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Isolated left ventricular vegetation caused by community-acquired *Klebsiella pneumoniae* infective endocarditis

KEYWORDS
Klebsiella pneumoniae;
Infective endocarditis;
Type 2 diabetes mellitus;
Left ventricular vegetation

Dear editor,

Infective endocarditis (IE) manifests a wide spectrum of clinical presentation, which can be complicated by septic embolization, immunological vascular phenomena, acute heart failure, severe sepsis, and even death.[1] Pathogens mostly involve valvular structures of a heart, with exceptions in patients with intracardiac prosthesis or congenital heart disease.[1] Among all the pathogens, streptococci and staphylococci are the most common in daily practice nowadays.[1] *Klebsiella pneumoniae* is a common gram-negative bacillus, but IE caused by the microorganism is extremely rare.[2] Herein, we reported a diabetic woman with *K. pneumoniae* IE, and a unique location of vegetation was found by echocardiography. To our best knowledge, this is the first case in Taiwan (see Fig. 1).

A 72-year-old woman with a history of insulin-dependent type 2 diabetes mellitus (T2DM) presented to the emergent department with a 2-day history of abdominal pain, fever, vomiting, malaise, and consciousness disturbance. On examination, her response was stupor, and eyeballs deviated to left without pupil reflex. No cardiac murmur was heard. Laboratory tests showed leukocytosis (>16,000 cells per microliter), pyuria (100 cells per high-power field), and elevated serum creatinine of 3.3 mg per deciliter. A T2-weighted magnetic resonance imaging of brain demonstrated multiple hyperintensities in bilateral cerebral and cerebellar hemispheres, which showed water restriction on diffusion-weighted image, suggestive of acute infarct (panel A). A computed tomography of abdomen revealed right subcapsular renal abscess (panel B). Urine and four separated blood cultures grew *K. pneumoniae*, which was susceptible to amikacin, ampicillin/sulbactam, cefazolin, cefuroxime, ceftriaxone, ceftazidime, ciprofloxacin, ertapenem, flomoxef, gentamicin, imipenem, levofloxacin, and trimethoprim/sulfamethoxazole. A two- and three-dimensional transesophageal echocardiography depicted a 1.0 × 1.0 cm oscillating mass in left ventricle, with a stalk attached to the interventricular septum (panel C and D). Infective endocarditis was diagnosed by modified Duke criteria. The patient underwent percutaneous drainage and antibiotic treatment with intravenous ceftriaxone; however, she became comatose on day 3 and died on day 18.

Either microbiologic or echocardiographic finding is rare in our case. In community-acquired native valve IE, non-HACEK (*Haemophilus, Aggregatibacter, Cardiobacterium, Eikenella, Kingella*) gram-negative bacillus IE are uncommon, and it contributed to 1.8% of all the IE cases reported by the International Collaboration on Endocarditis.[2] In a prospective cohort study, *K. pneumoniae* IE accounted for 10.3% of non-HACEK gram-negative bacillus IE cases.[3] Genitourinary tract infection, immune-compromised status, health care contact, and cardiac implanted device are independent risk factors.[2,3] Although our patient had no risk factors above, T2DM might be correlated to the disease. Siu et al. demonstrated an invasive syndrome that two capsular types of *K. pneumoniae* predispose a diabetic patient to develop liver abscesses and the following embolic complications.[4] In Taiwan, 47.5% of diabetic patients have rectal carriage of hypervirulent *K. pneumoniae*,

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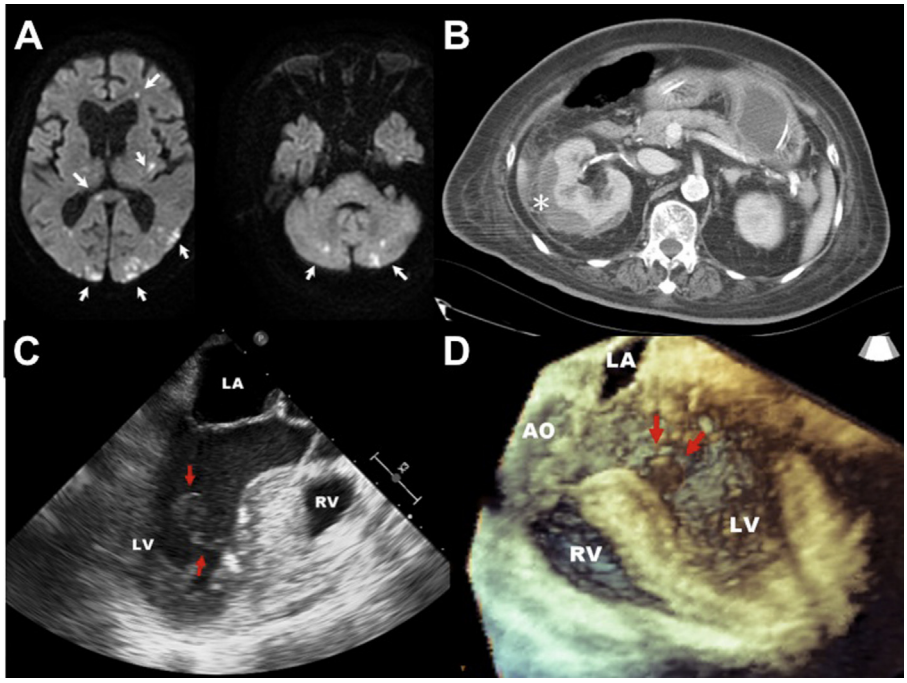

Figure 1. (A) Multiple acute infarcts in bilateral cerebral and cerebellar hemispheres (white arrows) on a diffusion-weighted magnetic resonance image of brain. (B) An enhanced computed tomography of abdomen demonstrated a right subcapsular renal abscess (asterisk). (C and D) A two- and three-dimensional transesophageal echocardiography showed an oscillating mass in left ventricle, with a stalk attached to the interventricular septum (red arrows). LA denotes left atrium; LV, left ventricle; RA, right atrium; RV, right ventricle; Ao, aorta.

leading to subsequent infection in whom blood sugar is poorly controlled.[5] It was our limitation that the specific serotype of *K. pneumoniae* was not identified.

In conclusion, this case is educational because of its unusual location and pathogen, indicating that a careful investigation of IE should be done in patients with T2DM and *K. pneumoniae* infection to improve clinical outcome.

Conflicts of interest

All of the authors declared no conflicts of interest.

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Kuan-Liang Liu*
Department of Cardiology, Landseed International Hospital, Taoyuan, Taiwan

Chien-Lung Chen
Department of Nephrology, Landseed International Hospital, Taoyuan, Taiwan

Chuan-Fa Hsieh
Department of Medical Research, Landseed International Hospital, Taoyuan, Taiwan
Center for General Education, Hsin Sheng College of Medical Care and Management, Taoyuan, Taiwan

Yi-Jen Chen
Dr. Chiang Pediatric Clinic, Taipei, Taiwan

Yhu-Chering Huang
Division of Pediatric Infectious Disease, Department of Pediatrics, Chang Gung Memorial Hospital, Taoyuan, Taiwan

*Corresponding author. No. 77, Guangtai Rd., Pingzhen Dist., Taoyuan, 32405, Taiwan. Fax: +886 3 4914000.
E-mail address: leftylkl@gmail.com (K.-L. Liu)

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