Case report

Abdominal Wall Abscess Due to Perforation of Sigmoid Colon in Presence of Diverticulosis: A Case Report with MDCT and Ultrasonography Findings

ABSTRACT

Study design: Case Report

Aims: Perforated sigmoid diverticulosis with abscess formation is a serious complication of diverticular disease, creating additional diagnostic and treatment challenges. In this case report, a patient of middle age experienced an uncommon occurrence of sigmoid diverticulosis perforation with abscess formation. Sigmoid diverticulosis is a common condition associated with significant morbidity and mortality, particularly seen among older age groups. When a perforation leads to abscess formation, patients typically display symptoms such as acute abdominal pain, fever, and signs of localised or generalised peritonitis.

Diagnosing the condition early is essential and typically involves using a combination of imaging methods like computed tomography (CT) scans, lab tests, and clinical examination. These assessments can help assess the extent of the perforation and identify any abscesses that may be associated with it. The recurrence of acute diverticular disease often corresponds to associated complications. The primary treatment consists of antibiotic therapy, abscess drainage, and surgical procedures in severe cases. Surgical options, which depend on the patient's clinical condition and the severity of the disease, range from laparoscopic lavage and drainage to sigmoid colectomy with or without a colostomy. Some patients may be advised to undergo prophylactic sigmoid resection to prevent a recurrence. Additional clinical studies are necessary to improve treatment protocols and outcomes for this complex surgical procedure.

Keywords: Sigmoid diverticulosis, surgical emergency, perforated diverticulitis, diverticular disease

1. INTRODUCTION

Diverticulosis is the term used to describe the formation of small, protruding pouches in the colon wall known as diverticula. Diverticulitis is the term used to describe the inflammation or infection of one or more of these pouches. An abscess, is a localised collection of pus,

which may develop when one of these diverticula gets inflamed and subsequently perforates. A severe complication of diverticular disease is perforation of sigmoid colon associated with abscess formation. This happens when these pouches weaken and burst, allowing the contents to leak into the abdominal cavity. Since it's a medical emergency, prompt attention is needed. Patients who are elderly have an increased risk of developing acute colonic diverticulitis. Increasing age, smoking, obesity, a sedentary lifestyle, a diet high in animal fat and low in fibre, certain medications such as steroids and opioids, and non-steroidal anti-inflammatory drugs are risk factors associated with this illness.
Severe abdominal discomfort, fever, chills, nausea, vomiting, and changes in bowel habits are typical signs of this medical condition. Bacteria from the gut can enter the abdominal cavity due to the perforation, which causes inflammation and infection. It can develop into peritonitis, a potentially fatal condition marked by extensive inflammation of the abdominal cavity, if immediate intervention is not obtained. A combination of imaging tests, such as computed tomography (CT) scans, and clinical assessment is frequently used to make the diagnosis. Antibiotics to manage the infection, surgical intervention or percutaneous drainage of the abscess, and in certain circumstances, surgical excision of the affected part of the colon are the common forms of treatment. In order to prevent complications and enhance patient outcomes, patients with sigmoid diverticulosis with abscess formation must be diagnosed and treated promptly. Furthermore, lifestyle changes like eating more dietary fibre and keeping a healthy weight will help to prevent the onset of diverticular disease and its associated complications.

2. PRESENTATION OF CASE

A 40-year-old male patient presented to the emergency room with complaints of intense abdominal pain and fever. He does not have any known co-morbidities and is at higher risk due to obesity and smoking. The patient has been experiencing fever, constipation, and intermittent lower abdominal pain in the right lower quadrant over the past month.
During the assessment, the patient appeared conscious, coherent, and oriented to the time, place, and person on examination. The patient was found to have tachycardia, a fever of 38.3 °C (101.1 °F), and a blood pressure of 130/80 mmHg. Both oxygen saturation and respiration were found to be normal. A cardiac examination revealed regular heart sounds, while a respiratory assessment indicated a central trachea and the absence of breath sounds in the bilateral infra-axillary region. Examination of the abdomen showed tenderness and guarding in the lower right quadrant, as well as slight tenderness in the suprapubic area.

Results from the laboratory investigations revealed an increase in neutrophils. Ultrasonography of the abdomen indicated the presence of a clearly defined hypoechoic area measuring approximately 15cc in the right iliac fossa region. The appendix was not visible, and a grade 1 fatty liver was observed.Multiple small diverticula in the ileal loops and sigmoid colon were discovered during an abdomen and pelvic contrast-enhanced computed tomography (CECT) scan. It also revealed a 4.8 x 3.2 cm collection of air fluid, small air pockets in the hypogastric area close to a mid-ileal loop, and surrounding mesenteric fat stranding. There was also a small umbilical hernia and a mild pneumoperitoneum in the upper abdomen. Other investigations performed upon admission were reported within normal limits.

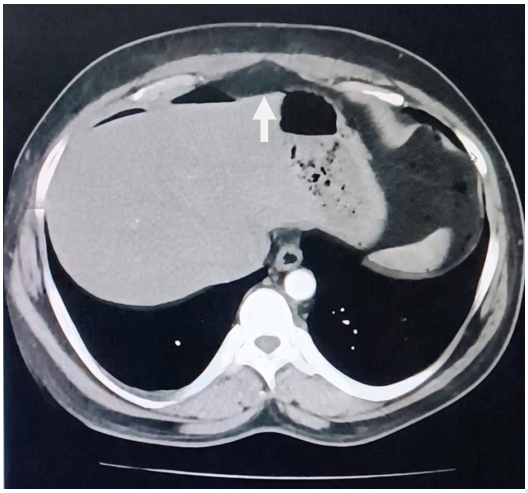

FIGURE 1: Contrast enhanced computed tomography (CECT) of the abdomen and pelvis demonstrated pneumoperitoneum due to diverticular perforation.

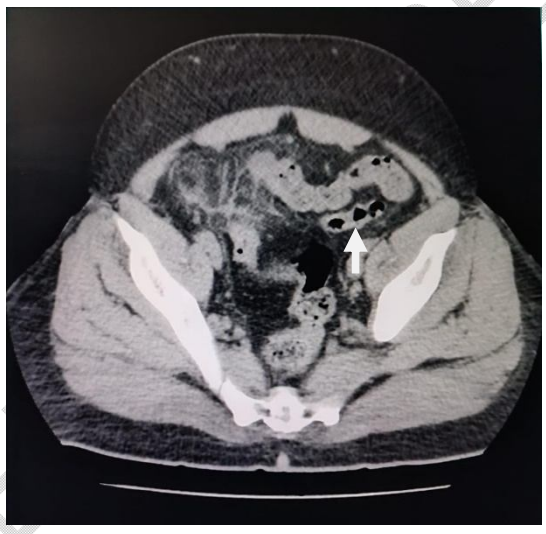

FIGURE 2: Contrast enhanced computed tomography (CECT) of the abdomen and pelvis demonstrated multiple pouches of the diverticula.

Based on clinical presentation and radiological findings, the patient was preoperatively diagnosed with ileal diverticular perforation and abscess formation. The patient has been treated with antibiotic therapy and surgical interventions. Exploratory laparotomy with drainage of the abscess and peritoneal lavage under general anaesthesia were performed. Multiple sigmoid diverticula with a small sigmoid perforation were observed during the surgical procedure, in addition to pus in the peritoneal cavity and faecal contamination. An extensive washout was carried out, the abscess was drained, and the perforation was closed via primary closure. The process was well tolerated by the patient, and pus was collected for culture, confirming the presence of the organism Escherichia coli. A post-operative final diagnosis of sigmoid diverticular perforation was made.Following the surgery, the patient received intravenous fluids, antibiotics, analgesics, and appropriate wound care. Regular monitoring included a complete blood count, C-reactive protein, imaging studies, and other

routine tests. On the sixth day after the surgery, the patient experienced persistent fever spikes and abdominal pain that did not improve with initial antibiotic treatment. An abdominal ultrasound revealed mild inflammatory changes at the suture site. Subsequently, a contrast-enhanced computed tomography (CECT) scan of the abdomen and pelvis indicated mild dilatation of the ileal loops and inter-bowel fluid collection in the left lower abdomen. Additionally, blood and urine cultures and wound swabs were obtained for further investigation. The patient was shifted to higher antibiotics, such as injection meropenem and injection amikacin, based on culture and sensitivity reports. The patient became afebrile on the ninth post-operative day and had a stable recovery.

3. DISCUSSION

Inflammation of the colonic diverticulum, is known as acute diverticulitis, which can include perforation or microperforation [1].Localised diverticular inflammation is known as uncomplicated diverticulitis, while diverticular inflammation linked to an abscess, phlegmon, fistula, obstruction, haemorrhage, or perforation is known as complicated diverticulitis [1]. A study done between 1990 and 2005 found that the overall incidence of complicated perforated diverticular disease was 2.66 (95% CI: 2.49–2.83) per 100,000 person-years, and in people over 45, it was 6.11 (95% CI: 5.73–6.53) per 100,000 person-years [2].

Diverticulitis is said to develop in 10% to 25% of patients with diverticulosis over time, according to historical reports [3]. Nevertheless, diverticulitis has been becoming more common in recent years, with a notable rise in the incidence of diverticulitis among younger patients [3]. Diverticular disease has been thought to be primarily caused by a low-fibre diet, either exogenously or environmentally [3]. Smoking, the use of steroids and non-steroidal anti-inflammatory drugs, and obesity are other environmental variables linked to diverticulitis [3]. In conclusion, extrinsic environmental, dietary, and constitutional/genetic variables may all have a role in the formation of diverticula [3]. The pathophysiology of diverticular disease appears to have several components and is yet to be fully understood [3]. Diverticula development is linked to chronic constipation, which can result in elevated intraluminal pressure, hypertrophy of the colonic muscles, and mucosal and submucosal herniation at the entry sites of the penetrating blood vessels [3]. While diverticulitis is thought to arise from trauma and blockage of the diverticulum, followed by ischemia, microperforation, and infection, these theories are long-standing but not scientifically proven [4].

The most widely used imaging test, computed tomography, can help determine the diagnosis, the scope and severity of the illness, and, in some cases, rule out complications [1]. When diverticula associated with inflammatory symptoms of the colonic wall and pericolonic fat are found on CT, the diagnosis of acute diverticulitis is confirmed after other pathologic disorders are ruled out [5]. In about 10% of instances, it is challenging to distinguish between diverticulitis and perforated colon cancer, and more often than not, colon diverticulitis must be distinguished from colon carcinoma [5]. Patients who exhibit symptoms of peritonitis or who may have complicated diverticulitis should be hospitalised [1]. Phlegmon and local abscesses can be treated with antibiotics, bowel rest, and, if necessary, percutaneous drainage, as surgical intervention offers very little chance of preventing recurrence or perforation [4]. While the main indication for emergency surgery for perforated diverticulitis is generalised peritonitis [6], compared to open colectomy, laparoscopic surgery has a shorter length of stay, fewer complications, and reduced in-hospital mortality [1]. However, a large retrospective study found that the morbidity and mortality following emergency laparoscopic sigmoid resection for purulent peritonitis and diverticular perforation are similar to those following elective sigmoidectomy, including the rate of leakage [6]. Therefore, patients with recurrent diverticulitis should make an individual decision on

whether to proceed with surgery depending on their lifestyle, comorbidities, and preferences [1]. Increased dietary fibre consumption, exercise, quitting smoking, and weight loss are among the interventions used to prevent the recurrence of diverticulitis [1].

4. CONCLUSION

Perforated sigmoid diverticulosis with abscess formation represents a formidable clinical challenge requiring prompt recognition and decisive management. A multidisciplinary approach to treating the disease is crucial, as this study has demonstrated the complex nature of this ailment. In this report, we present the case of a 40-year-old male patient with sigmoid diverticulosis who presented with sudden-onset severe abdominal pain and fever. Other risk factors were ruled out, although the patient had the related risk factors of obesity, smoking, and a diet high in animal fat. It is necessary to diagnose and treat this problem as soon as possible. After a diagnosis, the course of treatment should be modified for each patient, taking into consideration variables such as comorbidities, hemodynamic stability, the presence of an abscess, and the degree of perforation. In addition to percutaneous abscess drainage, which can relieve symptoms and promote the healing process, antibiotic medication is essential for managing infection. If there are big abscesses, severe peritonitis, or hemodynamic instability, surgery can be required. The patient's clinical state and the surgeon's experience should be taken into consideration while selecting a surgical technique, be it laparoscopic or open. Perforated sigmoid diverticulosis with abscess formation continues to be associated with significant morbidity and death, even with advancements in diagnostic and treatment techniques. For early diagnosis and prevention of complications, constant efforts are required to optimise surgical procedures and establish treatment plans.

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