

GASTRIC PERFORATION MANAGEMENT IN A 50-YEAR-OLD PATIENT: A CASE STUDY

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Abstract: Gastric perforation is one of the most common emergency conditions worldwide, with a mortality rate up to 30% and a morbidity rate up to 50%. World Health Organization data states that deaths due to gastric perforation in Indonesia reach 0.99%. Study is a case report, primary data obtained through anamnesis, physical examination, laboratory tests and x-ray examination. Assessment based on diagnosis holistic from the beginning, process and end of the study quantitatively and qualitatively. Subject case study was a 50-year-old man who came to the emergency room with pain all over stomach, especially in the upper left abdominal area. Pain was felt eight hours before entering the hospital. Abdominal pain felt like being stabbed, got worse when moving, coughing, or walking. Patients also complained of abdominal fullness and bloating. The patient has a personal and socioeconomic history which is a risk factor for gastric perforation, namely consumption of long-term non-steroidal anti-inflammatory pain relievers and smoking. Examination of the localized status of the abdomen found distention, muscular defans, tenderness throughout the abdominal field with dominant pain in the upper left abdomen, hepatic dullness disappeared, positive shifting dullness, and decreased bowel sounds. X-ray examination of the abdomen showed a picture of free air on the lateral side of the liver, suspicious for a pneumoperitoneum, preperitoneum fat line and psoas looked gloomy, suspicious for peritonitis. The patient was given pharmacological therapy in the form of injection of ceftriaxone 1 gram every 12 hours, infusion of metronidazole 500 mg every 8 hours, injection of omeprazole 40 mg every 12 hours, injection of ondansetron 4mg and sucralfate syrup 15 cc every 8 hours, followed by a laparotomy and closure of the perforated part. Postoperatively the patient was observed in the ICU for two days then transferred to a normal room after his condition stabilized.

Keywords: gastric perforation, abdominal pain, peritonitis, emergency

Introduction

Gaster is a gastrointestinal organ with very important digestive, nutritional and endocrine functions. This organ stores and facilitates the digestion and absorption of food and helps regulate appetite. Disease in the stomach is a pathological condition that often occurs, and the stomach is an organ that responds relatively well to therapy. One of the gastric emergency conditions that often occurs is gastric perforation. (Wintoko,2023) Gastric perforation is a condition characterized by destruction of the gastric wall which results in a connection between the gastric lumen and the peritoneal cavity. (Andrian, 2022)

Gastric perforation accounts for 25-30% of acute abdominal conditions in the Emergency Room (ER) and has a high mortality and morbidity rate. Gastric perforation is one of the most common emergency conditions worldwide, with a mortality rate of up to 30% and a morbidity rate of up to 50%.(Sayuti,2020) From WHO data, it is stated that deaths due to gastric perforation in Indonesia reach 0.99 percent, which is obtained from the 8th mortality rate 41 per 100000 population.(Wintoko, 2023)

Risk factors that cause gastric perforation are smoking, alcohol and taking long-term NSAIDs. The purpose of writing this case report is to discuss the findings in patients, the risk factors that influence gastric perforation, and the appropriate management. Primary data obtained through anamnesis, physical examination, laboratory tests and x-ray examination. Assessment based on diagnosis holistic from the beginning, process and end of the study quantitatively and qualitatively.

Case Study

Mr. S, 50 years old, came to the emergency room at Roemani Hospital with complaints of abdominal pain since 8 hours before entering the hospital. The pain appears suddenly when the patient is at home after returning from work. Complaints of pain initially felt only in the upper left abdomen and then gradually spread to the entire abdominal region. Complaints are felt to be increasingly burdensome and interfere with activities. There are no factors that aggravate the complaint. Complaints have not been treated. Other symptoms felt by patients are stomach feeling full and bloated. There are no complaints of defecation, difficulty in flatus, fever, diarrhea and vomiting.

The patient had a past medical history, namely a history of low back pain and HNP since the last 1 year so that the patient routinely consumed Diclofenac Na 50 mg every 12 hours, the patient also often took piroxicam tab 10 mg every 12 hours which was purchased at the pharmacy. The patient also routinely performs physiotherapy to treat low back pain and Hernia Nucleus Pulposus. There is no history of diabetes mellitus. There was no family history of similar diseases, hypertension and

diabetes mellitus. The patient's personal and socioeconomic history is a worker in an aluminum shop, the patient is an active smoker since he is young and in a day the patient can spend 1 pack of cigarettes. The patient has no history of consuming alcohol. The patient also rarely exercises.

Examination of the general condition of the patient looked moderately ill, compos mentis awareness, vital sign blood pressure 138/81 mmHg, heart rate 111x/minute tachycardia, temperature 36.4o C, respiratory rate 20x/minute. Examination of the localized status of the abdomen found distention, muscular defans, tenderness throughout the abdominal field with predominant pain in the upper left abdomen, hepatic dullness disappeared, positive side deafness and deafness, bowel sounds decreased. The patient was given 1 mg ceftriaxone therapy every 12 hours, 40 mg omeprazole injection every 12 hours, injection of ondansetron 4 mg, and 15 cc sucralfate syrup every 8 hours, then the patient underwent a complete blood count, urea, creatinine, routine urine and radiological examination.

Complete blood test results: hemoglobin 12.4 gr/dL, leukocytes 8940/mm³, hematocrit 39.0%, platelets 556000/mm³, erythrocytes 5.26 million. Urea examination results 39 mg/dL, creatinine 0.94 mg/dL. The results of the clinical chemistry examination obtained potassium 3.3 mEq/L, sodium 142 mEq/L, chloride 109 mEq/L, calcium 7.9 mg/dL. The results of x-ray examination of the abdomen in 2 positions obtained a free air (lucent) image on the lateral side of the liver (on the LLD projection) suspected pneumoperitoneum, preperitoneum fat line and psoas looked gloomy, suspected peritonitis (Figure 1). The patient is planned for the laparotomy program. Postoperatively the patient was observed in the intensive care unit for two days and then transferred to a normal room after his condition stabilized. Most patients with gastric perforation present to the emergency department.

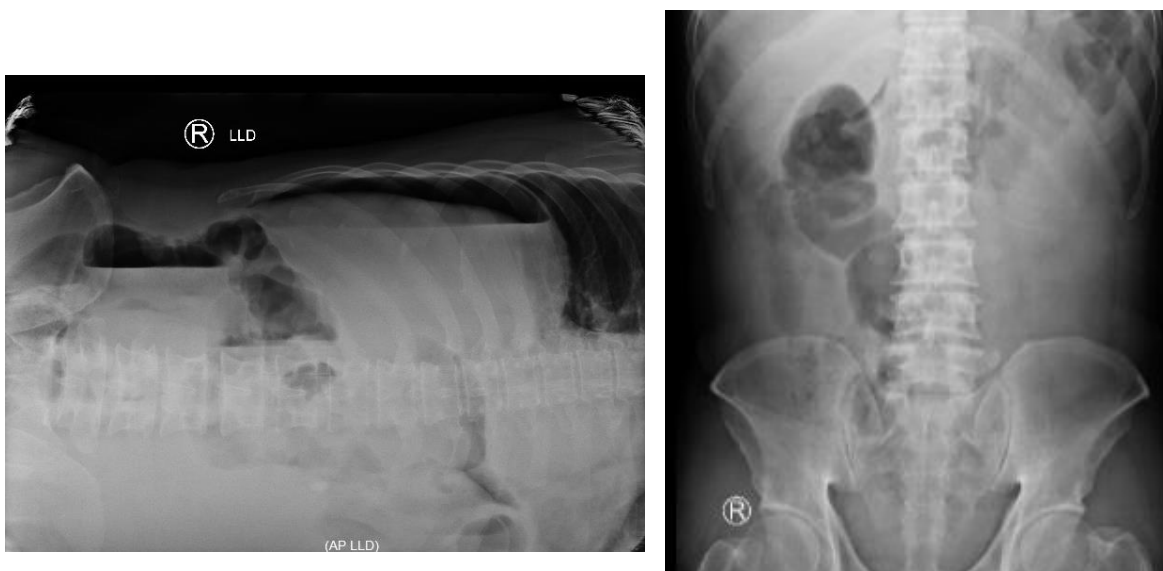


Figure 1: The results of x-ray examination of the abdomen in 2 positions

Discussion

The diagnosis of gastric perforation in this patient was established from the history, physical examination and supporting examinations. In the anamnesis, there were complaints of abdominal pain since 8 hours before entering the hospital. The diagnosis of gastric perforation in patients is in accordance with the theory of sudden pain, tachycardia, and tension in the abdominal wall. This is in line with previous research that the most common presenting manifestation is a sudden onset of abdominal distension and pain. (Sigmon, 2023) The patient also said there were complaints of nausea. In the past medical history, the patient had hypertension and did not take medication regularly, the patient also had a history of low back pain and hernia nucleus pulposus in the past year, so the patient regularly took anti-pain medication. In personal, social and economic history, the patient was found to be a smoker. On physical examination found distention, muscular defans, tenderness throughout the abdominal field with dominant pain in the upper left abdomen, hepatic dullness disappeared, positive shifting dullness, and decreased bowel sounds. X-ray examination of the abdomen showed a picture of free air on the lateral side of the liver, suspicious for a pneumoperitoneum, preperitoneum fat line and psoas looked gloomy, suspicious for peritonitis. Risk factors that cause gastric perforation are smoking habits, long-term use of NSAIDs, smoking, alcohol, two out of three risk factors are found in this patient. (Qorina, 2021)

Gastric perforation is a complex penetration of the wall of the stomach, large intestine, small intestine resulting from leaking of contents from the intestine into the abdominal cavity. Perforation of the stomach develops into chemical peritonitis which is caused due to leakage of stomach acid into the abdominal cavity. Perforation is a serious complication with the appearance of symptoms in the form of an acute abdomen that requires immediate treatment. The main feature of gastrointestinal perforation is abdominal pain. The abdominal pain occur cause acute peritonitis which causes patients who experience this perforation to appear in great pain.(Andrian, 2022) The peritonitis may be localised or generalized (a rigid abdomen); generalised peritonitis implies diffuse contamination of the abdomen and the patient will be very unwell. Gastric perforation can be enforced from several symptoms, namely sudden pain, tachycardia, and tension in the abdominal wall. (Qorina, 2021) Those three markers of perforation are found on this patient, thereby supporting the diagnosis of gastric perforation.

Supporting investigations that can confirm the diagnosis of gastric perforation include blood tests and radiology. Patients will have raised inflammatory markers it is white blood cells and c-reactive protein, in some cases, depending on how unwell the patients condition, blood tests also will indicate as sign of organ dysfunction, such as acute kidney injury or a coagulopathy. Diagnosis usually confirmed by another important supporting examination, it is radiological imaging. Radiological

imaging on gastric perforation showing free intraperitoneal air. Another reported suggestive sign is the lack of an air-fluid level in the stomach in a horizontal beam view and a relative paucity of gas in the distal bowel. This is in line with radiological imaging that found in this case study. (Sigmon, 2023)

Treatment includes immediate surgery accompanied by gastric resection or suturing the perforation site. Emergency surgical repair (open or laparoscopic) is indicated in nearly all cases. Conservative therapy is indicated in cases of patients who are non-toxic and clinically generally stable and usually receive intravenous fluids, antibiotics, NGT aspiration, and fast the patient. Intravenous analgesia and PPIs should be given as necessary. A urinary catheter enables close monitoring of urine output. Broad-spectrum antibiotics should start early, it have been shown to reduce the risk of wound infection. Metronidazole and either a cephalosporin or an aminoglycoside will suffice. (Melmer, 2018)

Factors that influence the occurrence of gastric perforation in patients are smoking habits and taking long-term NSAIDs. The patient has been smoking since he was 20 years old and in one day the patient can spend one pack of cigarettes. Smoking has been reported to be associated with an increased risk of gastric perforation. The theory says smoking will inhibit bicarbonate secretion, and the nicotine content in cigarettes will stimulate acid secretion. (Sayuti, 2020) The patient has also been taking NSAIDs for the past year, where pain relievers such as NSAIDs can damage the gastric barrier. Secretion of prostaglandins normally protects the gastric mucosa, but NSAIDs inhibit prostaglandin synthesis by inhibiting the COX-1 enzyme. This causes a decrease in gastric mucus and bicarbonate production and reduces blood flow to the gastric mucosa. (Koto, 2016)

Conclusion

Gastric perforation is a condition characterized by destruction of the gastric wall resulting in a connection between the gastric lumen and the peritoneal cavity, which is a discontinuity or loss of a portion of the corneal surface due to the death of the corneal tissue. In this case, patient complaint pain all over stomach, especially in the upper left abdominal area. Patients also complained of abdominal fullness and bloating. The patient has a personal and socioeconomic history which is a risk factor for gastric perforation, namely consumption of long-term non-steroidal anti-inflammatory pain relievers and smoking. Examination of the localized status of the abdomen found distention, muscular defans, tenderness throughout the abdominal field with dominant pain in the upper left abdomen, hepatic dullness disappeared, positive shifting dullness, and decreased bowel sounds. X-ray examination of the abdomen showed a picture of free air on the lateral side of the liver, suspicious for a pneumoperitoneum, preperitoneum fat line and psoas looked gloomy, suspicious for peritonitis. Disease prevention can be done by avoiding existing risk factors such as consumption of. long-term

non-steroidal anti-inflammatory pain relievers and smoking. The management of any suspected gastrointestinal perforation warrants an early resuscitation, prompt diagnosis, and definitive treatment. Proper management and evaluation of the patient's condition can make the disease have a good prognosis. The limitation of this study is the lack of data and discussion regarding the laparotomy process undergone by the patient. It is hoped that future research can examine the surgical management performed on patients with gastric perforation.

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