Revista Colombiana de Anestesiología
Colombian Journal of Anesthesiology

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Case report

Anesthesia crisis in laparoscopic surgery: Bilateral spontaneous pneumothorax. Diagnosis and management, case report☆

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ARTICLE INFO

Article history:
Received 30 March 2014
Accepted 19 January 2015
Available online 11 March 2015

Keywords:
Pneumothorax
Anesthesia
Laparoscopy
Barotrauma
Pneumoperitoneum

ABSTRACT

Introduction: Laparoscopic surgery as a minimally invasive technique has shown considerable benefit in terms of patient outcomes. However, major complications have been described, including spontaneous pneumothorax, with a 0.4% incidence. An unusual crisis in laparoscopic surgery – spontaneous bilateral pneumothorax – and an updated literature review are discussed with a view to identify the factors related to its occurrence and the prevention and management measures involved.

Case presentation: A young man undergoing emergency laparoscopic surgery for abdominal pain. During the intraoperative period the patient developed respiratory impairment and subcutaneous emphysema. Bilateral pneumothorax was documented on chest X ray, though the etiology could not be established. Early diagnosis allowed for timely management with bilateral thoracotomy and extubation at the end of surgery.

Conclusion: Spontaneous pneumothorax has been recognized as a potential crisis in laparoscopic procedures. There are multiple cases of this intraoperative complication reported in the literature since 1939. It is worth highlighting that to this date, and despite the advances in surgical techniques, monitoring and anesthetic agents, few elements may be manipulated and only an insightful anesthesiologist may prevent the condition from evolving into major hemodynamic and respiratory morbidity and even death. Few factors such as establishment of pneumoperitoneum and pressure, length of the procedure and type of surgery have been identified. Early diagnosis is based on a high suspicion due to subtle changes in respiratory and hemodynamic parameters that require radiographic confirmation if the patient's condition permits, followed by immediate decompression through thoracotomy.

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☆ Please cite this article as: Mendoza KC, Suarez GC, Suguimoto A. Crisis anestésica en cirugía laparoscópica: neumotórax espontáneo bilateral. Diagnóstico y manejo, reporte de caso. Rev Colomb Anestesiol. 2015;43:163–166.

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Crisis anestésica en cirugía laparoscópica: neumotórax espontáneo bilateral. Diagnóstico y manejo, reporte de caso

Palabras clave:
Neumotorax
Anestesia
Laparoscopía
Barotrauma
Neumoperitoneo

R E S U M E N

Introducción: la cirugía laparoscópica como técnica quirúrgica mínimamente invasiva ha demostrado importantes beneficios en el desenlace de los pacientes. Sin embargo, se han descrito complicaciones mayores como el neumotórax espontáneo, con una incidencia de 0,4%. Se presenta una crisis inusual en cirugía laparoscópica, como el neumotórax espontáneo bilateral y una revisión actualizada de la literatura que permita identificar los factores relacionados con su presentación y las medidas de prevención y manejo.

Presentación del caso: un hombre joven llevado a cirugía laparoscópica de urgencia por dolor abdominal, en el periodo intraoperatorio presentó deterioro respiratorio y enfisema subcutáneo, documentándose un neumotórax bilateral en una radiografía de tórax, cuya etiología no fue posible establecer. Su rápido diagnóstico permitió el oportuno manejo con toracostomía bilateral y extubación al finalizar la cirugía.

Conclusión: el neumotórax espontáneo es reconocido como una potencial crisis en procedimientos laparoscópicos, y desde 1939 la literatura reporta múltiples casos de esta complicación intraoperaroria. Es de resaltar que al presente, a pesar de los avances en la técnica quirúrgica, monitoria y medicamentos anestésicos, pocos elementos pueden ser manipulados y solo la suspicacia del anestesiólogo puede prevenir su evolución a una mayor morbilidad hemodinámica y respiratoria o la muerte. Solo factores como la instauración y presión del neumoperitoneo, duración del procedimiento y tipo de cirugía han sido relacionados. Su rápido diagnóstico reposa en un alto índice de sospecha ante cambios sutiles en parámetros respiratorios y hemodinámicos que deben llevar a una confirmación radiográfica si el estado del paciente lo permite, con posterior descomprensión inmediata con toracostomía.

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Introduction

Abdominal laparoscopic surgery encompasses a broad range of procedures that have gained popularity because of the advantages in terms of patient recovery, low morbidity (1.07–0.3%) and low mortality rates (0.03%).[1]

Despite these encouraging statistics, there are however potential intraoperative complications not to be overlooked, such as cardiac arrhythmia, gas embolism, intestinal trauma, hemorrhage, pneumothorax, pneumomediastinum, and subcutaneous emphysema that may arise in this type of procedures.[2] Other important complications affecting the cardiovascular system have been described, including advanced atrioventricular blocks. [3]

Since 1939 pneumothorax has been reported as a laparoscopic complication with an incidence of 0.01–0.4%.[4,5] Currently, despite the advances in the surgical technique, this complication is rather unusual, and even more so bilateral involvement.

The case presented is an unusual intraoperative crisis caused by bilateral spontaneous pneumothorax during a laparoscopic procedure in a young man. Though the outcome was not fatal, the situation was life-threatening for the patient and resulted in additional morbidity and a longer hospital stay. Spontaneous pneumothorax should be kept in mind as a potential crisis in laparoscopic surgery, with proper identification of risk factors, early suspicion and prompt diagnosis and management.

Case report

36-year old man admitted to the emergency room with intense and poorly characterized, localized abdominal pain for the last 12 h and nausea. The patient had a history of GI bleeding from peptic ulcer one year ago and high blood pressure managed with Losartan; previous knee arthroscopy and uncomplicated lumbar laminectomy, cigarette smoking and occasional alcohol use. The physical examination findings were hypertension (blood pressure of 130/100), heart rate (HR) 20 bpm, oxygen saturation (SpO_2) 97%, body temperature 37 °C, normal cardiopulmonary auscultation, abdominal guarding, painful palpation of the right iliac fossa, positive Blumberg sign and positive Rowsing.

The paraclinical tests reported leukocytosis, normal platelet count and normal hemoglobin. The patient was diagnosed with appendicitis and laparoscopic appendectomy was indicated.

The pre-anesthesia evaluation indicated a functional class > 4 METS, with no predictors of difficult airway.

A rapid induction sequence was used with lidocaine 60 mg, propofol 150 mg and succinylcholine 80 mg followed by orotracheal intubation. 150 mcg of fentanyl were then administered

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