

CASE REPORT

An acute and life-threatening complication after an endoscopic procedure

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Keywords - tension pneumoperitoneum, needle decompression, upper gastrointestinal endoscopy**Abstract**

Tension pneumoperitoneum is a potentially lethal complication of many procedures, including endoscopic ultrasound guided aspiration. We report the case of a 57-year-old male with pancreatic pseudo-cysts who developed tension pneumoperitoneum and circulatory collapse after endoscopic ultrasound. Initial treatment was successful with needle decompression. Emergency surgery revealed two perforations in the stomach which were manually sutured. The patient had an uneventful recovery and was discharged home on the seventh postoperative day. Tension pneumoperitoneum is a life-threatening complication and should be suspected in all patients who develop circulatory collapse with an acutely distended abdomen following endoscopic procedures. Treatment with needle decompression is life-saving and should not be delayed for confirmatory radiography once the clinical diagnosis is made.

Introduction

The term tension pneumoperitoneum refers to the accumulation of intra-abdominal free air under pressure leading to haemodynamic and respiratory compromise and in some cases circulatory collapse. It is an extremely rare condition and most often occurs after an invasive procedure. The incidence of perforation which can lead to tension pneumoperitoneum is 0.03% after gastrointestinal endoscopic procedures.^[1-3] We report a case of tension pneumoperitoneum with circulatory collapse after endoscopic ultrasound. Resuscitation with emergency needle decompression was performed which resulted in the recovery of vital signs.

Case report

A 57-year-old male presented with abdominal discomfort. His medical history was relevant for chronic alcohol abuse, non-insulin dependent diabetes mellitus and chronic pancreatitis. CT scan of the abdomen showed a cyst in the pancreatic body. Because of complaints of abdominal discomfort this cyst was punctured under transgastric endoscopic ultrasound guidance

followed by the insertion of two pigtail drains. Immediately after this procedure the abdomen was distended and the patient was agitated and suffered from abdominal pain. An emergency CT scan was performed to localise the suspected perforation but only exposed massive accumulation of intra-abdominal free air (*figure 1 and 2*). Directly after CT scan hypovolaemic shock developed with the blood pressure dropping to 70/28 mmHg and heart rate going up to 168 beats/min. The patient soon became unresponsive and tension pneumoperitoneum was diagnosed. An 18-gauge needle was used for decompression at the midline of the abdomen. Air was released out of the abdominal cavity, and the blood pressure and consciousness immediately returned to normal. Emergency laparotomy disclosed two perforations in the stomach which were repaired. The patient was discharged from the hospital seven days later after an uneventful recovery.

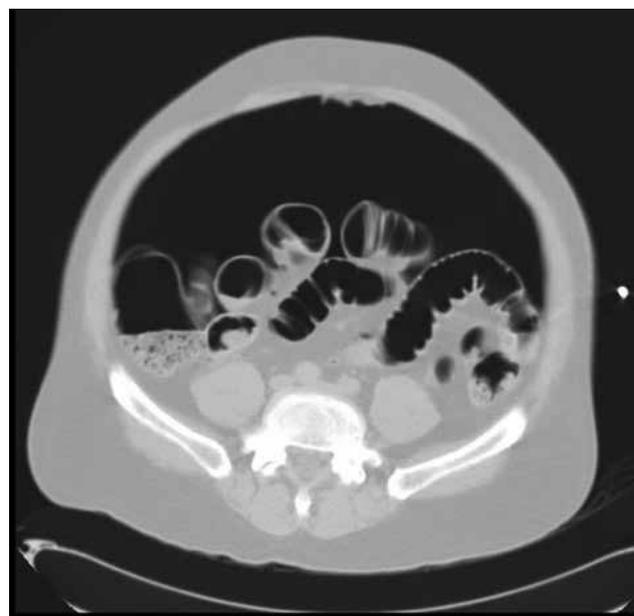
**Figure 1.** Massive pneumoperitoneum transversal image



Figure 2. Massive pneumoperitoneum sagittal image

Discussion

Tension pneumoperitoneum is defined by the harmful effects of intra-abdominal hypertension caused by intra-abdominal free air. The patient experiences abdominal pain and fullness, sometimes combined with dyspnoea. Physical examination may reveal a bulging abdomen with tympanic percussion in all quadrants. If left untreated increasing air pressure can cause upward displacement of the diaphragm with further respiratory compromise. Compression of the vena cava will result in hypovolaemic shock due to decreased or absent venous return. Also acute occlusion of the aorta with loss of pulses, diminished sensation and motor function in the lower extremities is possible. If tension pneumoperitoneum is not treated properly it can lead to progression of hypovolaemic shock and even cardiorespiratory arrest.^[4-7] If haemodynamic instability is present, immediate abdominal decompression should follow. Acute treatment includes needle decompression followed by surgical exploration. Beside diseases or trauma-related

perforation, many iatrogenic causes have been associated with perforation and tension pneumoperitoneum including endoscopic ultrasound guided procedures. Other complications after endoscopic ultrasound are infection, haemorrhage and iatrogenic pancreatitis. It is important that patients should be well prepared before endoscopic examination because food debris and blood clots are the most common causes of poor insufflation and so causing perforations. Also the endoscopy staff must be prepared to deal with an emergency during the procedure. The diagnosis of tension pneumoperitoneum is a clinical diagnosis which should be treated immediately and not be delayed by radiological confirmatory tests. Care should be taken to avoid internal injury during abdominal paracentesis, especially spleen or liver injury which may lead to internal haemorrhage. After needle decompression, the definite treatment depends on the specific cause of the pneumoperitoneum.

Conclusion

Tension pneumoperitoneum is a life-threatening and treatable complication of EUS and other endoscopic procedures. Immediate (needle) decompression is a life-saving procedure and should not be delayed to prevent circulatory arrest.

Disclosures

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