Postpartum pneumoperitoneum: A rare complication does not invariably pose a threat

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Abstract

Due to clinical suspicion of embolism, a 36-year-old gravida 5 para 4 patient was referred for CTPE five days after a normal vaginal delivery. CTPE showed no pulmonary artery filling deficit. However, lung window measurements showed pneumoperitoneum. The delivery was uneventful except for 1st-degree perineal injury. Patients’ CRP and blood levels were normal. The multidisciplinary team consultation between gynecology, surgery, and emergency department suggested observation, but the patient declined due to no symptoms. However, she was evaluated over the phone and readmitted two days later for a CT abdomen with oral and IV contrast. A repeat CT showed pneumoperitoneum resorption and no oral contrast extravasation. Poor intestinal dilatation with pneumocystis intestinalis. After discharge and contact, no symptoms appeared. We present a case with inadvertent observation during thoracic imaging for suspected pulmonary embolism revealed postpartum pneumoperitoneum, a benign condition.

Keywords: Postpartum; Pneumoperitoneum; Computed Tomography; Peritonitis.

Abbreviations: CT PE: CT for Pulmonary Embolism; IVF: In Vitro Fertilization.
contrast extravasation. There was absence of intestinal dilatation and pneumocystis intestinalis. The patient was discharged and subsequently contacted. She developed no symptoms.

Discussion

Pneumoperitoneum is a medical emergency. Most of the cases occur due to perforation of the bowel needing urgent surgical intervention. Laparoscopy and sometimes laparotomy are the standard of surgical care in cases of bowel perforation as this is a serious condition with significant morbidity and mortality. Also, all surgeries have their attendant risks. Therefore, it is critical to possess knowledge regarding non-surgical causes of pneumoperitoneum, particularly in instances where imaging records and clinical observations are inconsistent.

The frequency of pneumoperitoneum without any indication of visceral perforation has been shown to range from 5% to 14% [3]. The phenomenon of air ascending through the female vaginal system and entering the peritoneal cavity, leading to the occurrence of pneumoperitoneum, has been extensively documented in the literature [4]. There are several mechanisms that may be employed to address this issue, including as pelvic manipulation/insufflation, postpartum knee-chest exercises, vaginal douching, engaging in vigorous sexual intercourse, utilizing a Jacuzzi, and high-grade post-vaginal laceration [5,6].

The occurrence of pneumoperitoneum shortly following an uncomplicated vaginal birth is infrequent, with only a limited number of instances documented in the medical literature [4,7,8]. When a patient has pneumoperitoneum along with systemic upset and biochemical imbalance, they need an exploratory laparotomy [8].

Thoracic causes are the most common etiology of nonsurgical pneumoperitoneum. Several thoracic factors can contribute to the occurrence of this condition. These factors include: a) The application of high-pressure ventilation; b) Barotrauma, which refers to tissue damage caused by changes in pressure; c) Cardiopulmonary Resuscitation (CPR); d) The rupture of a bleb, which is a small air-filled sac in the lung; and e) Increased intrathoracic pressure resulting from forceful sneezing [9-11]. Chichley et al. describe a unique case in which positive pressure breathing and CPR resulted in a fatal occurrence of pneumoperitoneum [10]. Pneumoperitoneum can arise from several other factors, including diaphragmatic abnormalities, the Macklin effect (resulting from bleb rupture leading to pneumomediastinum and subsequent extension to retro pneumoperitoneum), as well as through the foramina of Morgagni and Bochdalek [11]. Spontaneous pneumoperitoneum has been documented in cases also with Covid pneumonia, without the need for surgical intervention [9].

Other causes of pneumoperitoneum within the abdomen include a) pronounced gastric dilatation, b) colonoscopy and polypectomy, c) intestinal pneumatosis, d) diverticulosis, and f) peritoneal dialysis [12]. It appears that pneumatosis intestinalis, which is associated with Inflammatory Bowel Disease (IBD) and pulmonary obstructive airway disease, is the most prevalent cause of pneumoperitoneum without peritonitis [13].

The current case did not yield any conclusive evidence regarding the etiology of pneumoperitoneum. It is improbable that the grade 1 rupture that the patient presented with caused pneumoperitoneum. A typical, uneventful vaginal delivery occurred. An oral contrast follow-up CT revealed no indications of contrast leakage, perforation, pneumatosi, or diverticulosis. The patient has no evidence of peritonitis and is in good health. The gynecological and surgical teams evaluated the patient, who had normal CRP and counts. The ultimate diagnosis was pneumoperitoneum in the absence of peritonitis.

Conclusion

While pneumoperitoneum is commonly recognized as a critical medical condition, it can also develop due to nonsurgical factors. Pneumoperitoneum without peritonitis occurring during the postpartum period following a normal, uneventful vaginal delivery is an uncommon occurrence. Radiologists should possess knowledge of this entity, given their potential role as the primary point of contact in identifying pneumoperitoneum. It is crucial to underscore that the rare prevalence of pneumoperitoneum during the postpartum phase necessitates immediate and intensive intervention. A clinical follow-up, contrast CT, and surgical consultation are all essential.

Declarations

The author declare that there is conflict of interest.

Statement of ethics: This was an observational study. Written informed consent was waived due to the nature of the study as a case report.

Data availability statement: Data will be made available on request.

References


