Introduction: Catamenial pneumothorax occurs simultaneous with menstruation as a result of thoracic endometriosis. We present a case of thoracic endometriosis manifested as recurrent pneumothorax requiring VATS for repair of diaphragmatic defects and excision of endometrial implants where general anesthesia with a double lumen endotracheal tube and one lung ventilation was successfully employed.

Case Presentation: A 31-year-old woman with hypertension presented with recurrent right pneumothorax. She presented with chest discomfort and shortness of breath occurring four days after the initiation of menstruation. Chest radiograph demonstrated a new large right pneumothorax with mild leftward mediastinal shift. A similar episode had occurred one month prior, also during menstruation. Her recurrent pneumothorax was initially treated with chest tube placement with subsequent re-expansion.

For suspected catamenial pneumothorax the patient underwent VATS for apical pleurectomy, repair of three right diaphragmatic defects, and excision of two pleural lesions that contained endometrial tissue. The patient had stable preoperative vital signs and underwent the uneventful induction of general anesthesia and maintenance with sevoflurane and opioids. Peak inspiratory pressures were kept below 20 cmH2O throughout with tidal volumes maintained below 8 mL/kg predicted body weight. Emergence and extubation were uneventful and the chest tube was removed on postoperative day six.

Discussion: Catamenial pneumothorax is a rare condition typically affecting women in their thirties and occurring during menstruation. The etiology is thoracic endometrial implants, and pelvic endometriosis is present in the majority of patients. Endometrial tissue is thought to enter the peritoneal cavity by retrograde menstruation and may enter the thoracic cavity through defects in the diaphragm. Pneumothorax is typically right sided and several episodes often occur prior to diagnosis. Treatment involves chest tube insertion, hormone treatment, and surgery. The goal of surgery is eradication of existing endometrial tissue and closure of diaphragmatic defects.

Knowledge of thoracic endometriosis is important for the anesthesiologist both for the care of patients with known disease and for the potential of perioperative complications in patients with undiagnosed thoracic endometriosis. The increase in airway pressure with positive pressure ventilation, with thoracic insufflation during VATS, and with abdominal insufflation and Trendelenburg positioning during laparoscopic surgery pose a risk of barotrauma. An existing pneumothorax with air leak, potentially subclinical, may be expanded by such maneuvers. Furthermore, diaphragmatic defects may allow insufflated CO2 to further expand a pneumothorax. If the diagnosis of thoracic endometriosis is known preoperatively, regional anesthesia may be preferred if possible. When general anesthesia is necessary, minimizing the tidal volume may decrease the potential for barotrauma.

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