Journal of Microbiology, Immunology and Infection 58 (2025) 381–382

Contents lists available at ScienceDirect

Journal of Microbiology, Immunology and Infection

journal homepage: www.e-jmii.com

Unusual *Helicobacter pylori* bacteremia in an immunocompetent elderly presenting as right ankle cellulitis

Dear Editor,

Helicobacter pylori, resides in the human gastric submucosa is recognized as important culprits of upper gastrointestinal diseases.[1]

An 88-year-old male presented with localized erythema in the right ankle, accompanied by a medical history, including old stroke and prior subtotal gastrectomy for ulcer hemorrhage 22 years ago. Upon examination in the emergency department, he exhibited febrile, while other vital signs remained normal, revealing cellulitis in the affected region. Laboratory tests indicated leukocytosis with neutrophilia, while renal parameters were stable; he was treated with amoxicillin-clavulanate. Following one week of empirical treatment, the patient showed complete resolution of symptoms during his outpatient follow-up. The subsequent blood culture was sterile.

After four days of incubation, the aerobic culture (Bactec Plus aerobic/F, Becton Dickinson, Sparks, MD, USA) flagged positive, revealing a curved Gram-negative organism upon Gram staining (Fig. 1a). After 48 hours, a single type of colony with the appearance of a transparent, colorless, slightly convex, smooth surface, with a diameter of 1–2mm on sheep blood agar (Becton Dickinson) was obtained (Fig. 1b). Identification (score: 2.01) was confirmed via MALDI-TOF MS, (Bruker Daltonics, Germany, model: microflex™ LT) with the MBT compass V4.1 software, database version MBT Compass Library, Revision K MBT 7311 MSP Library, supplemented with a custom *H. pylori* database and subsequent 16S rRNA gene sequencing yielded a 522-bp fragment matching *H. pylori*. The biochemistry test was positive for urease, oxidase and catalase production. Susceptibility testing was performed with E test® (bioMérieux, Marcy l'Etoile, France) and elaborated with EUCAST criteria. The isolate was sensitive to amoxicillin (MIC = 0.023μg/ml), clarithromycin (MIC = 0.016μg/ml), metronidazole (MIC = 0.094μg/ml) and tetracycline (MIC = 0.125μg/ml) but resistant to levofloxacin (MIC> 32μg/ml).

Levofloxacin is not a first-line treatment for *H. pylori* infections and the prevalence of primary phenotypic resistance to levofloxacin is relatively low in Taiwan. Nevertheless, point mutations within the quinolone resistance-determining regions of *gyrA* or *gyrB* may contribute to this resistance.[2] The genus Helicobacter encompasses gastric and enterohepatic species. The enterohepatic species (*H. cinaedi* and *H. bilis*) are zoonotic, potentially leading to various infections in immunocompromised individuals.[3] Conversely, *H. pylori,* a key gastric species, is primarily affects humans. The growth of fastidious strains, *H. pylori* requires an incubation period of 4–6 days under microaerophilic conditions.[4] *H. pylori* bacteremia is an uncommon presentation in *H. pylori*-related disorders.[5] One rationale may be the use of standard media lacking microaerophilic conditions for Gram-negative bacteria and the absence of prolonged incubation, which obstructs *H. pylori* isolation. Fortunately, *H. pylori* colonies were noted on sheep blood agar following 48 hours of incubation in this case. Isolating *H. pylori* from blood presents a greater challenge than culturing it from the gastric mucosa; conversely, owing to complications associated with culturing. *H. pylori* has not been associated with cellulitis or isolated from soft tissue samples, even in severely comorbid patients. Contemporary culture methodologies for soft tissue are not executed in a microaerophilic environment with prolonged incubation, which hinders its recovery. The eventual subculture of *H. pylori* utilizing an optimal medium such as chocolate agar, sheep blood agar or CDC ANA brucella agar with 5 % oxygen, 10 % carbon dioxide, 85 % nitrogen and extended incubation (5 days or more) may be necessitated when subculture efforts fail for curved Gram-negative organisms initially detected in blood cultures. This report underscores the necessity for clinical microbiology laboratories to understand cultivation methods for this highly fastidious organism.

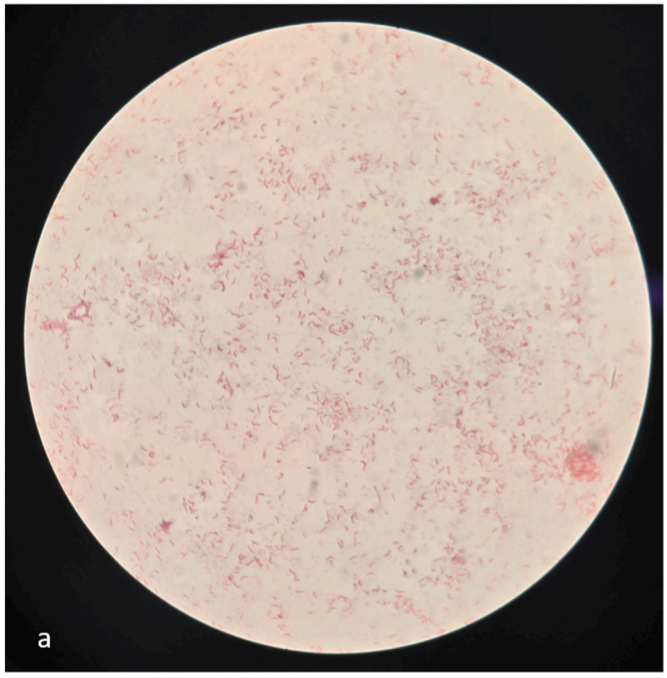

Fig. 1a. Short, spiral-shaped, Gram-negative bacteria with curved or helical ends under Gram stain.

https://doi.org/10.1016/j.jmii.2025.02.012
Received 27 December 2024; Received in revised form 10 February 2025; Accepted 27 February 2025
Available online 8 March 2025

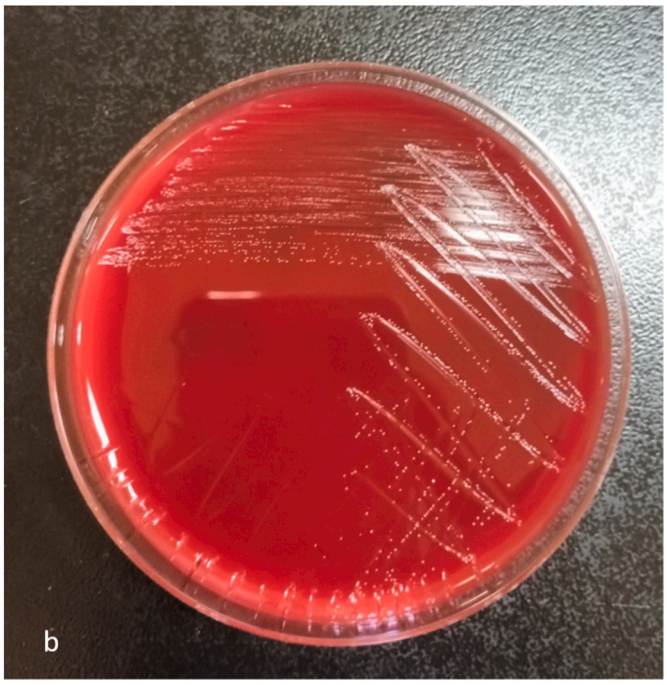

Fig. 1b. The characteristics of a single type colony were transparent, colorless, slightly convex, smooth surface, with a diameter ranging from 1 to 2mm on sheep blood agar (Becton Dickinson).

CRediT authorship contribution statement

Shu-Fang Kuo: Writing – original draft, Methodology, Investigation, Data curation, Conceptualization. **Tsung Yu Huang:** Data curation. **Chen-Hsiang Lee:** Writing – review & editing, Formal analysis, Data curation, Conceptualization.

Ethics approval

Ethics approval was not required for this study.

Declaration of competing interest

The authors have no conflicts of interest to declare.

References

1. McColl KE. Clinical practice. *Helicobacter pylori* infection. *N Engl J Med*. 2010;362:1597–1604.
2. Dascălu RI, Bolocan A, Păduaru DN, et al. Multidrug resistance in *Helicobacter pylori* infection. *Front Microbiol*. 2023;14, 1128497.
3. Zhang L, Zhou M, Lv W, Li T, Xu Y, Liu Z. Metagenomics assists in the diagnosis of a refractory, culture-negative pyoderma gangrenosum-like ulcer caused by *Helicobacter cinaedi* in a patient with primary agammaglobulinemia. *J Microbiol Immunol Infect*. 2023;56:1284–1287.
4. Destura RV, Labio ED, Barrett LJ, et al. Laboratory diagnosis and susceptibility profile of *Helicobacter pylori* infection in the Philippines. *Ann Clin Microbiol Antimicrob*. 2004;3:25.
5. Han XY, Tarrand JJ, Dickey BF, Esteva FJ. *Helicobacter pylori* bacteremia with sepsis syndrome. *J Clin Microbiol*. 2010;48:4661–4663.

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