Diffuse Peritonitis Associated Intra Abdominal Barium Leak:An Abdominal Emergency Catastrophe Case

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Abstract

Introduction : Barium peritonitis is a rare but life threatening complication of contrast examination of the gastrointestinal tract. The chemical peritonitis due to barium contamination is characteristically severe and difficult to treat. Such a complication has a high morbidity and mortality rate.

Case Report: A 64 years old, Indonesian male patient was referred immediately to our surgery department after extravasation was found during barium enema procedure. The patient underwent surgery after the diagnosis of acute abdomen was made. Exploratory laparotomy revealed perforation of the rectum with a diameter of 3 cm, located 12 cm above the anal verge and barium covering whole peritoneal cavity. There were no post operative complications found on this patients and the patients tolerate well with oral intake early on the post operative day.

Conclusion : Peritonitis associated intra abdominal barium leak could increased morbidity and mortality rate following the sepsis condition.

Keywords: peritonitis, barium leak, rectal perforation, emergency

Introduction

Bariumperitonitisisararebut life threatening complicationofcontrastexaminationofthe gastrointestinaltract.Theincidenceof peritonitisfollowingbariumenemaisintheorderof 2-8per10.000 investigations. Barium, is a silver-white compound that outlines the colon and rectal wall on X-ray and is used for the detection of filling defects and other abnormalities. While it was a relatively less invasive procedure, complications can occur during and after Barium Enema examination.[1]

Generalised peritonitisinsuchcircumstanceswasrare,since mostperforationswerelimitedtothe retroperitoneum. The chemical peritonitis due to barium contamination is characteristically severe and difficult to treat. However, the most important and life-threatening complication of barium examination is rectal perforation, which is caused by air used for insufflation of the rectum and the colon during the procedure to enhance imaging. Such a complication has a high morbidity and mortality rate.[2]

Case Report

A 64 years old, Indonesian male patient was referred immediately to our surgery emergency department after leakage was found during barium enema procedure (**Figure 1**). The patient presented with complain of nausea, vomiting and abdominal pain. His vital signs included temperature of 37.4°C, blood pressure of 110/ 70 mmHg, pulse rate of 82 beats/min, respiratory rate was 24 breaths/min. On physical examination, the abdomen was distended and tenderness was noted to direct and muscular guarding in all quadrants. Routine hematological were normal except for raised of total leucocyte count (11.600/mm3). On biochemical

examination showed decreased of the albumin (2.0 g/dl). A chest X-ray did not reveal any pneumoperitoneum. The patient underwent surgery after the diagnosis of acute abdomen was made.

Exploratory laparotomy revealed perforation of the rectum with a diameter of 3 cm, located 12 cm above the anal verge and barium covering whole peritoneal cavity (**Figure 2 and 3**). After an effective abdominal irrigation with normal saline, ileostomy was performed. Oral intake was given during first 24 hours after removing the nasogastric tube on the firstpostoperative day. On the second postoperative day, the patient is in stable condition and is allowed to move to the ward and well tolerated oral intake. On 7th post operative day, the patients could discharged from hospital with no post operative complication and well torelated oral intake.On 30 days follow up as out patient, the patient was tolerate well with solid food and no stoma related complication and no surgical site infection.

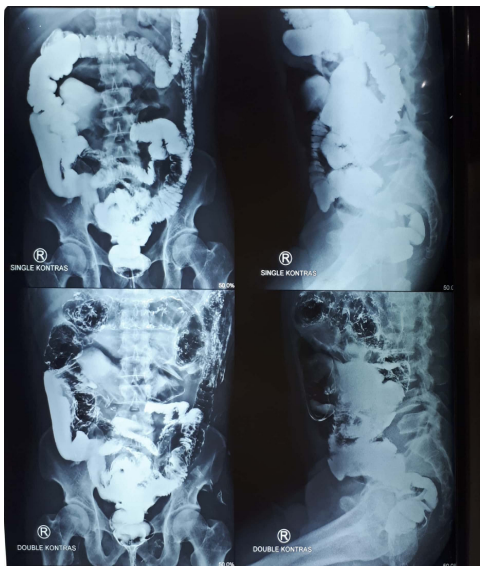

Figure 1. Previous colon in-loop examination results in the patient showed contrast in the rectum to caecum, no visible mass or contrast extravasation

Figure 2. Barium leakage arround the intestine and peritoeal cavity

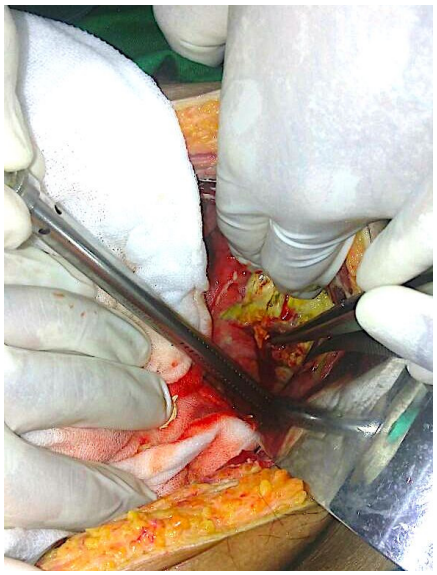

Figure 3. Perforated rectum 12 centimeters from anal verge

Discussion

Tadros and Watters suggested four mechanisms of injury : trauma from the enema, overinflation of the balloon, recent colonoscopic instrumentation especially associated with biopsy and the presence of rectal mucosal disease such as cancer, stricture, diverticulosis or inflammatory bowel disease.[1]Rarely the colon may burst due to excessive transmural pressure alone.[2]Different types of perforation have been described in the literature. One study classifies the perforation as either intramural (incomplete) or extramural (complete).[3] Peterson et al. divided perforations into five categories: 1) perforations of the anal canal below the levator ani muscle, 2) incomplete perforations such as perforation of the rectal mucosa, 3) perforations into the retroperitoneum, 4) transmural perforations into the adjacent viscera and 5) perforations into the free intraperitoneal cavity. The clinical signs, radiological findings, treatment strategies and prognosis may vary in each category.[4]

Surgery is not always required. In intramural or small retroperitoneal perforations, good results are reported with conservative treatment consisting of bowel rest, combined with total parenteral nutrition, intravenous fluid treatment, and broad-spectrum antibiotics.[5,6]Surgical debridement is only required in case of large amounts of leakage and intramural abscesses, or in patients not responding to conservative treatment.[7,8]

In retroperitoneal perforations with considerable extravasation of barium a subgroup with a much poorer prognosis the extravasation should be drained and adiverting colostomy is advised, however, treatment by rectosigmoid resection, primary anastomosis, and proximal colostomy also has been reported.[9,10,11]

Our patient was suspected of having chronic dhiarrea before, in the history we get nausea, vomiting, and flatulence before entering the hospital. Overinflation of the balloon is not recorded during barium-enema by the doctor and trauma from the enema in the mucosa is not suspected because the perfortion site was 12 cm above the anal verge. Disturbance of bowel wall tensile strength. However, in our patients, a plain abdominal X-ray revealed an excessive amount of barium that

dilates the rectum and sigmoid accompanied by extravasation. Possible causes of excessive amount of intraluminal barium and rectal perforation are excessive pressure during the procedure and thinning of the intestinal wall due to inflammation of the previous intestine which makes the intestinal wall more fragile to become perforated.

The incidence of colorectal perforation during barium-enema radiography can be reduced by 1) performing proctoscopy before barium enema, 2) avoiding the use of anal bubbles in patients with known rectal lesions, using safe-balloon tip designs insert it after careful rectal examination 3) avoid barium studies in patients with active colitis, 4) delay examination for at least six days in case of biopsy in or polypectomy, 5) avoidance of pressure formation greater than that made by barium suspension column one meters, and 6) using lower barium concentrations whenever possible.[11,12]

Peritonitis caused by the leakage of the barium colud be worsen because when this barium leakaged into the peritoneal cavity, barium was the good media for bacterial translocation, those made the peritonitis became severe.[13,14] In this case, there was no delayed time of reverral to our hospital, thus emergency operation could controlled the barium leakage into peritoneal cavity.

Conclusion

Peritonitis associated intra abdominal barium leak could increased morbidity and mortality rate following the sepsis condition. Emergency operation was needed in the management of this case and also post operative nutritional support.

Disclaimer regarding Consent and Ethical Approval:

As per university standard guideline participant consent and ethical approval has been collected and preserved by the authors.

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Conflict of interest

The authors have no conflicts of interest to report

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