



**ORIGINAL RESEARCH PAPER**

**General Surgery**

**A VERY RARE ACUTE ABDOMEN CAUSE; PNEUMATOSIS INTESTINALIS**

**KEY WORDS:** Pneumatosis intestinalis, acute abdomen

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**ABSTRACT**

The experience which was obtained from the patients who applied to the emergency service with acute abdomen disorder and who were treated and followed up with the diagnosis of Pneumatosis intestinalis was presented. The data of 8 patients who applied to the emergency service with abdominal pain complaint between July 2012 and July 2017, followed up and treated with the diagnosis of pneumatosis intestinalis were retrospectively evaluated. Five of the patients were male and three of them were female. The mean age of the patients was 68 (58-81y). When detailed medical histories were examined, we found that 4 patients had chronic smoking, 3 patients had the chronic obstructive pulmonary disease, none of them had a history of surgery and known gastrointestinal system diseases. Mean HB value was 10.2 g/dl (9.4-12.4 g/dl), white blood cell count was 11250/mm<sup>3</sup>(7200-12100/mm<sup>3</sup>). Despite the absence of acute abdominal pain, 6 of 8 patients were admitted to emergency surgery due to the presence of free air in direct graphics and continuous abdominal pain suggestive of perforation, then segmental small intestine resection and end-to-end anastomosis were performed by open surgery, and 2 patients were followed non-operatively after regulating the medical treatment in the hospital. It should be noted that pneumatosis intestinalis is a clinical symptom. Early diagnosis can be difficult because many systems can be associated with the disease. However, careful evaluation of clinical findings, radiological data, secondary diseases and laboratory data will help the clinician determine the correct diagnosis and appropriate treatment method.

**INTRODUCTION**

Pneumatosis intestinalis (PI) is a rare disorder characterized by multiple gas-filled cysts in the gastrointestinal tract, from the mouth to the anus, often sub-serosal in the sub-mucosal part of the intestinal wall. PI identified by Du Vernoi (3) for the first time in 1730 during a cadaver dissection can be found in two forms as primary (15%) and secondary (85%).

Although the etiology is not fully known, most of the cases can be accompanied by gastrointestinal system diseases, pulmonary system diseases, history of previous abdominal surgery, trauma, connective tissue diseases, iatrogenic injury (4). The development of pneumoperitoneum as a result of rupture of cysts without peritoneal irritation symptoms is pathognomonic although there are not distinctive clinical findings (5).

In this study, the experience which was obtained from the patients who applied to the emergency service with acute abdomen disorder and who were treated and followed up with the diagnosis of Pneumatosis intestinalis was presented.

**MATERIALS AND METHODS**

The data of 8 patients who applied to the emergency service with abdominal pain complaint between July 2012 and July 2017, followed up and treated with the diagnosis of pneumatosis intestinalis were retrospectively evaluated. The patients' detailed medical history and treatment during the hospitalization were noted, such as age, gender, accompanied-disease, chronic habits and drug use, previous operations. Laboratory values, radiological results, and if surgical procedures were performed, the operation, complications, hospitalization periods, follow-up periods, pathological examination results were also noted.

**RESULTS**

Five of the patients were male and three of them were female. Mean age was 68 (58-81y). All patients were admitted to the emergency service with sudden severe abdominal pain. In the physical examination, there was a widespread defense in all of them. When detailed medical histories were examined, we found that 4 patients had chronic smoking, 3 patients had the chronic obstructive pulmonary disease, none of them had a history of surgery and known gastrointestinal system diseases. Mean HB value was 10.2 g/dl (9.4-12.4 g/dl), white blood cell count was 11250/mm<sup>3</sup>(7200-12100/mm<sup>3</sup>). All patients were evaluated with direct abdominal graph and contrast abdominal computed

tomography.

Although there was no acute abdominal pain, 6 of 8 patients were admitted to emergency surgery due to the presence of free air in direct graphics and continuous abdominal pain suggestive of perforation, then segmental small intestine resection and end-to-end anastomosis were performed by open surgery, and 2 patients were followed nonoperatively after regulating the medical treatment in the hospital. The diagnosis of all patients was radiologically confirmed by computed tomography examination. Tomographic results showed that all of them had a widespread free air image in the intraperitoneal site, wall thickening of uniformed quality in the small intestine, and intraperitoneal disseminated free fluid in the lower quadrants of the abdomen. The patients undergoing resection and anastomosis had no other pathology in intraoperative explorations that could cause these changes in the intestinal wall. None of them showed any evidence suggesting trauma or mass lesions. All intestinal segments were subjected to pathological examination. Pathological examination of all specimens belonging to the patients was reported as primary pneumatosis intestinalis. It was reported that panceratin ileofocal sparse staining was observed and that CD 34: negative, F8: negative and D2-40 staining was not observed in the immunohistochemical studies on the purpose of evaluating the origin and epithelium of cystic dilation.

**DISCUSSION**

Pneumatosis is a rare pathology characterized by multiple cysts filled with gas in the subserosa and submucosa of intestinal wall, and its etiology has not been fully revealed yet (6). It is seen most commonly in the 6th decade, being equal to the male/female ratio (7). PI is often accompanied by gastrointestinal diseases (inflammatory intestinal diseases, pyloric stenosis, peptic ulcer, colitis, celiac sprue, tumor etc.) or pulmonary system diseases (chronic obstructive pulmonary disease, chronic bronchitis, cystic fibrosis, pulmonary fibrosis etc.), previous abdominal surgical history (mesenteric ischemia, transplantation, anastomosis), trauma, connective tissue diseases (lupus variants, scleroderma), iatrogenic injury (endoscopy, enteric tube placement, etc.) (4), but three of our patients had a continuing complaints of COPD, while the other five patients did not have any underlying co-morbid disease or history of the previous operation. Although it can be seen in the entire gastrointestinal tract, the colon is affected by 6% in the disease with retention of bowel loop. There were many cysts filled with gas in jejunum segments. As in our patients, although

pneumoperitoneum develops due to cyst rupture, the absence of peritoneal irritation findings is pathognomonic (5). The character of symptoms may be specific or nonspecific depending on retention localization. Abdominal distension, abdominal pain, mucous defecation, diarrhea, meteorism, invagination, volvulus, mechanical obstruction, gastrointestinal haemorrhagia may occur (8). All patients had distension and epigastric sensitivity in the abdomen. Sub-diaphragmatic free air, dilatation of the small intestines and air-liquid levels were present on the direct graphs of the operated patients. These findings were confirmed in the abdominal tomography evaluation, but no specific sign was detected in the differential diagnosis.

Since close to half of patients have been reported to have spontaneous remissions during the treatment of pneumatosis intestinalis, and recurrence of gas-filled cysts following surgery has been reported, specific treatment is not performed in asymptomatic cases and strict follow-up and support are recommended (6,7).

In the case of seconder form cases, treatment of the underlying disease and oxygen therapy is applied. In symptomatic cases, if there is no perforation, bleeding, peritonitis, and sepsis, the non-operative oxygen therapy is sufficient (9). Complications such as volvulus, intestinal obstruction, intussusception, and perforation are seen only in 3% of patients (10). There were no significant abdominal findings in our two patients with underlying COPD stories, so they were first treated by medical procedures, and they were operated upon to dramatically reducing respond to oxygen support therapy. However, the other six cases were operated considering that the perforation had developed. In patients with intraoperative pneumatosis, internal herniation and intestinal obstruction due to adhesions and ligaments caused by cysts were detected. Resection and end-to-end anastomosis were applied to the small intestine segment with obstruction segments and circulatory impairments

## CONCLUSIONS

It should not be forgotten that pneumatosis intestinalis is a clinical symptom. Early diagnosis can be difficult because many systems can be associated with the disease. However, careful evaluation of clinical findings, radiological data, secondary diseases and laboratory data will help the clinician determine the correct diagnosis and appropriate treatment. It should also be noted that in most cases the treatment of underlying disease and supportive treatment are sufficient and that emergency surgery indications may also be seen.

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