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CASE REPORT

Gastric heterotopia of colon found cancer workup in liver abscess: A case report

Jun Gi Park, Jeong Ill Suh, Yeo Un Kim

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Abstract

BACKGROUND

Recently reported cases of pyogenic liver abscess associated with colonic cancer in the absence of underlying disease, have included a small number of cases of gastric heterotopia (GHT). GHT is a congenital anomaly composed of ectopic gastric mucosa and can occur anywhere in the gastrointestinal tract but is more frequently encountered in the cervical esophagus. However, it is rarely observed in colon. Furthermore, most reported cases of GHT of the colon involved the rectum, and GHT involving the colon proximal to the rectum is rare.

CASE SUMMARY

An 83-year-old male patient presented with fever and a diagnosis of pyogenic liver abscess. Colonoscopy was performed for colon cancer workup and revealed a 1.0 cm sized polyp at the transverse colon. The polyp was removed by endoscopic mucosal resection by monopolar electrocauterization using a snare. Pathological examination revealed GHT. After administering intravenous antibiotics, the patient recovered well.

CONCLUSION

GHT in the colon could affect the development of pyogenic liver abscess by enabling hematogenous propagation of Klebsiella pneumoniae through mucosal damage. However, more study is needed due to the lack of cases.

Key Words: Gastric heterotopia; Colon; Liver abscess; Case report

Core Tip: Gastric heterotopia in the colon could affect the development of pyogenic liver abscess by enabling hematogenous propagation of Klebsiella pneumoniae through mucosal damage. However, more study is needed due to the lack of cases. Colonoscopy should be performed to the patients with a pyogenic liver abscess.

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INTRODUCTION

Gastric heterotopia (GHT) is defined as the presence of gastric mucosal tissue in a non-physiological site. Several hypotheses have been offered to explain its occurrence, but the mechanism involved has not been elucidated. GHT is usually asymptomatic and can occur anywhere in the gastrointestinal (GI) tract, but is rarely encountered in the colon. Most cases of GHT involve the rectum and the most common symptom is chronic bleeding[1]. GHT involving the colon proximal to the rectum is rare, and to our knowledge, only 11 such cases have been reported[2]. Pyogenic liver abscess is usually associated with hepatobiliary tract disease or intra-abdominal infections such as cholecystitis, cholangitis, pylephlebitis, appendicitis, diverticulitis, or peritonitis[3-5]. However, colorectal cancer without underlying infection is considered a rare cause of liver abscess[6-9]. Although the mechanism is unclear, disruption of the mucosal barrier by colorectal cancer and bacterial translocation into the portal venous system may, in part, be responsible for the pathogenesis of liver abscess[9]. To the best of our knowledge, no case report has been issued on the co-occurrence of pyogenic liver abscess and GHT. Here, we report a case in which gastric heterotopic mucosa in colon was discovered after a diagnosis of pyogenic liver abscess. We suggest that diagnostic colonoscopy be performed in patients with a pyogenic liver abscess.

CASE PRESENTATION

Chief complaints

An 83-year-old male patient presented at our emergency department due to fever.

History of present illness

The patient also complained of epigastric pain.

History of past illness

The patient had no medical history of cardiovascular disease, diabetes, or chronic liver disease.

Personal and family history

The patient had no relevant family history but had been drinking for 50 years.

Physical examination

At presentation, his blood pressure was 150/90 mmHg, heart rate 100 bpm, respiratory rate 20 breaths per minute, and temperature 39.5 °C. Physical examination revealed right quadrant tenderness.

Laboratory examinations

Laboratory examinations performed at admission revealed a white blood cell count of 14,150/μL (neutrophils 91.1%, lymphocytes 4.7%, monocytes 3.0%, eosinophils 0.7%), hemoglobin 12.9 g/dL, platelet count 125,000 /μL, and hematocrit 38.2%. Serum blood urea nitrogen was 13 mg/dL, creatinine 0.87 mg/dL, AST 33 IU/L, ALT 47 IU/L, total bilirubin 0.76 mg/dL, sodium 137 mEq/L, potassium 3.3 mEq/L, and chloride 102 mEq/L. Serum prothrombin time was 14.8 sec (INR of 1.34), protein 6.6 g/dL, albumin 4.0 g/dL, γ-GTP 138 U/L, ALP 69 U/L. Hepatitis viral markers were HAV Ab IgM negative, HBsAg negative, anti-HBsAb positive, and anti-HCV Ab negative. Tumor markers were AFP 2.7 ng/mL, CA19-9 7.96 U/mL, and CEA 1.4 ng/mL. Fecal occult blood test (FOBT) was negative. Parasite specific antibodies were negative. Pus and blood cultures were positive for Klebsiella pneumoniae (*K. pneumoniae*).

Imaging examinations

Abdominal computed tomography revealed a 2 cm × 2.5 cm sized, ill-defined, low attenuation nodular lesion in liver segment 6 (Figure 1). Colonoscopy was performed for colon cancer workup and revealed a 1.0 cm sized semi-pedunculated polyp at the transverse colon (Figure 2). The polyp was removed by endoscopic mucosal resection by monopolar electrocauterization using a snare. After endoscopic polypectomy, pathological examination revealed a gastric gland consistent with heterotopic gastric tissue, intestinal metaplasia, fibrosis, and vascular and nervous tissue proliferation (Figure 3).

FINAL DIAGNOSIS

The final diagnosis was pyogenic liver abscess and GHT of the colon.

TREATMENT

Based on abdominal CT findings, the liver lesion was initially considered to be a pyogenic liver abscess, and thus, intravenous antibiotic therapy with ceftriaxone 2g QD plus metronidazole 500 mg TID was administered. On the second day of hospitalization, the patient was asymptomatic, and his body temperature had dropped to 36.5°C. Antibiotic administration was continued for 4 wk.

OUTCOME AND FOLLOW-UP

On hospital day 33, follow-up abdominal computed tomography showed the lesion had completely resolved (Figure 4).

DISCUSSION

Liver abscess is an infectious disease in which an abscess forms within liver parenchyma, and those usually encountered are pyogenic or amoebic. The most common pathogen of pyogenic liver abscess is *K. pneumoniae*[10], and the main pathogenic pathways are *via* hepatobiliary tract disease or intra-abdominal infections such as cholecystitis, cholangitis, pylephlebitis, appendicitis, diverticulitis, or peritonitis[3-5]. However, 20%-55% of pyogenic abscess cases are idiopathic[11]. Furthermore, the detection rate of colon cancer is high in patients with a pyogenic liver abscess of unknown origin[12].

GHT is defined as the presence of normal gastric mucosal tissue in a non-physiological site. GHT is an uncommon condition, and differs from metaplasia, which involves the transformation of one type of fully differentiated tissue into another. Thus, heterotopia is a developmental malformation, whereas metaplasia is an acquired condition[13]. GHT may be found in various locations in the GI tract, from the oral cavity to the anus[14], and can occur in the biliary tract, gallbladder[15,16], or pancreas[17], but is usually encountered in the upper GI tract. GHT in colon is rare, and in most cases, it involves the rectum [18,19]. To the best of our knowledge, only 11 cases of GHT in the colon proximal to rectum have been reported[2].

Several hypotheses have been suggested to explain the presence of GHT in the GI tract. The congenital theory proposes it results from a genetic error during embryogenesis[20], whereas the acquired theory posits it is due to abnormal regeneration after intestinal mucosal injury[21]. The stem cell theory suggests mispositioning of endodermal stem cells during organogenesis or erroneous differentiation of pluripotent endodermal stem cells in the GI tract[22]. On the other hand, it is also possible that local injury and inflammation trigger the dysregulations and reactivations of genes and cause gastric differentiation in the colon[23].

Many GHT patients are asymptomatic, and the condition is usually detected during evaluations of other bowel ailments. Symptoms are mainly caused by acid secretion from heterotopic tissue. The most common symptom is hematochezia followed by anal pain, tenesmus, burning, or anal pruritus[14,20,24]. Incidental diagnoses of GHT in colon over the past decade are largely attributed to the expanded use of colonoscopy for colorectal cancer screening, irritable bowel, or indigestion[14]. Notably, colonoscopy has not been identified as the cause of pyogenic liver abscess in any reported case. Resection is the main treatment modality for GHT of the colon[14,25]. In our case, the tumor was successfully removed by endoscopic mucosal resection, though in other reported cases, tumors were removed by endoscopic submucosal dissection[14]. For medical treatment, H2 blockers and proton pump inhibitors may be used[23,26,27].

The association between GHT and colon cancer has not been studied. However, considering that mucosal damage by colon cancer is one of the mechanisms of pyogenic liver abscess[9], GHT may be

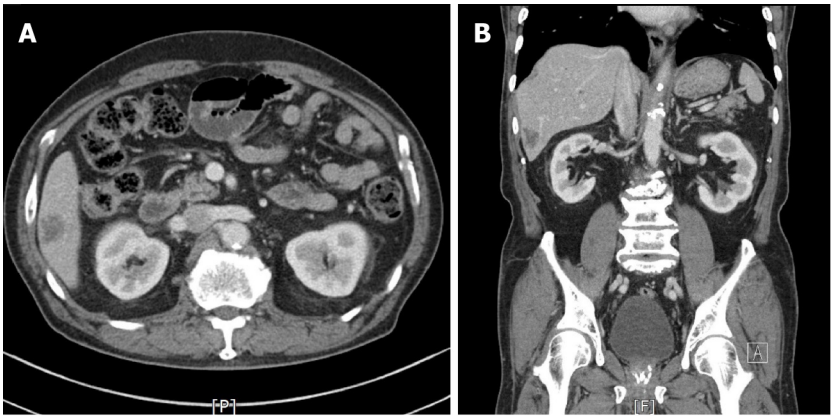

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Figure 1 Abdominal computed tomography images showing the pyogenic liver abscess. A and B: Axial and coronal images showing a ca. 2 cm × 2.5 cm sized, ill-defined, low attenuation nodular lesion in liver segment 6.

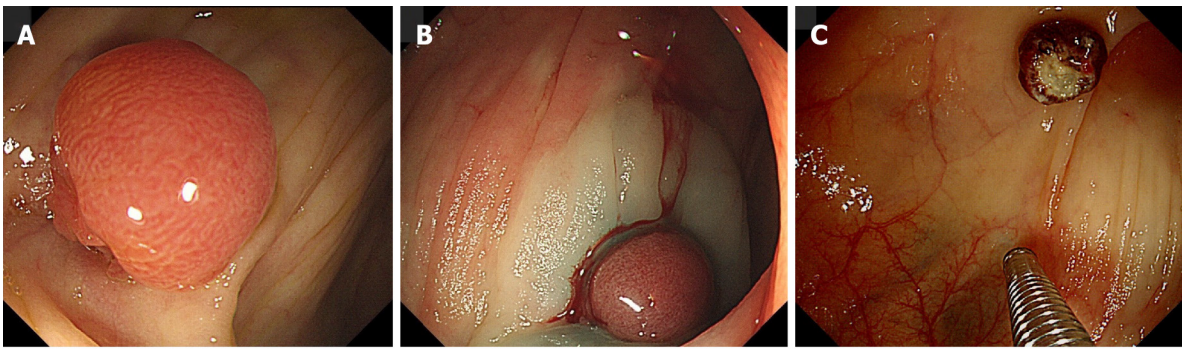

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Figure 2 Colonoscopy during cancer workup. A: Colonoscopy revealed about 1.0 cm sized, semi-pedunculated polyp at the transverse colon; B: The polyp was removed by endoscopic mucosa resection by monopolar electrocauterization using a snare; C: The polyp was successfully removed.

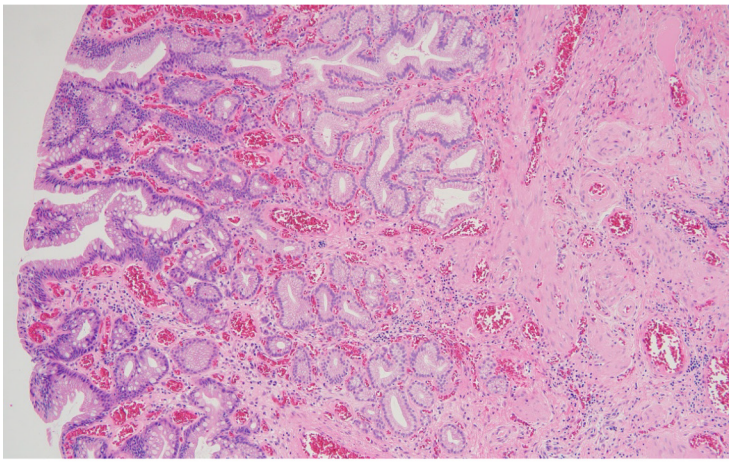

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Figure 3 Histology showed that the excised tissue was consistent with heterotopic gastric tissue with intestinal metaplasia, fibrosis, and vascular and nervous tissue proliferation. HE (× 100).

associated with pyogenic liver abscess. GHT in colon can cause mucosal damage by secreting gastric acid, and GHT formation might cause mucosal barrier damage. This suggests that GHT in colon could affect the development of pyogenic liver abscess by enabling the hematogenous propagation of *K. pneumoniae* through mucosal damage. However, more study is needed due to the lack of cases. Nonetheless, colonoscopy should be performed to determine the cause of GHT in patients with a

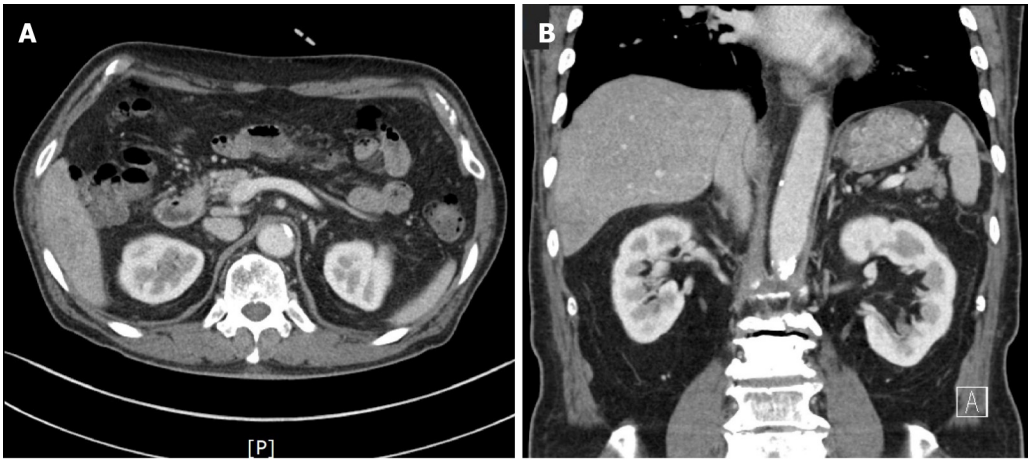

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Figure 4 Follow-up abdominal computed tomography after antibiotic treatment for 33 d showing resolution of the pyogenic liver abscess.
A and B: Axial and coronal images showing resolution of the focal ill-defined low attenuation in liver segment 6.

pyogenic liver abscess. We describe a rare case of ascending colonic GHT found during colonoscopy performed for the differential diagnosis of pyogenic liver abscess of unknown cause and provide a review of the literature.

CONCLUSION

GHT in the colon could affect the development of pyogenic liver abscess by enabling hematogenous propagation of *K. pneumoniae* through mucosal damage. However, more study is needed due to the lack of cases.

FOOTNOTES

Author contributions: Park JG, Suh JI and Kim YU contributed equally to this work; Park JG, Suh JI designed the research study; Park JG and Kim YU performed the data acquisition; Park JG and Kim YU analyzed the data; Park JG wrote the manuscript; Park JG and Suh JI contributed for critical revision of the manuscript for important intellectual content; all authors approved the final version of the article.

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