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# Primary Peritonitis in a Healthy Boy- Case Report



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## Abstract

Primary spontaneous peritonitis in children is a rare entity in the absence of underlying systemic disease. We present a case of a healthy 3 year-old boy, with no past medical history, who presented to the emergency room with a sudden onset of diffuse abdominal pain and fever. In the abdominal physical exam he presented diffuse abdominal pain and tenderness on palpation. After complementary studies we suspected a perforated appendicitis he was taken to the operating room. Upon laparotomy a primary peritonitis was diagnosed and posteriorly a Streptococcus Pyogenes (Group A) was isolated in the peritoneal fluid. He was treated with antibiotics and recovered completely. Primary peritonitis is a rare, forgotten entity and surgeons should be aware of it in the diagnosis of acute abdomen in children.

**Keywords:** Primary peritonitis; Abdomen, Acute; Appendicitis; Pediatrics

## Introduction

Primary spontaneous peritonitis is defined as an infection of the abdominal cavity in the absence of an identifiable source, and most commonly mistaken for an acute appendicitis. It was first described in an adult patient in 1885 by Da Bozzolo [1], and since then few cases have been published in the literature, especially in the pediatric group. It is uncommon in healthy children and normally associated to predisposing conditions, mostly hepatic or renal diseases (nephrotic syndrome, liver cirrhosis,) [2]. It is more frequent in boys and the mean age of incidence is between 4 and 9 years of age [2]. The most common isolated agent was *Sterptococcus pneumonia* [3].

## Case Report

We report a case of a three year-old boy, with no past relevant medical history. He presented to the emergency room due to diffuse abdominal pain and fever, with 24 hours of evolution. He also complained of dysuria, diarrhea and vomiting. There were no other associated symptoms or relatives with the same symptoms. In the physical exam he was dehydrated, with diffuse abdominal pain and tenderness at palpation, suggesting an acute abdomen. Blood work was performed showing elevated inflammatory markers: peripheral WBC count of 19.510/mm<sup>3</sup> with 94.7% polymorphs and C-reactive protein of 100mg/L. An ultrasound was requested, identifying an inflamed appendix with complex free fluid, suggestive of perforated acute appendicitis.

He was taken to the operating room after IV bolus hydration and antibiotics. Laparotomy revealed abundant purulent fluid, with generalized intestinal inflammation but no obvious appendicitis or other intra-abdominal source. Fluid was recovered for microbiology and an appendectomy was performed and sent for histopathological analyses. A primary peritonitis was suspected and empiric EV antibiotics were maintained. He was afebrile 24h later and recovered uneventfully. A Streptococcus Pyogenes (Group A) was isolated in the free fluid, sensitive to Ceftriaxone. The histopathological analyses of the appendix showed no inflammatory alterations. Posterior studies showed no associated medical conditions. He was discharged home on the 5th post-operative day, and is now at four years of follow-up.

## Discussion

Primary peritonitis is defined as an infectious process involving the peritoneal cavity without an intra-abdominal source. It is a rare entity in the absence of underlying systemic disease. Multiple potential sources of infection have been implicated (gastrointestinal translocation, hematogenous bacterial diffusion originating from a primary pharyngeal or pulmonary focus [1,4,5] but the etiology remains unclear in most cases. In the majority of the cases described in the literature the presentation is of a sudden acute abdominal pain with generalized associated symptoms (fever and nausea) and often the diagnosis is only made upon laparotomy/laparoscopy.

In children PP are often mono-microbial and the most common agent identified is Streptococcus Pneumonia [6], although several agents have been identified (*E. coli*, *Enterococci*, *Streptococcus group A...*) and the treatment consists of IV antibiotics. Studies have showed that a third generation of cephalosporin can be a suitable antibiotic for empirical therapy of children with this pathology [3,6]. Post-operative full recovery is expected, and if there is no improvement in the days that follow surgery a secondary diagnosis must be excluded. With the presentation of this case the authors would like to remind this unusual cause of acute abdomen in healthy children, normally presenting with a disparity of symptoms to the time of evolution. The main challenge of primary peritonitis is to make the diagnosis without surgery.

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