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CLINICAL CASE

Abdominal compartment syndrome by tension pneumoperitoneum secondary to barotrauma. Presentation case[☆]



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KEYWORDS

Barotrauma;
Pneumoperitoneum;
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Abstract

Background: Pneumoperitoneum is defined as the existence of extraluminal air in the abdominal cavity. In 80–90% of cases is due to perforation of a hollow organ. However, in 10–15% of cases, it is nonsurgical pneumoperitoneum.

Objective: The case of a patient undergoing mechanical ventilation, developing abdominal compartment syndrome tension pneumoperitoneum is reported.

Clinical case: Female, 75 years old asking for advise due to flu of long term duration. Given her respiratory instability, admission to the Intensive Care Unit is decided. It is then intubated and mechanically ventilated. Chest X-ray revealed a large pneumoperitoneum but no pneumothorax neither mediastinum, and due to the suspicion of viscera perforation with clinical instability secondary to intra-abdominal hypertension box, emergency surgery was decided.

Conclusions: When discarded medical history as a cause of pneumoperitoneum, it is considered that ventilation is the most common cause.

Benign idiopathic or nonsurgical pneumoperitoneum, can be treated conservatively if the patient agrees. But if intraabdominal hypertension prevails, it can result in severe respiratory and haemodynamic deterioration, sometimes requiring abdominal decompression to immediately get lower abdominal pressure and thus improve haemodynamic function.

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PALABRAS CLAVE

Barotrauma;
Neumoperitoneo;
Presión abdominal;
Ventilación mecánica

Síndrome compartimental abdominal por neumoperitoneo a tensión secundario a barotrauma. Presentación de un caso

Resumen

Antecedentes: El neumoperitoneo se define como la existencia de aire extraluminal en la cavidad abdominal. En el 80-90% de las ocasiones se debe a la perforación de una víscera hueca. No obstante, en un 10-15% de los casos se trata de neumoperitoneos no quirúrgicos.

Objetivo: Presentamos el caso de una paciente sometida a ventilación mecánica que desarrolla un síndrome compartimental abdominal por neumoperitoneo a tensión.

Caso clínico: Paciente mujer de 75 años que consulta por síndrome gripal de días de evolución. Dada su inestabilidad respiratoria se decide su ingreso en la unidad de cuidados intensivos y se procede a su intubación orotraqueal con conexión a ventilación mecánica. En la radiografía de tórax se observa un gran neumoperitoneo sin neumotórax ni neumomediastino, por lo que, con la sospecha de perforación de víscera hueca y ante la inestabilidad clínica secundaria al cuadro de hipertensión intraabdominal, se decide su intervención quirúrgica urgente.

Conclusiones: Cuando se descartan antecedentes médicos como causa de neumoperitoneo, se considera que la ventilación es la causa más frecuente.

El neumoperitoneo benigno, idiopático o no quirúrgico, puede tratarse de forma conservadora si la clínica del paciente lo permite. Pero si existe un cuadro de hipertensión intraabdominal, puede producirse un grave deterioro hemodinámico y respiratorio que en ocasiones obliga a la descompresión abdominal de forma inmediata para conseguir disminuir la presión intraabdominal y, por tanto, mejorar la función hemodinámica del paciente.

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Background

Pneumoperitoneum is defined as the existence of extraluminal air in the peritoneal cavity. The first cause to be ruled out is hollow visceral perforation, which requires emergency surgical intervention.¹

The condition referred to as a primary, idiopathic or benign pneumoperitoneum occurs in 10% to 15% of cases, and is not caused by intra-abdominal lesions. This condition is also called non-surgical pneumoperitoneum, because a wait-and-see approach can be taken with conservative treatment, avoiding unnecessary laparotomies, which increase morbidity and mortality.²

Objective

We present the case of a patient who underwent mechanical ventilation, and who developed an abdominal compartment syndrome caused by tension pneumoperitoneum. Surgical decompression was decided, without demonstrating the abdominal cause responsible.

Clinical case

A 75-year-old woman with no medical history of interest attended the emergency department with flu-like symptoms of several days' duration. The patient reported asthenia and dyspnoea, which were gradually increasing. On physical examination the patient was agitated, she was normotensive but tachycardic (108 beats/min), tachypneic (35 respirations/min), with oxygen saturation of 84% and a fever of 39 °C. She presented mucocutaneous cyanosis and oedema

to the middle third of the leg. Pulmonary auscultation showed hypoventilation in the base of the right lung, and there were no significant pathological findings in the other organs and systems.

Arterial gasometry was compatible with respiratory acidosis (pCO₂ 90, pH 7.14, HCO₃ 30, pO₂ 88). The chest X-ray showed findings compatible with pneumonic syndrome, and fibrobronchoscopy did not show significant lesions.

Given the patient's respiratory instability, it was decided that she should be admitted to the intensive care unit with a clinical diagnosis of acute respiratory failure secondary to a possible pneumonia acquired in the community. Treatment with corticosteroids was started and non-invasive ventilation with *bilevel positive airway pressure* (BiPAP).

Because this ventilation failed, the patient was intubated orotracheally and connected to mechanical ventilation. Twenty-four hours later she developed haemodynamic compromise (hypotension and tachycardia), and respiratory compromise (hypoxia and metabolic acidosis), and oligoanuria. On examination the patient had a very distended abdomen with tympanism and reduced bowel sounds. A chest X-ray showed findings compatible with a major pneumoperitoneum (Fig. 1). Neither a pneumothorax nor a pneumomediastinum were observed, with the suspicion of hollow visceral perforation, and given the patient's clinical instability secondary to symptoms of intra-abdominal hypertension, urgent surgical intervention was decided. Measures were not taken to deal with the intra-abdominal pressure as the patient's haemodynamic instability made emergency intervention necessary.

Surgical decompression caused an improvement in the patient's haemodynamic and respiratory parameters. The integrity of the intestinal loops was checked, and no lesions

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