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Case report

A case of *Klebsiella oxytoca* endocarditis in an intravenous drug user

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ABSTRACT

Non-HACEK Gram-negative bacilli account for only a small percentage of infective endocarditis cases globally. Among those, *Klebsiella* species account for only about 10% of cases and are most often health-care acquired. We present a rare case of *Klebsiella oxytoca* endocarditis in a young intravenous drug user.

Background

Non-HACEK Gram-negative bacilli account for only about 1.8% of infective endocarditis cases globally [1]. Among those, greater than half are due to either *Escherichia coli* or *Pseudomonas aeruginosa* while only 10% are due to *Klebsiella* species [1]. Most are health-care acquired and injection drug use is associated with non-HACEK Gram-negative bacilli endocarditis only 4% of the time [1]. *Klebsiella* species are responsible for prosthetic valve endocarditis more frequently than for native valve endocarditis, and involve the aortic valve in nearly two-thirds of cases [2]. *Klebsiella pneumoniae* is the species most commonly involved and *Klebsiella oxytoca* is rare, with only nine cases reported in the literature [3–11]. We present a case of *Klebsiella oxytoca* endocarditis in a 37-year old intravenous (IV) drug user.

Case presentation

A 37-year old man with a history of IV heroin use presented to the emergency room (ER) of a small community hospital requesting admission for opiate detoxification. He had been using IV heroin about four times a day for the last five months. He was agitated and tangential on presentation but was able to provide a brief history. He stated that he did not share needles but no other details could be obtained. He reported having run out of heroin several days earlier and had been experiencing palpitations for the prior two weeks. He developed chills and shortness of breath just before presentation but denied any chest pain.

In the ER, the patient had a temperature 101 F, heart rate 124 bpm, respiratory rate 20/min, blood pressure 108/65 mmHg, and oxygen saturation 95% on room air. Labs were remarkable for hemoglobin 8.1 g/dL, white blood cell count 20,600/uL with 85% neutrophils and 2% band neutrophils. Hepatic enzymes revealed aspartate aminotransferase 200U/L, alanine aminotransferase 170U/L, and alkaline phosphatase 386U/L. Troponin I was elevated at 0.074 ng/ml (0.00–0.029). Urine toxicology screen was positive only for cocaine. HIV 1 and 2 antibody screen was nonreactive as was screen for viral hepatitis. A chest x-ray revealed cardiomegaly with no indication of pneumonia. A 2D echocardiogram showed thickened aortic valve leaflets that prolapsed into the ventricular outflow tract resulting in severe aortic regurgitation. A pericardial effusion was also seen, which was large posteriorly and moderate anteriorly with definite right ventricular compromise. The patient was started on IV vancomycin and ceftriaxone for endocarditis. Initial blood cultures were obtained in the ER and a total of seven sets of blood cultures returned positive for Gram-negative rods within 24 h of collection. Antibiotics were changed to cefepime following Gram stain results and the patient was transferred to a tertiary care hospital on the second day of hospitalization for probable emergent cardiac surgery. Identification of blood culture growth eventually revealed *Klebsiella oxytoca* in all samples. The patient underwent aortic valve replacement and repair of aortic root abscess. The post-operative hospital course was complicated by pericardial abscess requiring repeat sternotomy and drainage.

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His antibiotics were changed to ceftriaxone and levofloxacin and, eventually, he was discharged on oral levofloxacin due to its 100% bioavailability and the organism's sensitivity profile, for an additional 6 weeks.

Conclusions

Klebsiella oxytoca is a rare cause of endocarditis and only 9 other cases have been reported in the literature. The diagnosis of infective endocarditis in our patient is based on the modified Duke criteria: one major criterion (intracardiac mass on the aortic valve seen on echocardiogram) and three minor criteria (fever, positive blood cultures, and predisposing IV drug use) [12]. A 1998 literature review found that 1.5% of endocarditis cases were caused by *Klebsiella* species and most of these cases involved prosthetic cardiac valves [2]. *Klebsiella* species caused at most 1.2% of native valve endocarditis cases compared to 4.1% of prosthetic valve cases, however percentages are likely overestimates of actual incidence due to inclusion criteria for the study [2]. The aortic valve is most commonly involved, as was the case for our patient [2]. The mortality rate for *Klebsiella* endocarditis is not entirely clear but was estimated to be 49% [2]. A 2007 study found an in-hospital mortality rate of 24% for patients with non-HACEK Gram-negative endocarditis (including *Klebsiella* spp.), compared to 17% for patients with infectious endocarditis of other causes [1]. The mortality rate associated with *Klebsiella oxytoca* endocarditis has not been established, however, of the 9 published cases there were three reported deaths that were either affiliated with or caused by the endocarditis [4–6].

Non-HACEK Gram-negative endocarditis was associated with a significantly higher frequency of genitourinary or non-oral gastrointestinal pathology, which was the presumed source of infection [1]. *Klebsiella oxytoca* endocarditis, specifically, has been associated on several occasions with genitourinary or gastrointestinal pathology [3,4,8]. IV drug use is uncommonly associated with non-HACEK Gram-negative endocarditis and was found in only 4% of cases [1]. This is only the third case reported in the literature of *Klebsiella oxytoca* endocarditis in an IV drug user, and only the second with no alternative identifiable source [3,6]. In contrast, 57% of patients with non-HACEK Gram-negative endocarditis had a history of health care contact [1]. Our patient had a known history of IV drug use without a known history of health care contact or genitourinary or gastrointestinal pathology. Our case, in addition to the rare previous cases of *Klebsiella oxytoca* endocarditis, emphasizes the changing microbial environment and the moving target that is infectious disease. A formal review of the species and source of infection in the non-HACEK Gram-negative bacillus endocarditis may be beneficial.

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Conflicts of interest

None.

References

[1] Morpeth S, Murdoch D, Cabell CH, Karchmer AW, Pappas P, Levine D, et al. International collaboration on endocarditis prospective cohort study (ICE-PCS) investigators. Non-HACEK gram-negative bacillus endocarditis. Ann Intern Med 2007;147(12):829–35.
[2] Anderson MJ, Janoff EN. Klebsiella endocarditis: report of two cases and review. Clin Infect Dis 1998;26:468–74.
[3] Mohamed A, Hall C, Hatch M, Ayan M, Winn R. Infective endocarditis caused by Klebsiella oxytoca in an intravenous drug user with cancer. BUMC Proc 2016;29(2):181–2.
[4] Ullah S, Elbita O, Abdelghany M, Tahir H, Tuli P, Alkilani WZ, et al. Klebsiella oxytoca endocarditis with complete heart block. J Invest Med-HICR 2016;1–3.
[5] Lopez CRZ, Giralda BG, Parra AR, Miguel AM. Infective endocarditis secondary to an infrequent agent in a patient with haemodialysis. Nefrologia (English Version) 2009;29:610.
[6] Geisenberger D, Huppertz LM, Büchsel M, Kramer L, Pollak S, Grosse Perdekamp M. Non-traumatic subdural hematoma secondary to septic brain embolism: a rare cause of unexpected death in a drug addict suffering from undiagnosed bacterial endocarditis. Forensic Sci Int 2015;257 (December):e1–5.
[7] Chen JY, Chen PS, Chen YP, Lee WT, Lin LJ. Community-acquired Klebsiella oxytoca endocarditis: a case report. J Infect 2006;52(5):e129–31.
[8] Watanakunakorn C. Klebsiella oxytoca endocarditis after transurethral resection of the prostate gland. South Med J 1985;78(3):356–7.
[9] Repiso M, Castiello J, Repáraz J, Uriz J, Sola J, Elizondo MJ. Endocarditis caused by Klebsiella oxytoca: a case report. Enferm Infecc Microbiol Clin 2001;19 (9):454–5.
[10] de Escalante Yangüela B, Aibar Arregui MA, Muñoz Villalengua M, Olivera González S. [Klebsiella oxytoca nosocomial endocarditis]. An Med Interna 2007;24(11)563–4 [Article in Spanish].
[11] Duggal A, Waraich K, Cutrona A. Klebsiella oxytoca endocarditis in a patient with a bioprosthetic aortic valve. Infect Dis Clin Pract 2012;20(3):224–5.
[12] Li JS, Sexton DJ, Mick N, Nettles R, Fowler Jr VG, Ryan T, et al. Proposed modifications to the Duke Criteria for the diagnosis of infective endocarditis. Clin Infect Dis 2000;30(4):633–8.