PI is the presence of multiple gas cysts in the walls of the small and large intestines. It could affect all ages and the estimated prevalence is 0.02% to 0.003% worldwide. It could be primary or secondary. The latter is usually associated with higher mortality rates, whereas the former is mostly benign and often considered an incidental finding. Most patients are asymptomatic. The condition is usually discovered either incidentally during a radiological investigation, during surgery or by the patient presenting with symptoms of the underlying disease. Due to the rarity of this condition, very few cases have been reported in the literature. In Bahrain, there has been no similar case documented.

The management varies from conservative management to emergency surgery. Many reports have been published of spontaneous recovery from pneumatosis intestinalis. Conservative management includes antibiotics, such as metronidazole and hyperbaric oxygen therapy. Urgent surgical exploration should be reserved for complicated cases with alarming symptoms. Without definitive risk stratification criteria, and with limited evidence regarding the management of these cases, surgeons are faced with a dilemma when to decide for emergency surgery.

The patient was a known case of hypertension, diabetes mellitus type 2 and schizophrenia. He had been confined to bed for some time. He had no past surgical history and no history of previous hospital admissions.

On examination, the patient was conscious; however, he was disoriented and appeared dehydrated. He had no signs of anemia, jaundice or cyanosis. He did not appear cachectic. His vital signs were within the normal range and his cardiovascular and respiratory examinations were unremarkable. On inspection, the abdomen was massively distended, tender and tense. Bowel sounds were absent. Examination per rectum was unremarkable. The patient had a chronic suprapubic catheter inserted for his benign prostatic enlargement.

The hemoglobin level was 10.1 mg/dL. Complete blood count was normal, as well as liver function tests and electrolytes. Urinalysis and chest X-ray were normal. The lateral decubitus view of his abdominal X-ray revealed large amounts of free intraperitoneal air. Abdominal and pelvic CT revealed dilated small bowel loops with air inside the wall indicating PI. In addition, CT revealed a right inguinal hernia containing air with some air loculi escaping into the subcutaneous tissue of the anterior abdominal wall, see figure 1 (A and B).
PI could affect all ages; however, it is difficult to determine the incidence or the prevalence, since most of the cases remain asymptomatic and undiagnosed. Symptomatic patients may complain of abdominal pain, vomiting, diarrhea, constipation and weight loss. On examination, there may be abdominal tenderness or generalized distension. Mortality increases in intestinal ischemia, perforation and peritonitis. PI may lead to pneumoperitoneum or ileus formation. In particular, pneumoperitoneum is considered diagnostic evidence of a ruptured intra-abdominal viscus. However, in 10% of pneumoperitoneum, the cause is physiological and emergency surgery is not indicated.

Causes of PI: retained air from a laparotomy or laparoscopic procedure, cardiopulmonary resuscitation, adenotonsillectomy, pulmonary tuberculids, blunt trauma, bronchopulmonary fistula, spontaneous rupture of pulmonary blebs, pneumatoysis cystoides intestinalis, endoscopic procedures, postpolypectomy syndrome, peritoneal dialysis, collagen vascular disease, pneumocholecystitis, jejunal and sigmoid, diverticulosis, distended hollow viscous, subclinical perforated viscous, vaginal insufflation, pelvic inflammatory disease, coitus and gynecological examination procedures.

In cases of ischemia of intestines, there may be acidosis (pH <7.3), hyperamylasemia (>200 IU/L), elevated serum lactate (>2 mmol/L) and/or low serum bicarbonate (<20 mmol/L). Plain X-ray and CT abdomen are the most frequently used to diagnose PI. The presence of linear gas distribution radiologically signifies risk of impending bowel perforation.

The treatment and management of PI, whether conservative or surgical, remains controversial. Khalil et al proposed a checklist for PI, which include critical symptoms, ominous physical examination findings, previous comorbidities, and alternating laboratory or radiological findings that would mandate urgent surgery. Another study found that the only statistically significant factors in the differentiation of benign compared to worrisome disease were CT findings of mesenteric stranding, bowel wall thickening and ascites. Another study found that the most statistically significant factor for predicting pathological PI is a lactic acid level of more than 2.0; other
significant factors were hypotension or vasopressor need, peritonitis, acute renal failure, need for mechanical ventilation and absent bowel sounds.

Retrospectively, in our case, we have come to believe that a more conservative approach in management may have led to better outcome. The decision to perform emergency surgery should be based on high-risk symptomatology, clinical examination and laboratory or radiological findings. Surgical exploration should only be performed when there is suspicion of intestinal obstruction, ischemia, perforation, sepsis, peritonitis or severe lactic acidosis.

The limitations of this case are largely due to its retrospective nature. The information gathered was partially based on subjective observation, which could lead to information bias. It is also difficult to draw comparisons as there was no objective statistical parameter used when evaluating the existing literature on the subject.

CONCLUSION

Urgent laparotomy could be avoided in some cases of PI by using an evidence based criteria for classifying primary compared to secondary. Clinicians must be aware that all necessary investigations must be performed before deciding on the management plan, and that the results must be correlated with the clinical picture of the patient.

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