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Bilateral tension pneumothorax during colonoscopy in a patient with chronic obstructive pulmonary disease: a case report☆,☆☆

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Abstract Colonoscopy is widely performed for the diagnosis and treatment of various colonic disorders and the screening and surveillance of colorectal neoplasia. According to research evidence, up to one-third of patients had at least 1 minor and transient gastrointestinal symptom after colonoscopy. Although severe complications developed uncommonly, they are potentially serious and life threatening. Here, we present the case of a 95-year-old man with chronic obstructive pulmonary disease who developed bilateral tension pneumothorax during therapeutic colonoscopy for sigmoid volvulus. In this case, air trapping resulting from the Valsalva maneuver under inadequate pain control may be the mechanism for fatal tension pneumothorax during colonoscopy.

1. Introduction

Minor complications from colonoscopy including abdominal pain, bloating, self-limited gastrointestinal bleeding, diarrhea, and nausea occur in up to 33% of cases. Reported symptoms were generally mild and resolved within 2 days after the procedure [1,2,3]. However, a systematic review reported an overall incidence rate of 0.28% for severe complications including cardiopulmonary, perforation, hemorrhage, infection, and other miscellaneous complications (ie, splenic rupture, diverticulitis, and subcutaneous emphysema) [1,2] during screening colonoscopy [1,2,4]. In addition, life-threatening complications, such as gas explosion leading to tension pneumoperitoneum [5] and colonoscopy-related mortality [1,2,6], were also reported. To our best knowledge, tension pneumothorax resulted from the Valsalva maneuver due to intractable pain during colonoscopy has rarely been reported.

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2. Case report

A 95-year-old man (height, 170 cm; weight, 82 kg; body mass index, 28.4 kg/m^2), who was classified as American Society of Anesthesiology physical status III due to a medical history of hypertension and chronic obstructive pulmonary disease and maintained on regular medication and follow-up, approached our emergency department for abdominal pain of 3 days. He was diagnosed with sigmoid volvulus based on the results of the plain abdominal radiography (Fig. 1). Plain chest radiography was also performed for assessment of the underlying disease (Fig. 2). An emergency therapeutic colonoscopy was scheduled, and he received pethidine (50 mg) and midazolam (5 mg) intramuscularly for routine sedation before the procedure. The operator was an experienced colonoscopist performing more than 300 cases annually, and he used air insufflation in this case. Initially, monitors revealed stable vital signs (pulse rate, 92 beats per min [bpm]; blood pressure, 146/82 mm Hg; saturation of peripheral oxygen [SpO_2], 96%). During the procedure, he frequently complained of severe pain due to the abdominal distension and dyspnea and occasionally held his breath, making colonoscopy difficult to perform. Approximately 10 minutes after the beginning of the procedure, he suddenly lost consciousness and became hypoxemic and cyanotic. As bradycardia with hypotension (pulse rate, 32 bpm; blood pressure, 62/32 mm Hg; SpO_2, 64%) was also noted, the colonoscopist rapidly and carefully withdrew the colonoscope and attempted colonic deflation. However, no clinical improvement was observed, and vital signs progressively got worse. The patient was subsequently intubated and received cardiopulmonary resuscitation. Considering the difficulty in restoring ventilation, chest wall rigidity, and the highly diminished breath sounds on the left compared with that on the right side of the chest, we highly suspected a left-sided tension pneumothorax. We initiated an emergency chest decompression and inserted a 16-G intravenous catheter into the second rib space in the left midclavicular line. The needle was advanced until air could be aspirated into a syringe connected to the needle, and the catheter was left open to air. An immediate rush of air out of the chest confirmed the presence of a tension pneumothorax, and the patient's vital signs dramatically stabilized (pulse rate, 108 bpm; blood pressure, 108/62 mm Hg; SpO_2, 92%) after chest decompression. However, because of the gradual decrease in breath sounds on the right side of the chest, we consulted a chest surgeon for the insertion of bilateral chest tubes (Fig. 3). Finally, the patient was transferred to the intensive care unit for further monitoring and treatment.

3. Discussion

Colonoscopy is currently the most widely used diagnostic and therapeutic procedure in gastroenterology. Despite the low incidence rate of complications, which are mostly mild and present with less serious symptoms, the potentially life-threatening complications of colonoscopy still exist albeit rarely.

Tension pneumothorax during or after colonoscopy has been previously reported [7,8,9,10]. In these case reports, the etiology was usually iatrogenic colonic perforation due to barotrauma from air insufflations; direct mechanical trauma to the

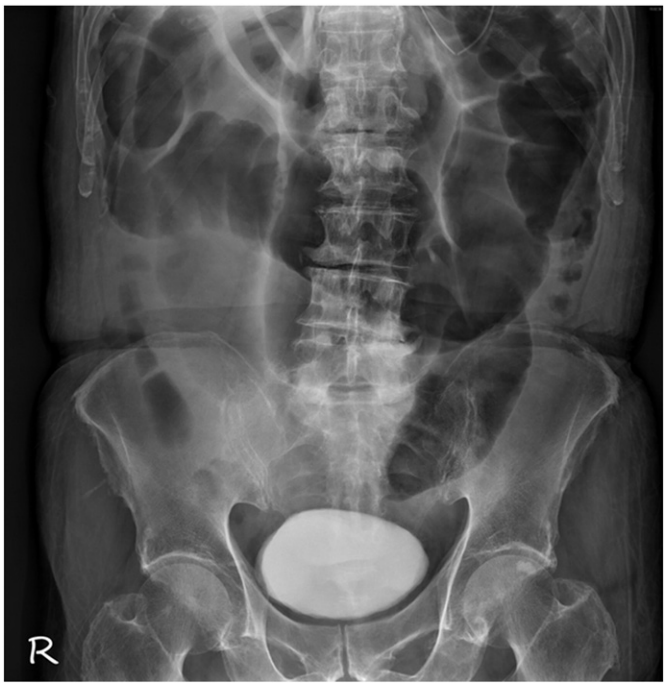

Fig. 1 Long segmental bowel dilatation with the beak's sign at the left paramedian aspect of the pelvic cavity implied the presence of sigmoid volvulus.