

## Case Report

# Intestinal cystic pneumatosis: a rare entity

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### ABSTRACT

Pneumatosis intestinalis is the presence of gas within the wall of the gastrointestinal tract. The gas forms bubbles containing nitrogen, hydrogen and carbon dioxide in most cases is intramural. Many factors are associated with this entity such as bacterial gas production (*Clostridium difficile*), increased intraluminal pressure (vomiting), mucosal injury (inflammatory bowel disease and immunosuppression), pulmonary gas (pulmonary obstruction and chronic cough) and combination of factors. The most frequent symptom is abdominal pain however physical examination is not very helpful in the diagnosis, the reason why computed tomography is the best imaging modality for this disease. The treatment depends in the underlying cause and is debated.

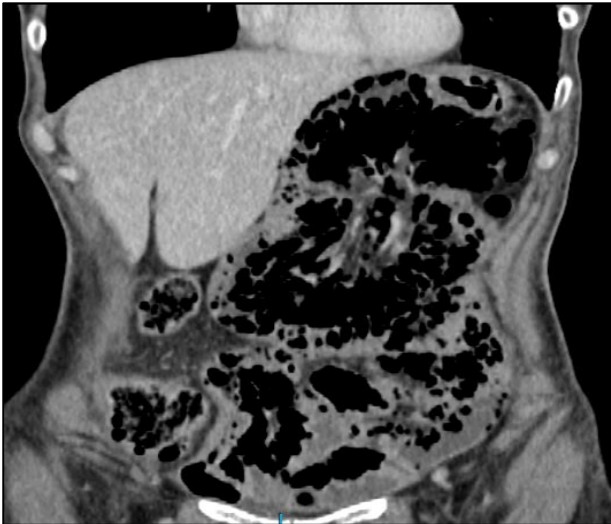
**Keywords:** Cystic pneumatosis, Pneumatosis, Abdominal pain

## INTRODUCTION

The presence of gas within the wall of the gastrointestinal tract is known as pneumatosis intestinalis. The gas forms bubbles that contain nitrogen, hydrogen and carbon dioxide and in most cases are intramural. Many factors are associated with this entity such as bacterial gas production (*Clostridium difficile*), increased intraluminal pressure (vomiting), pulmonary gas (pulmonary obstruction and chronic cough), mucosal injury (inflammatory bowel disease and immunosuppression) and combination of these factors.<sup>1,2</sup> The most frequent symptom is abdominal pain, however the physical examination is not helpful to make the diagnosis, for instance, is necessary to use imaging studies; an abdominal computed tomography is the best imaging modality to diagnosis this pathology.<sup>1-3</sup> The treatment depends in the underlying cause and is still debated. This rare entity has a differential diagnosis bowel perforation, since in up to 30% of the cases with perforation present pneumoperitoneum.<sup>4,5</sup>

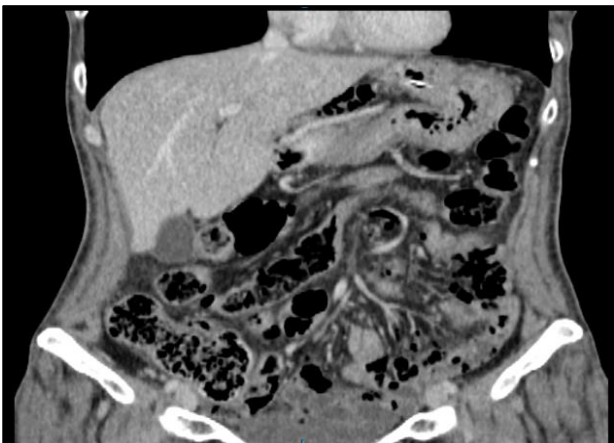
## CASE REPORT

We present the case of a 54 years old female patient, with the antecedents of rheumatoid arthritis treated with methotrexate and prednisone, also with a history of sigmoidectomy due to diverticular disease and restoration of intestinal transit. The patient went to the emergency department because 1 month prior to admission present diffuse abdominal pain, colic type, mild intensity and accompanied to alterations in the evacuation patterns. On physical examination, a tender abdomen is identified, however, there are no signs of peritoneal irritation. Laboratory test showed hemoglobin 12.6 g/dl, hematocrit 40.1%, leucocytes 5 miles/ul and the rest of laboratory test were normal. A computed tomography was performed, wich shows dilation of the small bowel of up to 50 mm, intestinal pneumatosis, without evidence of a conditioning site and free fluid in the abdominal cavity (Figure 1 and 2), which is why surgical management was decided.

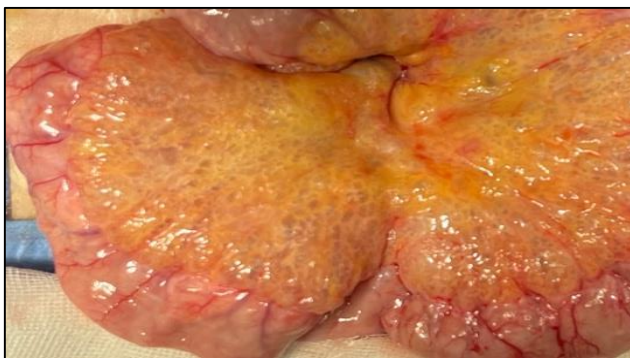


**Figure 1: Abdominal computed tomography showing the presence of intestinalis pneumatosis.**

**Figure 2: Abdominal computed tomography: evidence of intestinalis pneumatosis.**



An emergency exploratory laparotomy was performed, only identifying the presence of cystic pneumatosis of the mesentery from the angle of Treitz to the ileocecal valve; a cautious review of the cavity was performed and no perforation site is noted (Figure 3 and 4).



**Figure 3: Intestinal cysts pneumatosis at the level of the mesentery.**



**Figure 4: Intestinal cysts pneumatosis at the level of the mesentery.**

The patient presented a favorable evolution after the surgical procedure, the patient only received analgesia, and was discharged on the third day. We followed up the case by the general surgery outpatient clinic.

#### DISCUSSION

Intestinal cystic pneumatosis is a rare entity in which gas bubbles containing hydrogen, nitrogen and carbon dioxide are formed.<sup>1</sup> Most of these cysts are found in the submucosa and serosa of the intestinal wall.<sup>2</sup> Approximately 85% of cases the etiology is identified, being the pulmonary causes, increased intraluminal pressure, bacterial gas production and inflammatory bowel disease, however, in 15% the etiology is not identified, so it is classified as idiopathic intestinal cystic pneumatosis.<sup>3-4</sup> The most frequent location of this entity is the colon (61.8%), followed by the small bowel (15.4%) and in the same way the cysts that contain gas are located more frequently in the submucosa (Up to 69.9%).<sup>5</sup> The most frequent symptoms in this pathology are abdominal pain, diarrhea, digestive tract bleeding, constipation, rectal tenesmus and weight loss, despite that none of these symptoms are specific, such as in the case of our patient who presented abdominal pain.<sup>1-5</sup> The diagnosis is made mainly by imaging studies due to the low specificity of the physical examination; within the imaging studies we count with simple abdominal X-ray in which, multiple cysts with gaseous content that follow the intestinal wall path can be observed, also we have the ultrasound and finally the abdominal computed tomography, being the study of choice where numerous gas cysts that follow the intestinal wall path can be identified, and in the same way it can show the presence of pneumoperitoneum because there is the possibility of a ruptured cysts. In the case that we reported, the abdominal tomography identified the presence of intestinalis pneumatosis without the presence of

pneumoperitoneum, this scenario can occur in up to 15% of the cases.<sup>2</sup>

## CONCLUSION

This entity is treated conservatively, even with the presence of pneumoperitoneum; on the other hand, diagnostic suspicion of this entity should be considered in patients with history of rheumatological disease. Surgical indications will depend on the presence of fever, leukocytosis, suspicion of intestinal necrosis and lack of resolution of abdominal pain. In the case of our patient, we performed an exploratory laparotomy because the abdominal computed tomography revealed the presence of free fluid as well as pneumatosis, and also the abdominal pain did not resolve, however no intestinal resection was needed. An effective treatment for this pathology is oxygen at high flows because it can help replace the nitrogen found in gaseous cysts, therefore if we have the suspicion, and our patients do not have any inflammatory response a conservative management would be indicated.

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