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Case Report

Pneumoperitoneum! Is it a Diagnosis?

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Abstract

Pneumoperitoneum is perhaps a diagnosis or it is only a radiological sign; a medical diagnosis is essentially composed of signs and symptoms, this explains that the therapy is contingent on the diagnosis, in such a way that without diagnosis, it will be nonspecific, symptomatic and the patient runs the risk of being exposed to procedures and treatments that are not always innocuous. The objective of this is the presentation of a clinical case and the analysis of this entire entity. The theory of anaerobic infection is one of the causes of the etiology of pneumoperitoneum. At present, even with technological advances and even without discrimination or loss of resources, there are only assumptions, inferences, deductions, indirect results that do not absolutely and conclusively show an anaerobic pathogenic etiology. There is an unreasonable or indiscriminate use of antibiotics to cover the treatment of supposed diseases of anaerobic etiology, which in themselves are not corroborated and/or confirmed. So, it is a myth to suffer from high-profile anaerobic infections or that lead to sepsis and the death of the patient; or only impotence and difficulty in establishing a nosological diagnosis and specific treatment are emphasized.

Keywords: *Pneumoperitoneum; Anaerobes; Infection; Sepsis; Radiologic*

Introduction

The diagnosis of pneumoperitoneum is it itself a disease? Abdominal anaerobic infection (AAI) or systemic anaerobic infection of abdominal etiology (SAIA) is an extremely rare pathology, its theoretical knowledge is very broad, unlike the clinical area where its reproducibility is scarce.

The AAI or the SAIA are entities with a low frequency that, despite this, have a high mortality rate. In ancient times, Varro in the 1st century BC mentioned that swampy areas were very dangerous as the source of infections, because "certain tiny animals, invisible to the eye, are raised there and pass into the air to enter the body through the mouth, causing disease," later Giralamo Fracastoro in the 15th century said that there are "seeds" in the environment that could enter the body, multiply and cause disease [1].

Anaerobic bacteria are a major part of normal human biota; given this and thanks to advances in medicine, discerning if it is a pathogen or just a real commensal, is currently a real challenge [2].

Objective of the Study

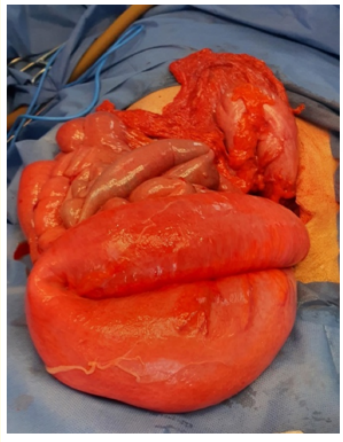
Presentation of a clinical case to the surgical medical society.

Case Report

It is a 69-year-old homeless male patient, with a history of chronic alcoholism for more than 20 years, intermittent smoking, various addictions to solvents, marijuana, cocaine, crack and methamphetamines. He denies chronic degenerative diseases and no surgical history. In the emergency room it is assessed by the surgery team. It is conscious, oriented in time and person, but not in place; with vital signs as follows: heart rate: 40 bpm. blood pressure: 90/50 mmHg. Respiratory rate: 16 rpm. Temperature: 98°F. Weight: 121 lb. Height: 5 ft 3 in. Cachectic facies, prostrate, with head and neck without data to comment, cardiopulmonary without apparent involvement, abdomen with very marked distension, absent peristalsis, tympanitic distension of the abdomen, marked tenderness and increased abdominal wall rigidity; absence of visceromegaly; hypotrophic upper and lower limbs.

Laboratories: hemoglobin with normochromic normocytic anemia of 10.2 g/dl, hematocrit 31.8%, thrombocytopenia 112 x 103 mm^2, leucocytes 8.14 x 103 mm^3, lymphopenia of 9.6%, monocytosis of 17.2%, prothrombin time of 14.4 seconds, prothrombin 70%, thromboplastin time 42.1 seconds. Severe hypoalbuminemia of 2.1 g/dl, sodium of 142 mEq/l, hypokalemia with potassium of 1.81 mEq/l (verified), chlorine 105 mEq/l, phosphorus 3.6 mEq/l, magnesium 1.82 mEq/l, severe hypoglycemia and incompatible with the human life of 9 mg/dl (verified), creatinine 0.8 mg/dl, BUN 31.86 mg/dl, urea 68.2 mg/dl. Arterial blood gas: pH: 7.53, pCO_2: 38 mmHg, pO_2: 70 mmHg, Na: 147 mmol/L, K: 1.5 mmol/L, Ca: 0.94 Lac: 1.7 mmol/L, HCO_3^-: 31.8 mmol/L, HCO_3: 31.5 mmol/L, TCO_2: 33 mmol/L, EB: 9.1 mmol/L, SO_2: 96%. Imaging studies found a simple chest radiograph in posteroanterior view (Figure 1), which despite having poor technique, it was possible to appreciate right subphrenic free air showing pneumoperitoneum. There are no other studies. Hollow viscus perforation is suspected, for which he undergoes emergency surgical intervention, finding only air contained in a large quantity at a pressure greater than 4 liters, (without data on compartment syndrome), without evidence of perforation, or apparent infectious focus, no data on an inflammatory process, with normal anatomical structures, no purulent material, no collections, little peritoneal fluid that is sent for culture, cytological and cytochemical. Only colon agangliosis (in some of its variants) is suspected due to significant dilatation only of the sigmoid colon (Figure 2 and 3). The culture with a result without development, the cytological report with cellularity without atypia, negative Gram staining and the cytochemical with normal cells without alteration. Antibiotic synergy for anaerobes is established with Imipenem and metronidazole; he remained 9 days in hospitalization for surgery with an evolution even with some clinical improvement, but upon change of service to Internal Medicine to continue study, protocol and treatment, he died 72 hours later due to sudden death.

Figure 1: *Radiological study: Pneumoperitoneum.*



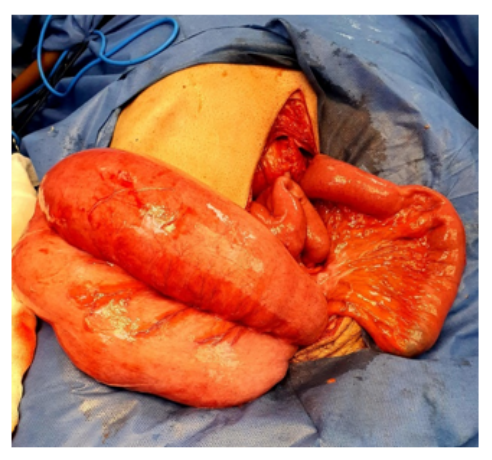


Figure 2 and 3: *Sigmoid colon dilatation.*

Discussion

Pneumoperitoneum is defined as the presence of air in the abdominal cavity, outside the viscera that normally contain it. The primary cause is perforation of any hollow viscus with a predominance of 3 organs, the stomach, the duodenum and the colon, occurring in more than 90% of cases [3]. Pneumoperitoneum can have a variety of etiologies that, in the authors' opinion, is erroneously called benign, idiopathic, or non-surgical "pneumoperitoneum" [4]. Others refer that pneumoperitoneum is also of thoracic origin due to barotrauma, iatrogenic, laparoscopic or even of obscure cause [5-7]. Speaking of pneumoperitoneum as a diagnosis, for the authors, is not very specific, since it is really a radiological sign; a medical diagnosis is essentially composed of signs and symptoms, this explains that the therapy is contingent on the diagnosis, in such a way that without diagnosis, it will be nonspecific and symptomatic. Without diagnosis, the patient runs the risk of being exposed to procedures and treatments that are not always safe [8]. An exhaustive search has been made in the SAIA literature in relation to primary peritonitis that is confirmed by anaerobes, in which the microorganism has been isolated and an anaerobic etiology has not been found even with a considerable number of cases [9-12]. The theory of anaerobic infection is the proposed cause of the etiology of pneumoperitoneum, however it has not been possible to isolate a microorganism that causes this sign that explains or corroborates non-surgical pneumoperitoneum [13]. On the other hand, it is called idiopathic non-surgical pneumoperitoneum that does not present clinical signs or surgical evidence of perforation, but it is only possible to isolate Gram negative ones, but not purely anaerobes [5]. The clinical picture is nonspecific and varied, which will depend on the cause that causes the so-called pneumoperitoneum pathology; These signs and symptoms can range from completely asymptomatic or become fatal; some patients experience nausea, vomiting, diffuse abdominal pain, tenderness, bloating, abdominal rigidity, septic shock, and even death [6,14,15]. The diagnosis is very difficult to establish, since there is no pathology to diagnose itself, that is, only a sign or a radiological finding with a very nonspecific clinical picture; that perhaps it is by dismissal or indirectly, or even by experimental assumption of the doctor's expertise, or as a trial and error [16-18]. Without an established nosological diagnosis, there is no specific treatment, a protocol, a gold standard that guides its prompt application and, of course, to fulfill the objective, which is to help heal the patient.

According to some authors, the treatment is described as conservative or non-surgical management; the dilemma is when does this conservative management occur? If there is no diagnostic certainty or etiology that explains the clinical condition of the patient or the radiological sign called pneumoperitoneum. They undergo surgery, with increased anesthetic risk and metabolic response to trauma and with the risks that these imply, without having a surgical reason; causing further deterioration of the patient increasing morbidity [18-21]. To recapitulate in the literature, it is mentioned from a spontaneous pneumoperitoneum associated with constipation, or even a pneumoperitoneum produced by indirect deduction, by anaerobic bacteria [5,22,23]. That is why the case presented resembles a probable systemic anaerobic infection of abdominal origin. And that is why in a deductive analytical way, the following questions are asked, without an answer:

- In decades, the medical experience of all the authors mentions, When has it been objectively verified with the isolation of the microorganism and culture, with the quantification of colonies; infection, sepsis and even the death of a patient by anaerobic pathogens?
- For centuries, since humanity exists, a symbiosis has been maintained with millions of anaerobic bacteria per cubic centimeter that exist in the intestine, and there is no disease named for this, much less a pathognomonic clinical picture that is known today, what is the factor (s) that trigger systemic anaerobic infection in the host? In the event that it exists.
- In daily medical practice, the various dosages of prophylactic, therapeutic and synergistic antibiotic coverage for anaerobic biota are included. Is this necessary?
- Pneumoperitoneum is a radiological sign, which in some cases could be superimposed on a chronic adaptive state of the host with its millions of bacteria. So, is it a disease?

- What is the clinical picture, diagnosis and treatment of an abdominal systemic anaerobic infection?

Conclusion

Pneumoperitoneum is not a diagnosis, it is a radiological sign that, as such, must be exhaustively searched for the etiology in order to be able to deliver a true diagnosis and, therefore, an ethical, effective and specialized treatment.

Even today with technological advances and even without discrimination of resources, there are only assumptions, inferences, deductions, indirect results that do not absolutely and conclusively show an anaerobic pathogenic etiology.

There is an unreasonable or indiscriminate use of antibiotics to cover the treatment of supposed diseases of anaerobic etiology, which in themselves are not corroborated and/or confirmed.

The medical community is the victim of the giant pharmaceutical groups, who in a marketing and strategic way, have amalgamated in the cultural psyche the therapeutic behavior of the doctor, for the so-called anaerobic infection; despite not having any hard evidence of its existence.

Conflict of Interest

There is no conflict of interest for any of the authors.

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