

## Hiccups : an uncommon presentation of pyogenic liver abscess

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### To the Editor,

Pyogenic liver abscess (PLA) is a rare but potentially life-threatening disease. It often presents with nonspecific symptoms and laboratory abnormalities (1, 2), which may result in missed diagnoses at emergency departments. Herein, we would like to report an uncommon presentation of PLA, which led to delayed diagnosis and interventions, in a patient with long-term malnutrition and relative immunocompromised status.

An 81-year-old man presented to our emergency department with persistent hiccups for 2 weeks and intermittent fever in recent 3 days. He had a history of pancreatic cancer experiencing pancreaticoduodenectomy two years ago and long-term malnutrition. Except tachycardia (126 beats per minute) and hypotension (88/42 mm Hg), initial evaluations revealed no other obvious abnormalities. Laboratory abnormalities showed an elevated creatinine level of 1.5 mg/dL and aspar-



Figure 1. — Non-contrast CT of the abdomen revealed a heterogeneous lesion with air bubbles in the liver (arrowheads) in transverse view (A), which was close to right hemidiaphragm with development of reactive pleural effusion in coronal view (B).

tate aminotransferase level of 75 U/L. Additionally, extremely high procalcitonin concentration of 82.79 ng/mL implied a severe bacterial infection. Under the impression of septic shock, the patient received resuscitation and vasoactive treatment, and then was admitted to our intensive care unit. However, his clinical condition worsened even though the empiric antibiotic with Tapimycin was promptly administered since his arrival at emergency department. According to his past history, non-contrast computed tomography (CT) of the abdomen was done the next day after intensive care unit admission and revealed a heterogeneous lesion with air bubbles, suggestive of a PLA (Figure 1A). The abscess lesion close to right hemidiaphragm (Figure 1B) perhaps was the key cause for persistent hiccups, and irritated the development of reactive pleural effusion. Hence, percutaneous drainage of abscess was performed. The result of microorganism culture was mixture of *Enterococcus faecium* and *Enterococcus faecalis*, which were members of the normal intestinal flora in humans. Despite drainage and broad-spectrum antibiotics, the patient's condition deteriorated with multiple organ failure, and died on the seventh day after admission.

Hiccup is a familiar and frustrating experience, and can have a profound impact on patients' quality of life.

Table 1. — Major causes of persistent and intractable hiccups

Central type	Common causes
Functional	Parkinsonism, multiple sclerosis, epilepsy
Non-functional	Vascular
	Cerebrovascular accident
	Structural
	Trauma, brain tumor
	Infectious
	Meningitis, encephalitis
Peripheral type	Common causes
Gastrointestinal	Distension, gastroesophageal reflux disease, peptic ulcer disease, pancreatitis, bowel obstruction, abdominal abscess/neoplasm
Non-gastrointestinal	Cardiovascular
	Myocardial infarction, pericarditis, aortic aneurysm
	Pulmonary
	Pneumonia, bronchitis, asthma, tuberculosis, neoplasm
	Ear, nose and throat
	Rhinitis, otitis, pharyngitis, herpes zoster
Others	Common causes
Toxic metabolic	Electrolyte imbalance, hypocapnia, uremia, diabetes, alcohol
Drugs	Opioids, benzodiazepines, barbiturates, steroids, dopamine agonists, chemotherapeutic agents, antibiotics
Psychogenic	Anxiety, stress, schizophrenia, anorexia

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It results from involuntary and repetitive myoclonic contractions of the diaphragm and the intercostal muscles. Based on their duration, hiccups can be classified into acute, persistent and intractable (3). Acute hiccups are self-limiting and rarely require interventions, but persistent and intractable hiccups usually imply diseases affecting the diaphragm, gastrointestinal or central nervous systems (Table 1). As reported by Yang et al. (2), liver abscess, as an irritant to the diaphragm, can be a rare cause attributable to persistent hiccups indeed, but it is difficult to rule in the diagnosis of PLA early if there is a lack of apparent abdominal symptoms such as abdominal pain (1, 4). Therefore, we should always keep in mind that patients with hiccups for more than 2 days must be thoroughly evaluated to identify obscure pathology. Moreover, when patients with a history of diabetes mellitus, previous biliary intervention or gastrointestinal malignancy suffer sepsis of unknown origin, intra-abdominal infection should be considered and immediate imaging with ultrasound or CT is important for differential diagnosis (1, 5).

### Conflict of Interest

The authors have no conflict of interest to declare.

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