Successful treatment of an acute infective endocarditis secondary to fish bone penetrating into left atrium caused by *Granulicatella adiacens* and *Candida albicans* 

A case report

Ya Ling Tong, MD, Ting Ting Qu, PhD, Jia Xu, PhD, Nai Yun Chen, PhD, Mei Fang Yang, PhD

Abstract

**Rationale:** Infective endocarditis caused by a foreign body of the upper digestive tract is rare. We report a rare case of *Granulicatella adiacens* and *Candida albicans* coinfection acute endocarditis combined with systematic embolization caused by a fish bone from the esophagus penetrating into the left atrium.

**Patient concern:** A 42-year-old woman was admitted to our hospital because of fever, abdominal pain, headache, and right limb weakness.

**Diagnoses:** Clinical examination indicated endocarditis and systemic embolisms secondary to a fish bone from the esophagus penetrating into the left atrium. The emergency surgery confirmed the diagnosis. Cultures of blood and vegetation show *G. adiacens* and *C. albicans*.

**Interventions:** Antimicrobial therapy lasted 6 weeks after surgery.

**Outcomes:** The patient was discharged with excellent condition 7 weeks after hospitalization and was well when followed 6 months later.

**Lessons:** The successful treatment of this patient combines quick diagnosis, timely surgery, and effective antimicrobial regimen. This rare possibility should be kept up in mind in acute infective endocarditis cases.

**Abbreviations:**

- *C. albicans* = Candida albicans
- *G. adiacens* = Granulicatella adiacens
- *GP* = gram-positive
- *IE* = infective endocarditis
- *NVS* = nutritionally variant streptococci

**Keywords:** acute infective endocarditis, *Candida albicans*, esophageal perforation, fish bone, foreign body, *Granulicatella adiacens*

1. Introduction

Infective endocarditis (IE) is a serious disease of the endocardium of the heart and cardiac valves, with high morbidity and mortality. The infection is usually associated with traumatic or iatrogenic metallic foreign body such as bullets, metallic fragments, iatrogenic needles, fragments of catheter, intravascular stents, or filters.\(^{1-5}\) However, IE caused by foreign bodies of the upper digestive tract is rare. Here, we report a unique case of *Granulicatella adiacens* and *Candida albicans* coinfection acute IE, which was secondary to a fish bone penetrating through the esophagus into the left atrium. The patient was successfully cured by antibiotic therapy combined with surgical removal of the foreign body.

2. Case presentation

A 42-year-old Chinese woman was admitted to our emergency department because of fever and abdominal pain for 2 days, headache for 1 day, and right limb weakness for 5 hours. The patient had no obvious underlying disease history. Two weeks earlier, the patient had a transient throat pain after eating fish.

Before admitting, she received 2-day empirical ampicillin/sulbactam therapy because of fever and abdominal pain. Physical examination showed vital signs were normal except a temperature of 38.0°C. Heart and lungs examination was unremarkable. She had left upper abdominal pain but without a sign of peritoneal irritation. Her right lower limb muscle strength was level 3.

Blood tests showed elevated white blood cell count of 12.8 × 10^9 cells/L (87.9% neutrophils), the hemoglobin level was 115 g/L, and the platelet count was only 27 × 10^9 cells/L. High-sensitivity C-reactive protein was 166 mg/L.
revealed 2 masses in the left atrium (approximately 1.0 and 0.9 cm in diameter) (Fig. 1). The contrast enhanced computed tomography scan of chest and abdomen revealed a suspected foreign body perforating through the anterior wall of the esophagus into the left atrium (Fig. 2), and infarction of spleen. Magnetic resonance imaging of the brain revealed multiple lesions in the cerebral hemisphere and pons (Fig. 3).

She received meropenem (500mg, once every 8h) for empirical antibiotic treatment after admission to the emergency department. Four blood cultures were drawn before the antibiotic therapy. According to the clinical examinations, we suspected acute IE with systemic embolisms secondary to foreign body (fish bone) penetrating. We performed emergency surgery, and found a fish bone penetrating into the left atrium via the esophagus anterior wall. The fishbone was 4.0cm in length, attached to the left atrium wall, and with a large vegetation around it. We also sent 2 sets of vegetation culture immediately.

On the next day after surgery, 2 sets of blood culture and 1 vegetation culture grew Gram-positive (GP) cocci, which were identified as *G. adiacens* by use of the Vitek 2 GP identification kit (Vitek 2 GP, bio Merieux VITEK-2, Durham, England). Another sample blood and sample vegetation culture grew *C. albicans* on the third day. Antimicrobial susceptibility test of *G. adiacens* was performed using isolates by the disc diffusion method, and the results showed that the pathogen was susceptible to penicillin, ampicillin, ceftriaxone, levofloxacin, vancomycin, and meropenem; moderately sensitive to erythromycin; and resistant to clindamycin. Antifungal susceptibility to *C. albicans* was not assessed. The antimicrobial regimen was then adjusted to intravenous meropenem (500mg, once every 8h) combined with voriconazole (loading dose 70 and, 50mg thereafter, once daily) on the third day. The blood cultures became negative on the fourth day after antimicrobial treatment started. As the clinical status improved, the antimicrobial regimen was then adjusted to moxifloxacin (400mg, once daily) and fluconazole (400mg, once daily) 2 weeks after the initial treatments. The antibiotic therapy lasted for another 4 weeks until the body temperature was well under control. The patient was discharged with excellent condition in week 7 and was followed up for 6 weeks without complication.

3. Discussion

We report a unique case of acute IE caused by *G. adiacens* and *C. albicans* coinfection, which was secondary to a fish bone penetrating through the esophagus and into the left atrium. The patient was successfully treated by antimicrobial therapy combined with surgical intervention.

Penetrating intracardiac foreign body-related endocarditis are usually caused by traumatic injury or introduced into the heart by blood flow as a complication of interventional techniques or minimally invasive. However, IE caused by a foreign body of the
upper digestive tract was exceptionally rare. A fatal case in 1972 showed a swallowed toothpick perforated duodenum, then entered into the inferior vena cava, embolized the right ventricle, and eventually caused candida endocarditis. The upper digestive tract can cause complications including perforation of the esophagus, migration into the adjacent organs, and abscesses formation. But penetrating into the heart is rare and potential fatal. This rare possibility should be kept in mind in all acute IE cases.

As mentioned above, G adiacens and C albicans, as normal flora of the oral cavity, can cause fatal IE each. We reported, for the first time, an acute IE case caused by G adiacens and C albicans coinfection, carried along with the fish bone which from the esophagus penetrated into the left atrium. Foreign bodies of the upper digestive tract can cause complications including perforation of the esophagus, migration into the adjacent organs, and abscesses formation. But penetrating into the heart is rare and potential fatal. This fatal infection is potential curable. We describe a unique case of candida endocarditis due to NVS. NVS endocarditis is rare but potential curable. We describe a unique case of candida endocarditis due to NVS and C albicans infection caused by a fish bone penetrating through the thoracic esophagus into the heart. According to IE cases caused by a foreign body of the upper digestive tract, we should pay attention to pathogens originating from the upper digestive tract such as NVS and candida. This fatal infection is potential curable with timely operation and effective antimicrobial therapy.

References

[1] Balbi M, Bertero G, Belloni S, et al. Right-sided valvular endocarditis supported by an unexpected intracardiac foreign body. Chest 1990;97:1486–8.
[2] Markowitz SM, Szentpetery S, Lower RR, et al. Endocarditis due to accidental penetrating foreign bodies. Am J Med 1976;60:571–6.
[3] FalcaoPedrosa Costa A, Castelo Branco Cavalcanti F, Modesto dos Santos V. Endocarditis due to Burkholderia cepacia in a renal transplant patient. Rev Port Cardiol 2014;33:117 e1–4.
[4] Nishiyama Y, Takahashi S, Uehara T, et al. A case of infective endocarditis and pyogenic spondylitis after transrectal ultrasound guided prostate biopsy. J Infect Chemother 2016;22:767–9.
[5] Ono M, Wolf RK. Heart injury and endocarditis caused by a needle migrated from the left arm. Eur J Cardiothorac Surg 2001;20:1074–7.
[6] Case records of the Massachusetts General HospitalWeekly clinical-pathological exercises. Case 24-1972. N Engl J Med 1972;286:1309–15.
[7] Karchmer AW, MacGillivray TE, Healey TT, et al. Case records of the Massachusetts General Hospital. Case 1-2001. A 35-year-old man with fever, bacteremia, and a mass in the left atrium. N Engl J Med 2001;344:158–66.
[8] Cargill JS, Scott KS, Gascoyne-Binz D, et al. Granulicatella infection: diagnosis and management. J Med Microbiol 2012;61:735–61.
[9] Brouqui P, Raoult D. Endocarditis due to rare and fastidious bacteria. Clin Microbiol Rev 2001;14:177–207.
[10] Tuohy MJ, Procop GW, Washington JA. Antimicrobial susceptibility of Abiotrophia adiacens and Abiotrophia defectiva. Diagn Microbiol Infect Dis 2000;38:189–91.

[11] Benjamin DK Jr, Miro JM, Hoen B, et al. Candida endocarditis: contemporary cases from the International Collaboration of Infectious Endocarditis Merged Database (ICE-mD). Scand J Infect Dis 2004;36:453–5.

[12] Baddley JW, Benjamin DK Jr, Patel M, et al. Candida infective endocarditis. Eur J Clin Microbiol Infect Dis 2008;27:519–29.

[13] Pappas PG, Rex JH, Sobel JD, et al. Guidelines for treatment of candidiasis. Clin Infect Dis 2004;38:161–89.

[14] Smego RA Jr, Ahmad H. The role of fluconazole in the treatment of Candida endocarditis: a meta-analysis. Medicine (Baltimore) 2011;90:237–49.