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## **Emphysematous gastritis associated with mucormycosis in a patient with fulminant myocarditis requiring veno-arterial extracorporeal membrane oxygenation**

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### **Dear Editor,**

We present the case of a 37-year-old male who admitted to our hospital with fever, weakness, limb pain for 6 days and dyspnea for 14 hours. The patient had no immune related diseases. He was rapidly diagnosed with fulminant myocarditis and progressed to severe cardiogenic shock during the early stage. Then he was treated with V-A extracorporeal membrane oxygenation (ECMO). It is worth mentioning that the patient's peripheral blood was taken for metagenomic Next-Generation Sequencing (mNGS) upon admission and the results did not find any pathogenic bacteria. But there is no further examination (such as coronary angiography and myocardial biopsy) to determine the etiology of myocarditis.

After weaning from ECMO, however, he developed a secondary Gastrointestinal mucormycosis as shown by mNGS and Necrosis of the whole stomach. Abdominal Computed Tomography (CT) (Fig. 1a and 1b) showed obvious thickening and diffuse edema of gastric wall, and intramural gas collections. The CT findings of our patient's stomach were consistent with those described in the previous literature<sup>[1]</sup>. Total gastrectomy, partial transverse colectomy, and transverse colostomy were eventually performed (Fig. 1c). Pathology showed numerous broad-based, nonseptate, right angular branched fungal hyphae, morphologically

consistent with mucormycosis(Fig.1d).Prompt and aggressive surgical debridement and Treatment with liposomal amphotericin B therapy were effective. However, the patient's abdominal condition did not improve significantly.Irreversible shock ensued.The patient was finally discharged automatically on the 17th postoperative day for financial reasons,then he died upon return home.

Emphysematous gastritis caused by mucormycosis infection is a rare and usually lethal gastrointestinal emergency and often associated with high mortality<sup>[2]</sup>.Mucormycosis infection has been reported after ECMO treatment<sup>[3]</sup>. Gastrointestinal mucormycosis is the least frequent type and may be a primary disease or a feature of generalized mucormycosis.Gastrointestinal mucormycosis due to nonspecific presentationrare is only 25% of the cases are diagnosed antemortem<sup>[4]</sup>.Few reports have described emphysematous gastritis caused by mucormycosis infection in patients with normal immunity<sup>[5]</sup>.

#### **Conflicts of interest**

All authors have no conflicts of interest.

#### **Funding**

None.

#### **Ethical approval**

The case report was approved by the ethics committee of the First Affiliated Hospital of Anhui Medical University.

#### **Patient consent for publication**

Obtained

#### **Author contributions**

CW collected the data, drafted this manuscript, and submitted version of the manuscript;MS conceived in the study and revised the manuscript; QY and NL analyzed the data;MF and RH participate in the patient management and collected the data; All authors have read and agreed to the published version of the manuscript.

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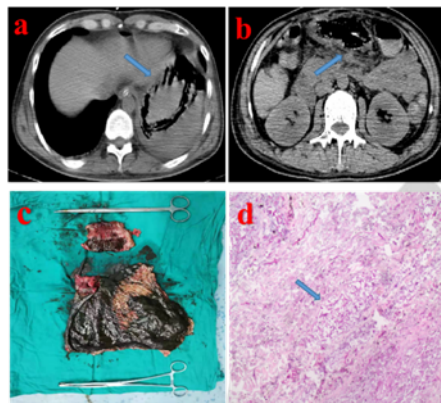


Fig 1 Abdominal computed tomography (CT) imaging of Preoperative and Photomicrograph of Emergency laparotomy with the resected specimen. a and b: Abdominal CT showed gastric pneumatosis, and intramural gas in the gastric wall (blue arrows).c: Emergency laparotomy showed a total gastric necrosis associated with infectious.d:Photomicrograph of the resected specimen showed numerous broad-based, nonseptate, right angular branched fungal hyphae, morphologically consistent with mucormycosis(blue arrow).