The mother and baby were discharged in stable condition on post-partum day 28.

DISCUSSION

Peritonitis is typically categorized as spontaneous bacterial or secondary bacterial, though culture-negative peritonitis is extremely uncommon. It makes up about 1 per cent of all occurrences of peritonitis and occurs when no obvious source for the peritoneal infection can be demonstrated.8 In these situations, a fallopian tube-related pelvic infection can be assumed to be the etiology. While our patient presented with several of the classic symptoms, such as abdominal pain, distension and tenderness, and vomiting, cultures of ascitic fluid yielded no bacterial growth. The antibiotic therapies were started as soon as there was suspicion of peritonitis, which could potentially explain the negative cultures. In patients with a temperature greater than 37.8 degrees Celsius (100 degrees Fahrenheit), abdominal pain and/or tenderness, altered mental status, or an ascitic fluid polymorphonuclear leukocyte count greater than 250 cells/ml, antibiotic therapy is recommended. Third-generation cephalosporins like cefotaxime are the recommended first-line antibiotic, particularly for SBP.[9] The preferred second-line broad-spectrum class is carbapenems; however, these are usually saved for patients with severe illness or in life-threatening situations. Five days is the recommended duration of antibiotic treatment; however, if the patient's health does not improve, this can be extended.[10] It is important to distinguish between secondary bacterial peritonitis or SBP, as the management approach may vary. If the source of secondary bacterial peritonitis is not identified and cleared and treatment is limited to antibiotics, the mortality rate is thought to be close to 100%.[4] Therefore, determining and addressing the source of inflammation is crucial. When treating secondary bacterial peritonitis, an exploratory laparotomy and peritoneal lavage are usually the cornerstones of care. But in our case, a minimal interventional procedure, that is, ultrasound-guided pigtail catheter drainage, was done, which led to improvement in the patient's condition. Based on our experience from this case, we advise medical practitioners to consider peritonitis as a differential diagnosis despite cultures returning negative.

CONCLUSION

Although the patient's extensive workup yielded no definite source of infection of the peritoneum, drainage of the infected collection was beneficial in treating the case. Atypical culture-negative peritonitis in a patient without trauma, necrosis, or post-operative sequelae, along with the corresponding systemic inflammatory response, is a rare manifestation of a common clinical diagnosis. Peritonitis should remain on differential with a patient presenting with acute abdominal pain with fever and nausea/vomiting despite no past medical or surgical history, no demonstrable source of infection and culture being negative. Apart from the conventional mainstay of explorative laparotomy, minimal interventional procedures can also be considered a treatment modality.

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