Spontaneous pneumoperitoneum: a challenge for the surgeon

AHMP Anuruddha[1], BL Perera[2], MB Samarawickrama[3], WUPC Gunaratne[3], LP Kolombage[4]
[1]Registrar in Surgery, [2]Consultant Surgeon, [3]Senior Registrar in Surgery, [4]Consultant Radiologist, Karapitiya Teaching Hospital, Galle.

Introduction

Pneumoperitoneum usually results from the perforation of a hallow viscus and able to compels the surgeon to do an exploratory laparotomy most of the time. However but 10-20% of cases it is not secondary to a perforation. Such spontaneous pneumoperitoneum usually follows a more benign course and may not require surgical intervention. Proper diagnosis of spontaneous pneumoperitoneum is a challenge for the surgeon as laboratory and imaging techniques do not help in the diagnosis.

Case report

An eighteen year old school girl presented with severe bilateral shoulder tip pain and mild epigastric pain of 2 days duration. She had mild shortness of breath due to shoulder tip pain which worsened in inspiration. She had got dengue haemorrhagic fever 2 years back.

On examination patient was comfortably lying on the bed. Her blood pressure was 100/70 mmHg, pulse rate was 100 beat per minute, respiratory rate was 20 per minute and the body temperature was 37 ^{0}C. There were no signs of abdominal trauma. Her chest examination was clinically normal. Abdomen was soft .There was mild diffuse abdominal tenderness over the epigastric region without guarding. Digital examination of rectum was normal

White blood cell count has 16,300 with neutrophlia, urinalysis was normal and the urine HCG for pregnancy was negative. The chest x-ray showed normal, lung fields normal with air under the diaphragm. The X-ray erect abdomen revealed air under the diaphragm. The abdominal ultrasonography. Barium meal follow through is normal. There was a small reactive ovarian cyst and a small amount of free was small reactive ovarian cyst and a small amount of free fluid in the peritoneal cavity. We kept the patient under close observation as patient was clinically stable and there were no signs of peritonitis. In 2 days patient was symptom free.

Discussion

Following open or laparoscopic surgery free air in the peritoneal cavity can be seen up to about 10 days. Endoscopic procedures of the gastrointestinal tract can cause pneumoperitoneum without a clinically significant perforation [1]. Bronchoscopy, cardiopulmonary resuscitation and peritoneal dialysis are other iatrogenic causes for spontaneous pneumoperitoneum. Air accumulated in the thoracic cavity gain access to the abdominal cavity by direct passage through small diaphragmatic defects or through perivascular connective tissues of the mediastinum. Positive pressure ventilation and spontaneous rupture of pulmonary blebs can cause spontaneous pnemoperitoneum but in usually accompanied by pneumomediastinum and subcutaneous emphysema [3].

Pneumomatosis intestinalis is the most common reported cause for spontaneous pneumoperitoneum. There are multiple thin walled non communicating gas filled cysts located in subserosa with or without submucosa. The mucosa is normal [2].

The other known causes are;

1. Ischemia – due to Necrotizing enterocolitis
   Mesenteric vascular disease
2. Trauma- due to Endoscopy
   Biopsy
   Barium enema
3. Infection - Parasites
4. Inflammation - Inflammatory bowel disease
   Connective tissue disease
   specially scleroderma
   Whipple disease

5. Colonic obstruction - Due to air dissection distally
6. Congenital malformation - Diverticular disease

There is an increasing number of cases reported due to gynecological causes. Sexual intercourse, oral genital sex, various methods of abortion, post partum knee-to-chest exercise and after routing pelvic examination are some of them. In European countries several cases due to artificial sex instruments and sex toys have been reported [4].

Pneumoperitoneum secondary to a non-surgical cause represent a diagnostic dilemma. The majority of patients will require laparotomy which can be avoided with careful history taking and serial abdominal examination.

References

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