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False positive galactomannan tests attributed to pulmonary aspiration of edible mushrooms

Dear editor,

Galactomannan (GM) is a component of *Aspergillus* cell wall and becomes the most widely used tool to establish the diagnosis of invasive aspergillosis.[1,2] However, many factors can cause false positivity of GM. Herein, we report a case with positive serum and bronchoalveolar lavage (BAL) GM tests attributed to pulmonary aspiration of gastric content retaining edible mushrooms.

A 62-year-old man presented with abdominal pain and frequent vomiting for two days with coffee-ground vomitus. He underwent esophagogastroduodenoscopy (EGD) but experienced massive pulmonary aspiration and subsequent acute respiratory failure. The abdominal computed tomography (CT) showed dilated stomach and duodenum, with proximal jejunal obstruction (Fig. 1A). He underwent veno-arterial extracorporeal membrane oxygenation (ECMO) support within hours after admission to the intensive care unit due to severe acute respiratory distress syndrome and acute decompensated heart failure with shock.

The GM optical density index (ODI) values using Platelia™ *Aspergillus* EIA (Bio-Rad, Hercules, California, USA) of BAL and serum within two days after admission were 5.54 and 2.21 respectively. The GM ODI values of nasogastric (NG) aspirate on hospital day 5 was 4.42. The second EGD nine days after admission revealed gastric ulcers and much food retention in the stomach including enoki mushroom and jelly ear (Fig. 1B). The serum and BAL GM ODI values decreased in the following days (Fig. 1C). He received micafungin for *Candida tropicalis* candidemia, and eight days of voriconazole treatment since hospital day 10. The fungal cultures for the BAL and NG aspirate yielded *C. tropicalis* but not *Aspergillus* species. The *p*an-*Aspergillus* polymerase-chain-reaction (PCR) testing using the AsperGenius® assay (PathoNostics, Maastricht, Netherlands) for the BAL and NG aspirate did not detect any *Aspergillus* species either.

He underwent ECMO removal eight days after admission, and tracheostomy on day 21. He was weaned from mechanical ventilation and discharged after a 96-day hospital stay. His activity recovered to baseline and the tracheostomy tube was removed four months later.

To investigate whether the mushrooms in the stomach could cause positive GM results, three stewed samples of each kind of mushroom were tested. The median GM ODI value was 1.92 for enoki mushroom and 5.22 for jelly ear. Other edible mushrooms lead to positive GM tests as well, with a median of 2.16 for white mushroom, and 2.67 for king oyster mushroom.

To the best of our knowledge, this is the first report of false-positive GM tests probably caused by pulmonary aspiration of edible mushrooms. Positive GM results had been observed in patients with other fungal infections, receiving blood transfusion, certain antibiotics or food.[1,3] While *Candida* species may be associated with positive GM indexes as well, the isolated *C. tropicalis* in the current patient is not.[4] He recovered well with an antifungal duration of 16 days, which would be insufficient if pulmonary aspergillosis did occur.[2,5]

False GM positivity might lead to unnecessary antifungal administration and adverse effects including drug–drug interactions. Physicians should be aware that a positive GM test is not equal to presence of *Aspergillus* infection, and PCR testing may help differentiating true aspergillosis from other causes.

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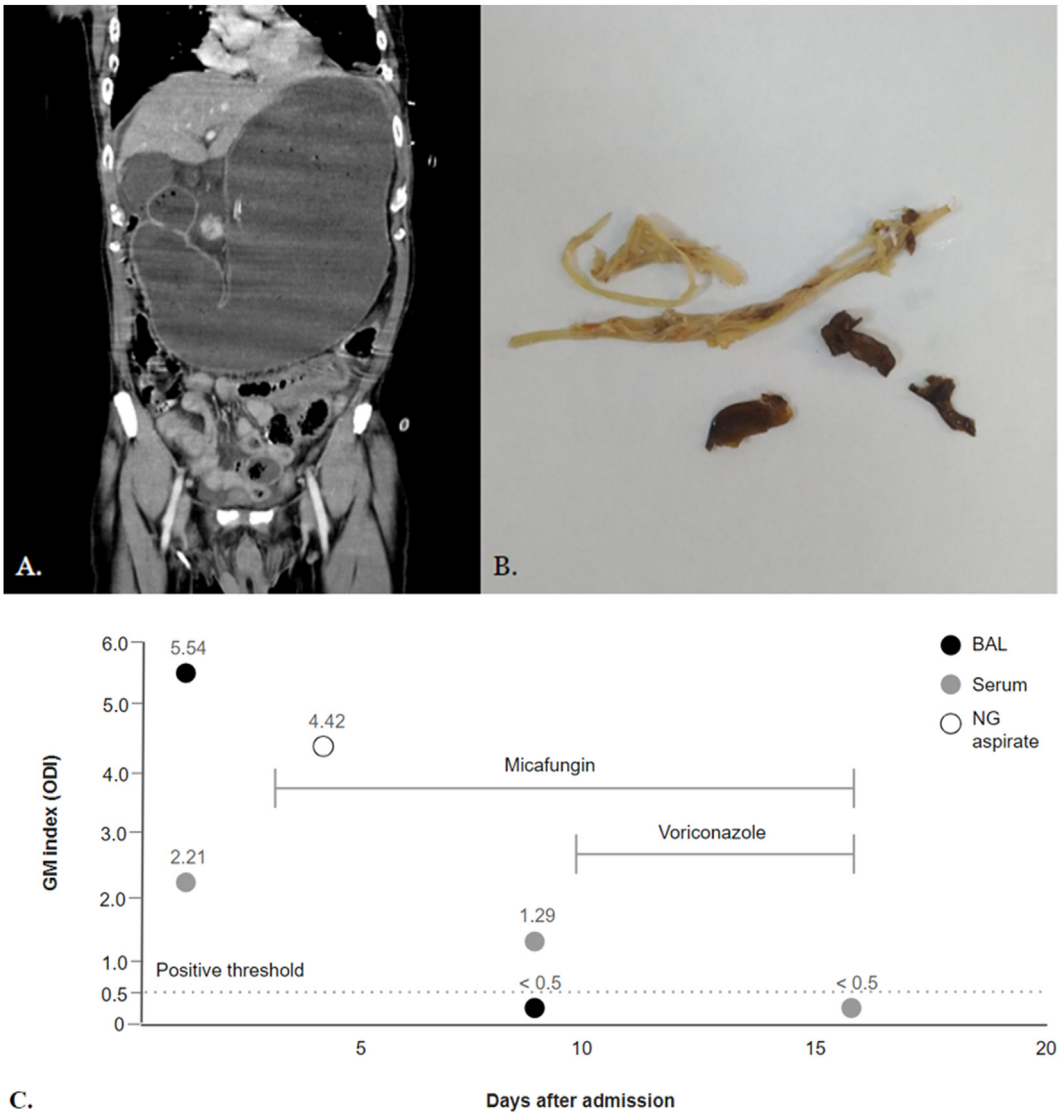

Figure 1. A. CT of abdomen shows dilated stomach and duodenum caused by proximal jejunal obstruction. B. Enoki mushroom and jelly ear removed using EGD. C. Galactomannan ODI values of different specimens and antifungal treatment durations.

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