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CORRESPONDENCE

A cluster of *Streptococcus suis* meningitis in a family who traveled to Taiwan from Southern Vietnam



To the Editor,

Streptococcus suis is an emerging zoonotic pathogen, and infection is easily misidentified. The first human case in Taiwan was reported in a swine farmer in 1994.¹ Hsueh et al² reported six isolates of *Streptococcus acidominimus* using commercial identification systems but later identified them as *S. suis* using 16S rRNA gene sequencing analysis. We also identified *S. suis* meningitis (initially misdiagnosed as *S. acidominimus* infection) in two members of a family who traveled from Southern Vietnam to Taiwan.

An 80-year-old woman who had hypothyroidism treated regularly with thyroxin presented to our emergency

department with chills, fever (39.7°C), headache, back pain, general weakness, consciousness disturbance, and a stiff neck. After brain computed tomography excluded intracranial hemorrhage, lumbar puncture was done, showing purulent cerebrospinal fluid (CSF) with numerous white blood cells and low glucose level [26 mg/dL; serum glucose (135 mg/dL)]. A Gram stain failed to demonstrate pathogens in CSF but detected Gram-positive cocci in blood culture samples. Ceftriaxone and vancomycin were given for community-acquired bacterial meningitis³ and dexamethasone, to prevent sequelae. Brain magnetic resonance imaging showed diffuse leptomeningeal enhancement

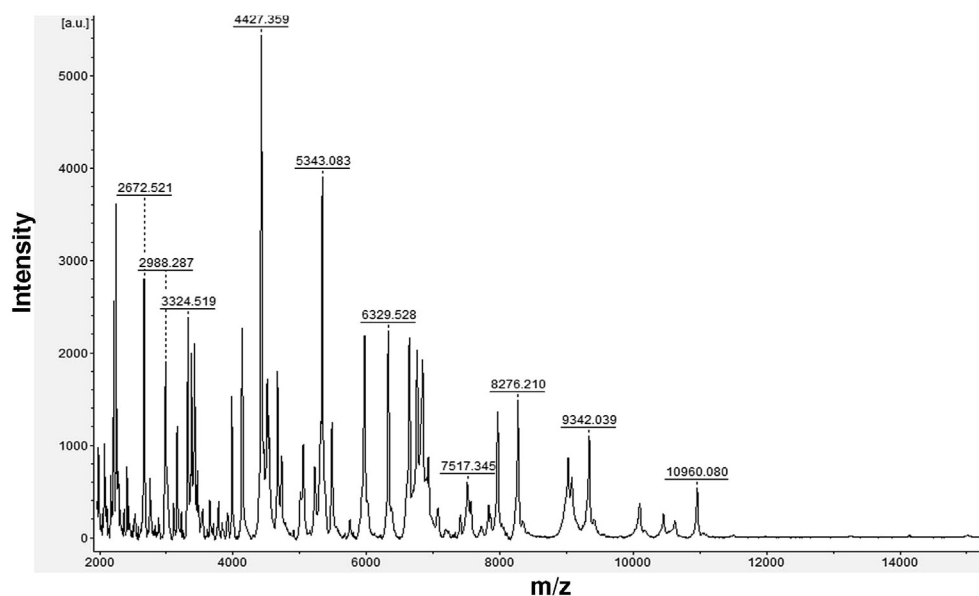


Figure 1. Spectra of *Streptococcus suis* isolates generated by the matrix-assisted laser desorption ionization–time of flight Bruker Biotyper.

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bilaterally over the cerebral hemispheres. Her fever subsided on the 2nd day after antibiotic therapy. *S. acidominimus* was identified in two sets of blood cultures and two sets of CSF cultures by the Phoenix Automated Microbiology System (Becton Dickinson Diagnostic Systems, Sparks, MD, USA). The isolates were susceptible to penicillin [minimum inhibitory concentration (MIC) \leq 0.0625 mg/L], amoxicillin (MIC \leq 0.25 mg/L), cefotaxime (MIC \leq 0.5 mg/L), cefepime (MIC \leq 0.5 mg/L), vancomycin (MIC \leq 0.5 mg/L), linezolid (MIC \leq 1 mg/L), erythromycin (MIC \leq 0.06 mg/L), and clindamycin (MIC \leq 0.03 mg/L). The antibiotic therapy was de-escalated to penicillin G 300 MU every 4 hours intravenously.

Unfortunately, her 43-year-old son also presented to an emergency department of another hospital with fever, chills, and headache on the same day. Both had been in Đồng Nai, Vietnam, for 47 days prior to coming to Taiwan. The diagnosis in his case was also bacterial meningitis and brain magnetic resonance imaging showed bilateral focal leptomeningeal and ventricular wall enhancement. The isolates from both persons were re-analyzed using matrix-assisted laser desorption ionization–time of flight mass spectrometry (MALDI-TOF MS; the Bruker Biotyper) and partial 16S rRNA sequencing analysis.^{3,4} *S. suis* was identified by MALDI-TOF MS (score 2.335; Fig. 1) and confirmed by partial 16S rRNA sequencing [accession number CP006246.1; 100% (857/857) identity]. Both patients (though recovered after penicillin G therapy for 3 weeks) developed moderate hearing loss.

S. suis is the most frequent cause of bacterial meningitis in Southern Vietnam and is associated with significant morbidity with hearing loss.^{5,6} Identification of *S. suis* is sometimes challenging because of its possible misidentification as *S. acidominimus* or *Streptococcus vestibularis* by the Phoenix System and as *Streptococcus sanguinis* by the Vitek II System.^{5,6} *S. suis* infection outbreaks are clustered in Asia,^{2,5,6} therefore, clinicians should be on the alert for infections with α -hemolytic streptococci in patients with meningitis or sepsis, especially patients who have resided in or traveled from Southern Vietnam where *S. suis* infections are endemic.

Conflicts of interest

All authors declare no conflicts of interest.

References

1. Yen MY, Liu YC, Wang JH, Chen YS, Wang YH, Cheng DL. *Streptococcus suis* meningitis complicated with permanent
2. Tsai HY, Liao CH, Liu CY, Huang YT, Teng LJ, Hsueh PR. *Streptococcus suis* infection in Taiwan, 2000–2011. *Diagn Microbiol Infect Dis* 2012;**74**:75–7.
3. Tsai HY, Lauderdale TL, Wang JT, Chen YS, Liu JW, Huang JH, et al. Updated antibiotic resistance and clinical spectrum of infections caused by *Streptococcus pneumoniae* in Taiwan: emphasis on risk factors for penicillin non-susceptibilities. *J Microbiol Immunol Infect* 2013;**46**:345–51.
4. Lee WS, Ou TY, Chen FL, Hsu CW, Jean SS. *Shewanella putrefaciens* bacteremia in a uremic patient receiving hemodialysis. *J Microbiol Immunol Infect* 2016;**49**:159–60. <http://dx.doi.org/10.1016/j.jmii.2014.01.010>.
5. Mai NT, Hoa NT, Nga TV, Linh le D, Chau TT, Sinh DX, et al. *Streptococcus suis* meningitis in adults in Vietnam. *Clin Infect Dis* 2008;**46**:659–67.
6. Huang YT, Teng LJ, Ho SW, Hsueh PR. *Streptococcus suis* infection. *J Microbiol Immunol Infect* 2005;**38**:306–13.

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