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The appearance of free-air in the abdomen with related pneumatosis cystoides intestinalis: Three case reports and review of the literature

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ABSTRACT

INTRODUCTION: Pneumatosis sistoides intestinalis (PSI) is a rare condition with unknown origin, defined as the appearance of gas-filled cysts in the intestinal wall. It usually occurs due to respiratory infections, tumor or collagen disease, traumas, immunosuppression.
PRESENTATION OF CASE: Three patients with PSI were examined that followed up and treated in our clinic. The first patient was hospitalized for emergency treatment of previously diagnosed free-air under the diaphragm. He had a defense on physical examination and free-air was detected in X-ray and abdomen CT. We decided to laparatomy and peroperatively, stenotic pylorus with an abnormally increased stomach and gas-filled cysts were seen in the terminal ileum. Antrectomy and gastrojejunostomy with partial ileum and cecum resection and end ileostomy were performed. The second patient underwent laparatomy because of intraperitoneal free-air and acute abdomen. Partial ileum and cecum resection and ileotransversostomy were performed. The third patient with intraperitoneal free-air was treated with antibiotics, oxygen treatment and bowel rest.
DISCUSSION: PSI is usually asymptomatic. Plain radiographs, USG, CT, upper gastrointestinal endoscopy, colonoscopy can use for diagnosis. Treatment of PSI depends on the underlying cause; include elemental diet, antibiotics, steroids, hyperbaric oxygen therapy and surgery.
CONCLUSION: In patients with asymptomatic and symptomatic PSI are different treat. Symptomatic PSI can be safely treated antrectomy and gastrojejunostomy with partial ileum and cecum resection.

1. Introduction

Pneumatosis sistoides intestinalis (PSI) a rare condition that is characterized by gas-filled cysts in the intestinal submucosa and subserosa.[1–3] Its etiology is unclear and several hypotheses have been proposed.[2] PSI may occur as primary or secondary and often seen terminal ileum in the gastrointestinal tract.[3–5] Clinics of PSI is broad, ranging to asymptomatic from diffuse peritoneal signs. Respiratory infections, tumor or collagen disease, traumas, immunosuppression and the use of steroids are associated with PSI.[6] Imaging tools, endoscopy, surgery and sometimes pathological examinations are used in the diagnosis.[7,8] Although PSI is usually benign disease, sometimes high mortality is observed. In asymptomatic patients are used hyperbaric oxygen treatment, antibiotics and rest to bowel; in patients with signs of peritonitis are recommended to surgical treatment.[3,6–9,16–21] We want to discuss 3 case of with PSI that followed-up and treated in our clinic.

1.1. Case report 1

A male patient aged 62 was hospitalized for emergency treatment of previously diagnosed free air under the diaphragm. At the time of arrival the patient reported supraumbilical pain, nausea and vomiting in the past two weeks. The problems of abdominal discomfort and pain connected with taking food had started 21 years earlier, with intermittent remissions and there was a history of stomach bleeded before 15 years. A few months before, the intensity of the symptoms had increased and continued with nausea, vomiting and weight loss (15 kg in a year) and his body mass index (BMI) was 17 kg/m^2. He often received proton pomp inhibitors and there was not history of gastroscopy. On physical examination the abdomen was tenderness and defense at palpation in the epigastrium. In laboratory analysis hemoglobin was 10.3 g/l and white blood cell was $11.6 \times 10^3/\mu$L. X-ray showed free-air under the

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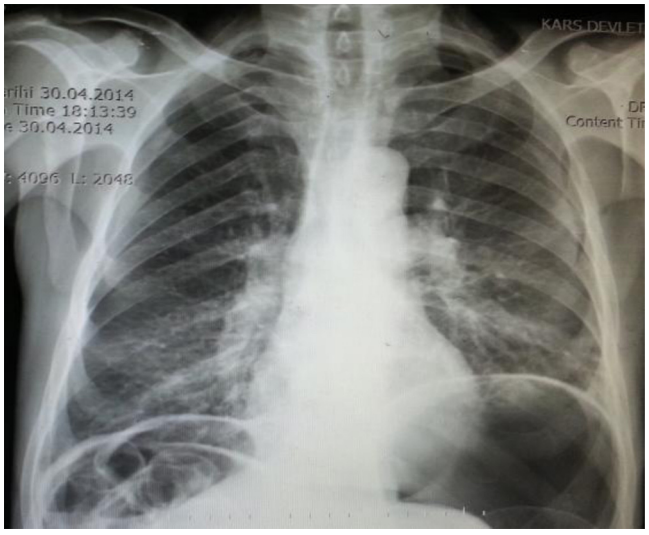

Fig. 1. X-ray free air under the diaphragm.

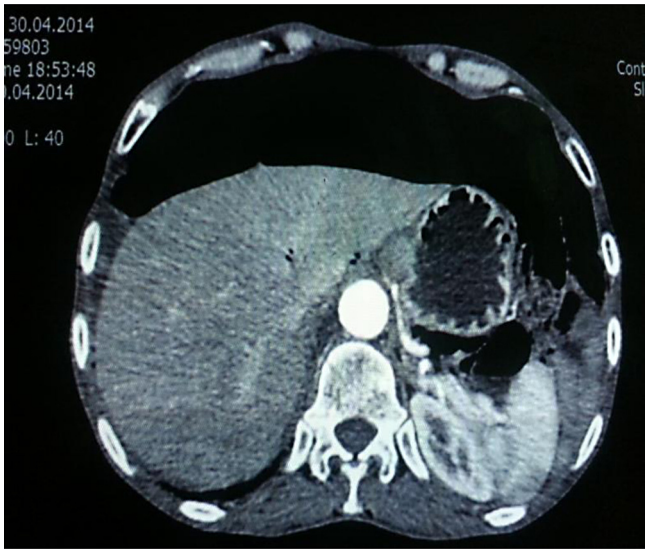

Fig. 2. Abdominal CT showed intraperitoneal free air.

diaphragm (Fig. 1). Contrast-enhanced abdominal CT was detected free-air in the abdomen (Fig. 2). The patient was admitted and prepared for the operating theatre where the operation was started. A supraumbilical median laparatomy was performed. After opening the abdominal cavity and exploration, the following finding was present: stenotic pylorus with an abnormally increased stomach and gas-filled cysts were seen in the terminal ileum (Figs. 3–5). After that we decided to make the first resection of that antrectomy and were performed retrocolic, isoperistaltic gastrojejunostomy. Partial ileum and ceacum were resected, after then was performed end ileostomy. The operative wound was closed after haemostatic control and drainage set. Specimens were sent to the pathology department.

At first, when the specimen sections from the ileum and proximal colon; macroscopic findings were noted that cystic lesions were filled with air and in greatest diameter 2 cm. Under the microscope, cystic lesions were swollen mucosa, with air filled in submucosa and subserosa. Additionally, the cysts were not communicated with each other and in different sizes which means that the finding at the terminal ileum was pneumatosis cystoides intestinalis (Figs. 4–6).

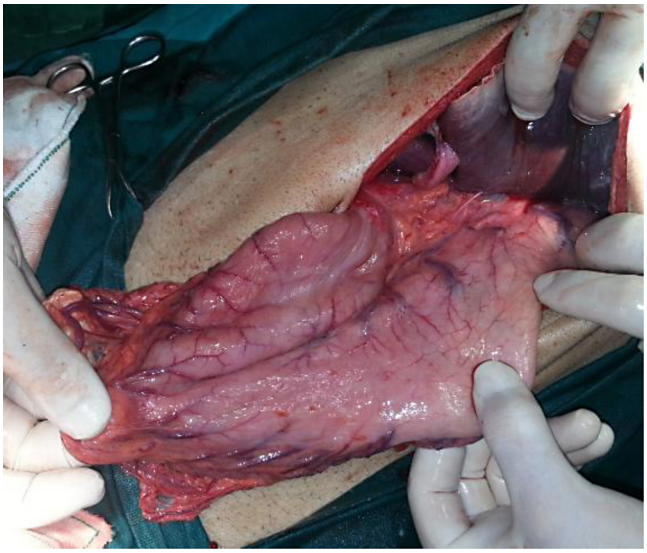

Fig. 3. Stenotic pylorus and dilated stomach.

Fig. 4. Gas-filled cysts in the terminal ileum.

Fig. 5. Gas-filled cysts at mucosa in the terminal ileum.