

中文題目：Football sign—典型的腹部急症影像

英文題目：Football sign, a classical imaging of acute abdomen

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Background:

Hallow organ perforation is acute abdomen with high mortality up to 30%. Emergent surgical intervention is needed. Classical imaging by abdominal radiography is important for timely diagnosis and further treatment.

Method:

We reported a patient with abdominal pain in whom classical imaging of intraperitoneal free air, known as football sign, was found on radiography.

Result:

A 57-year-old man with a history of hepatocellular carcinoma presented to the Emergency department with 10-day fever, epigastric pain, tarry stool and coffee ground vomitus. At Emergency department, physical exam revealed body temperature 38.2°C, blood pressure 119/76 mmHg, heart rate 122 beats per minutes, respiration rate 22 breaths per minutes, normal oxygen saturation under room air., and soft abdomen without peritoneal sign. Laboratory tests showed white blood cell count 7600/uL with 85.5% neutrophils, elevated C-reactive protein(25.98 mg/dL), elevated total bilirubin(1.7 mg/dL), and elevation of r-GT(123 IU/L). Abdominal computerized tomography (CT) scan showed liver tumor, fluid collection with free air in the left lobe of liver, and suspicion of abscess formation, and distended stomach. (Figure 1). Esophagogastroduodenoscopy showed gastric ulcers and protruding mass at antrum with gastric outlet obstruction. He was diagnosed as liver tumor with necrosis and abscess formation and gastric outlet partial obstruction by liver tumor. Due to the related position to hilar vessels, drain was not inserted. Fever and abdominal pain improved after 5 days of Flomoxef treatment, and he discharged.

Fever recurred with distended abdomen after discharge. Septic shock was improved after 7 days of imipenem treatment. Progressive diffuse abdominal pain and distension were found on the day10th of hospitalization. Physical exam showed drowsy consciousness, decreased bowel sound, and diffuse tenderness. Abdominal radiography revealed hypodensity lesion over the central part without interruption by intestine, which was classical finding of pneumoperitoneum and known as football sign (Figure 2). Enhanced peritoneal stripe sign was noted under abdominal ultrasound (Figure 3). Paracentesis showed cloudy ascites with elevation of white cell

counts (9077 /uL) with 96% neutrophils. Abdominal computerized tomography (CT) scan demonstrated intraperitoneal free air and massive ascites (Figure 4). Hollow organ perforation with septic shock and acute respiratory failure was diagnosed and emergent operation was done, which showed a perforation sized 0.5cm at anterior surface of gastric antrum. Gastrorrhaphy and feeding jejunostomy were done. Imipenem, micafungin, and daptomycin were used for *Enterococcus faecium*, *Candida glabrata* and *Candida albicans*, which were yield from ascites. Because of the severe disease and underlying deteriorated HCC, the patient passed away on the 10th day after operation.

Discussion

Hollow organ perforation is acute abdomen with high mortality and needed emergent surgical intervention. Classical imaging as football sign by abdominal radiography is important for timely diagnosis and further treatment.

Gastric perforation was caused by full-thickness injury of the gastric wall due to a variety of etiologies or risk factors. The most common etiology is peptic ulcer disease, especially in those who are elder and taking NSAIDs or excess alcohol.[1] The second most common cause is resulted from gastrointestinal procedure such as endoscopy, nasogastric intubation or surgery. Upper endoscopy is the main cause in this kind of etiology.[1] The rest etiologies include neoplasms, trauma, medications, foreign body ingestion, intestinal obstruction and cardiovascular diseases which reduced the blood flow to the stomach. In our case, we considered that the etiologies of his perforation might be caused by obstruction in addition to sepsis in previous infection process. The main clinical features of gastric perforation are acute abdominal pain and sepsis. Acute abdominal pain is induced by release of gastric acid whose pH is 1-2 into the peritoneal cavity leading to peritoneal irritation. Although gastric acid is sterile, when food leaks inside the abdominal cavity, it can result in generalized abdominal infection followed by sepsis.

Diagnosis of hollow organ perforation is usually confirmed by radiological imaging showing free intraperitoneal air.[2] We could arrange upright radiographs of the chest, or supine and lateral decubitus films can be obtained in patients who cannot sit or stand. The most useful imaging is CT. It had high sensitivity and specificity for extra-luminal air.[3] When the diagnosis of gastric perforation is made, abdominal exploration should be done if there is no contraindication, to limit ongoing abdominal contamination and to manage the perforated site. In addition, initial management with sufficient intravenous fluid supplement, cessation of oral intake, broad-spectrum antibiotics and adequate intravenous analgesia should be given as soon as possible to limit the progression of sepsis.[4]

Conclusion

Early recognition of intraperitoneal free air is important for timely surgical intervention. Football sign is classical imaging on radiography and clinician should be familiar and alert of it.

Reference

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3. Søreide, K., Thorsen, K., Harrison, E. M., Bingener, J., Møller, M. H., Ohene-Yeboah, M., & Søreide, J. A. (2015). Perforated peptic ulcer. *The Lancet*, 386(10000), 1288-1298.
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Figures and figure legends

Figure 1

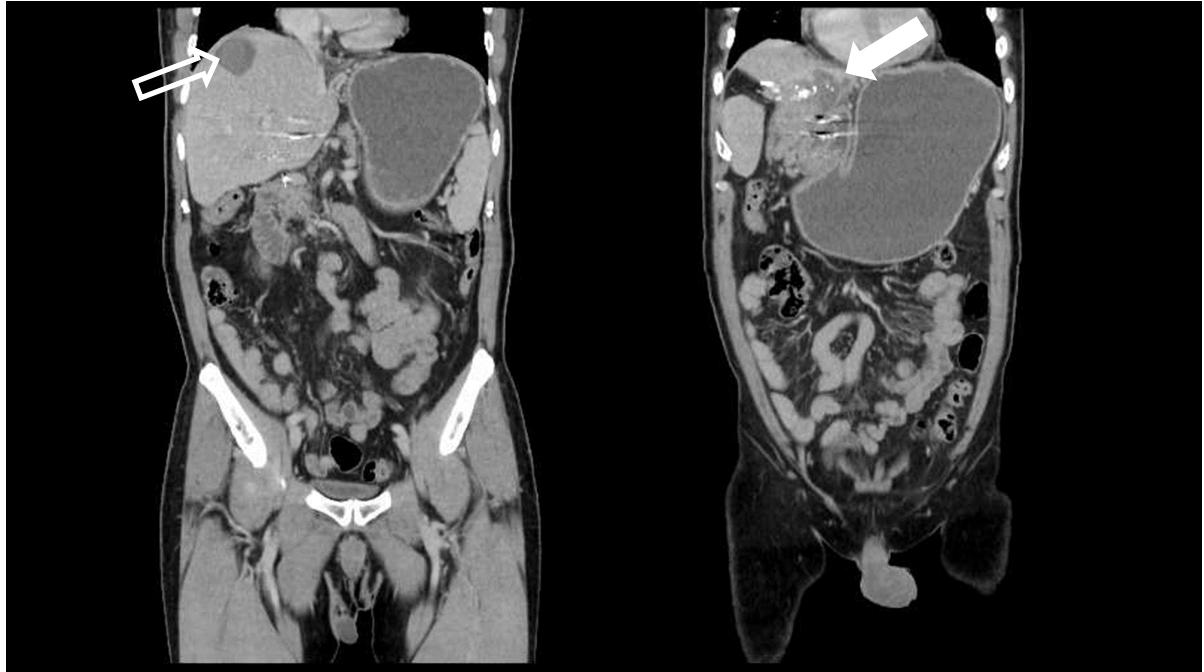


Figure 1. Liver tumor, liver abscess, and gastric distension in a patient with deteriorating HCC.

Abdominal computerized tomography (CT) scan showed liver tumor (empty arrow). Fluid collection with some air and high density were found in the left lobe of liver, which was meant tumor necrosis and abscess formation (white arrow). We also noted the distended stomach.

Figure 2

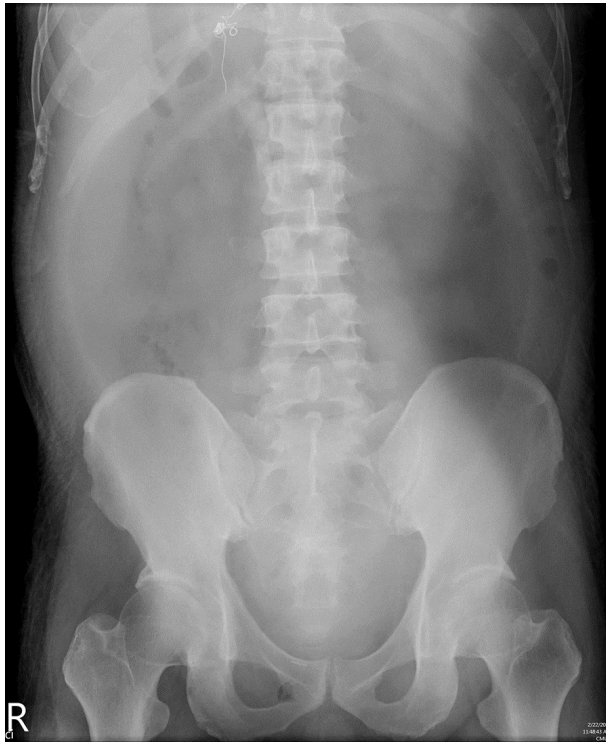


Figure 2. Football sign in a patient with acute abdominal pain

Abdominal radiography revealed hypodensity lesion over the central part of the abdomen and not interrupt by intestine, which was classical finding of pneumoperitoneum and was known as football sign.

Figure 3

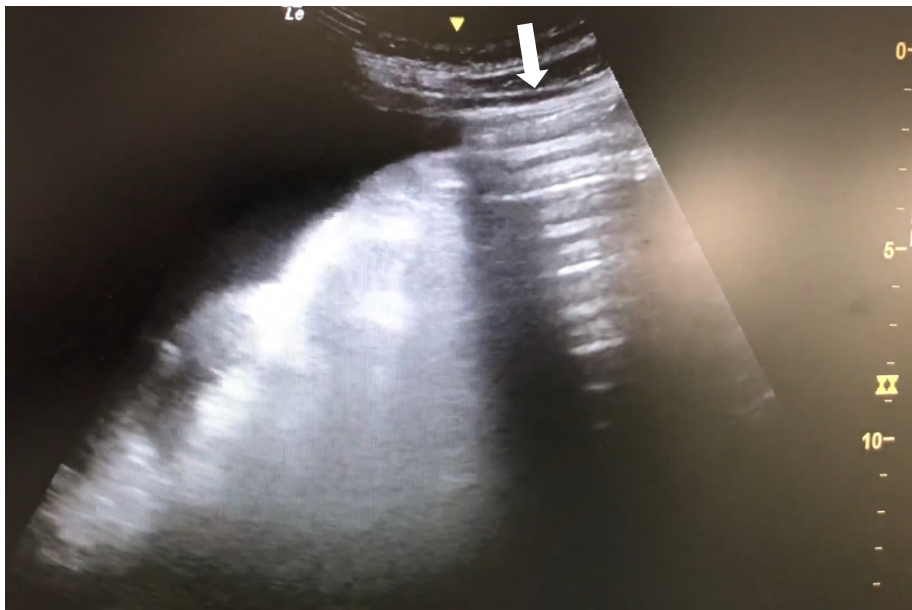


Figure 3. Enhanced peritoneal stripe sign in a patient with acute abdominal pain.

Abdominal ultrasound revealed gas shadowing, which meant intraperitoneal free air and was called enhanced peritoneal stripe sign (EPSS)(Arrow).

Figure 4

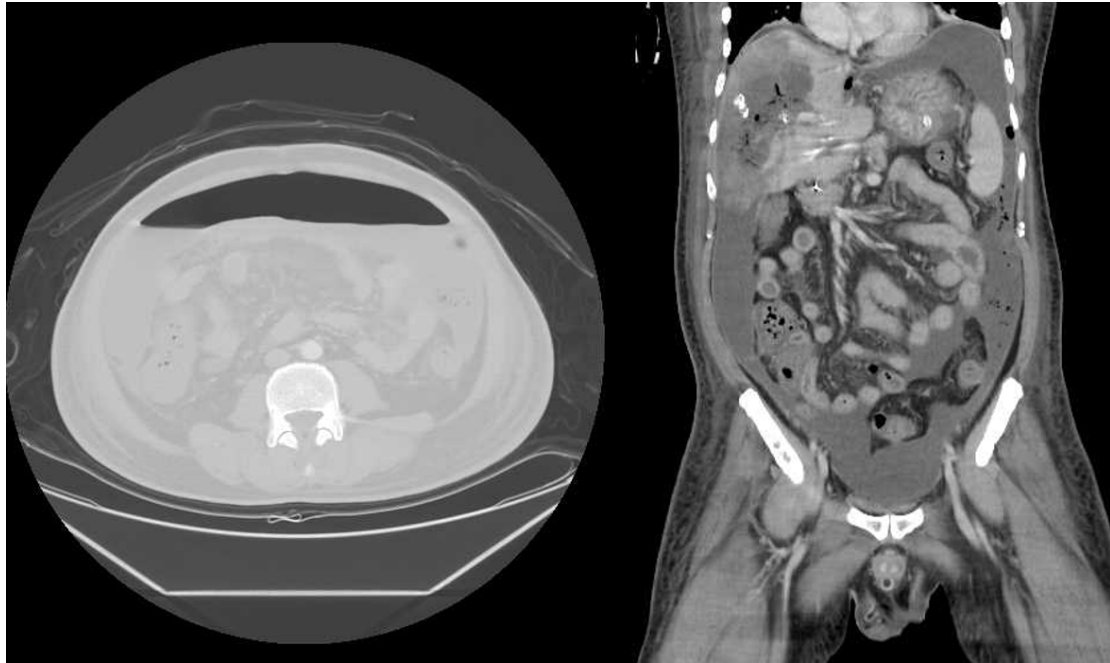


Figure 4. Free air by computed tomography

Abdominal CT scan demonstrated intraperitoneal free air , massive ascites, and liver abscess.