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Diagnosis of digestive tract perforation and acute peritonitis caused by a foreign body of *Monopterus albus* by three-dimensional computed tomography reconstruction: A case report

Yang JH *et al*. CT scan 3D reconstruction case report

Abstract

BACKGROUND

Few reports have described living foreign bodies in the human body. The current manuscript demonstrates that computed tomography (CT) is an effective tool for accurate preoperative evaluation of living foreign bodies in clinic. The three-dimensional (3D) reconstruction technology could clearly display anatomical structures, lesions and adjacent organs, improving diagnostic accuracy and guiding the surgical decision-making process.

CASE SUMMARY

Herein we describe a 68-year-old man diagnosed with digestive tract perforation and acute peritonitis caused by a foreign body of *Monopterus albus*. The patient presented to the emergency department with complaints of dull abdominal pain, profuse sweating and a pale complexion during work. A *Monopterus albus* had entered the patient's body through the anus two hours ago. During hospitalization, the 3D reconstruction technology revealed a perforation of the middle rectum complicated with acute peritonitis and showed a clear and complete *Monopterus albus* bone morphology in the abdominal and pelvic cavities, with the *Monopterus albus* biting the mesentery. Laparoscopic examination detected a large (diameter of about 1.5 cm) perforation in the mid-rectum. It could be seen that a *Monopterus albus* had completely entered the abdominal cavity and had tightly bitten the mesentery of the small intestine. During the operation, the dead *Monopterus albus* was taken out.

CONCLUSION

The current manuscript demonstrates that CT is an effective tool for accurate preoperative evaluation of living foreign bodies in clinic.

Key Words: Digestive tract perforation; Acute peritonitis; *Monopterus albus*; Three-dimensional computed tomography reconstruction; Case report

Yang JH, Lan JY, Lin AY, Huang WB, Liao JY. Diagnosis of digestive tract perforation and acute peritonitis caused by a foreign body of Monopterus albus by three-dimensional computed tomography reconstruction: A case report. *World J Gastrointest Surg* 2023; In press

Core Tip: Computed tomography (CT) is an effective tool for accurate preoperative evaluation of living foreign bodies in the human body. Three-dimensional (3D) CT reconstruction could clearly display anatomical structures, lesions and adjacent organs, improving diagnostic accuracy. In the present case, preoperative 3D CT reconstruction accurately showed a foreign body located outside the intestinal cavity with a perforation site, and revealed that the foreign body had damaged the mesentery in the small intestine, causing fluid and gas accumulation, as well as peritoneal thickening. These findings indicate preoperative 3D CT reconstruction may accurately locate perforation sites and foreign bodies, help diagnose peritonitis and guide surgical treatment.

INTRODUCTION

Digestive tract perforation is a common acute abdominal pathology[1,2], often secondary to ulcers, trauma, inflammation, tumors, *etc.* Computed tomography (CT) constitutes an effective tool for accurate preoperative evaluation of foreign bodies in clinic[3]. Preoperative three-dimensional (3D) CT reconstruction accurately locates perforation sites and foreign bodies, helps diagnose peritonitis and guides surgical treatment[4]. In the present case, according to clinical symptoms and signs, combined with plain 3D CT reconstruction, it was determined that the patient had digestive tract perforation, and a *Monopterus albus* had died after entering the abdominal cavity[5]. As a result, the patient's abdominal cavity was seriously polluted, with a large amount of turbid yellow fluid and a small amount of feces attached to several intestinal areas, so it could be determined that the patient had "intestinal perforation" caused by a *Monopterus albus*[6].

The intestinal wall is relatively weak, and may burst out after *Monopterus albus* bites, which easily causes acute diffuse peritonitis[7]. If not timely treated, patients may develop septic shock, which is a serious and life-threatening condition. Surgical removal of foreign bodies, *e.g.*, *Monopterus albus*, is the best treatment method, and preoperative imaging evaluation is particularly important[8]. Living foreign bodies are rarely reported in the literature.

CASE PRESENTATION

Chief complaints

One patient, a 68-year-old man from China, presented to the hospital's emergency department after suffering from dull abdominal pain, profuse sweating and a pale complexion during the two-hour workday.

History of present illness

Symptoms started 2 h before presentation with complaints of dull abdominal pain, profuse sweating and a pale complexion during work.

History of past illness

The patient didn't have any remarkable history.

Personal and family history

The patient denied having a family history of any malignant tumors.

Physical examination

Using a physical examination, the results showed the following vital signs: Blood pressure, 118/69 mmHg; body temperature, 36.4 °C; heart rate, 81 beats/min; respiratory frequency, 18 breaths/min. Furthermore, total abdominal tenderness, plate-like abdomen, and liver dullness disappeared, with weak abdominal breathing and bowel sounds.

Laboratory examinations

Laboratory tests showed normal liver function, alpha-fetoprotein, carbohydrate antigen 19-9, and carcinoembryonic antigen. No abnormality was found in routine blood and urine analyses. Primary laboratory data upon admission are summarized in Table 1.

Imaging examinations

CT with multi-plane reconstruction revealed scattered exudation, effusion and free gas in the abdominal cavity, indicating gastrointestinal perforation complicated with acute peritonitis (Figure 1A). Curved planar reconstruction of CT images revealed an abdominal *Monopterus albus* biting the mesentery, suggesting a *Monopterus albus* outside the intestinal cavity (Figure 1B). The outer margin of wall of the mid-rectum was rough and raised, and exudation and free gas were detected in the surrounding mesentery, suggesting a perforation of the mid-rectum (Figure 1C). Volume reconstruction of CT images showed clear and complete eel bone morphology in the abdominal and pelvic cavities (Figure 1D).

FINAL DIAGNOSIS

Based on the patient's previous medical history, the patient was eventually diagnosed with digestive tract perforation and acute peritonitis.

TREATMENT

Postoperatively, the patient recovered well and was discharged on postoperative 5 d.

OUTCOME AND FOLLOW-UP

The patient recovered without complications.

DISCUSSION

Few reports have described living foreign bodies in the human body. CT constitutes an effective tool for accurate preoperative evaluation of living foreign bodies in clinic. 3D CT reconstruction clearly displays anatomical structures, lesions and adjacent organs, improving diagnostic accuracy. In the present case, preoperative 3D CT reconstruction accurately located a *Monopterus albus* outside the intestinal cavity with a perforation site, and the foreign body had damaged the mesentery in the small intestine, causing fluid and gas accumulation, as well as peritoneal thickening. These findings suggest preoperative 3D CT reconstruction may accurately locate perforation sites and foreign bodies, help diagnose peritonitis and guide surgical treatment.

CONCLUSION

Preoperative 3D CT reconstruction can accurately locate perforation sites and living foreign bodies, help diagnose peritonitis and guide surgical treatment.

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SIMILARITY INDEX

PRIMARY SOURCES

1	You-Cai Lin, Xiao-Guang Cui, Li-Zhu Wu, Dong-Qing Zhou, Qi Zhou. "Resolution of herpes zoster-induced small bowel pseudo-obstruction by epidural nerve block: A case report", World Journal of Clinical Cases, 2022 Crossref	16 words — 1%

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