Pyogenic discitis due to *Abiotrophia adiacens*®

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**ABSTRACT**

**INTRODUCTION:** *Abiotrophia* species have been referred to as nutritionally variant streptococci because of their fastidious nutritional requirements for growth. *Abiotrophia* species are difficult to identify with conventional solid culture.

**PRESENTATION OF CASE:** A 48-year-old woman was admitted to our hospital with severe low back pain and body temperature of 38.2 °C. Magnetic resonance imaging revealed edema and contrast enhancement of the L4 and L5 vertebral bodies with high signal intensity in the L3–4 and L4–5 intervertebral discs on the T2-weighted images. The patient underwent needle biopsy of the L3–4 disk. Cultures of disk biopsy samples and blood yielded gram positive cocci in short chains with scanty growth on chocolate agar. Further subculture with supplemented medium and subsequent 16S ribosomal RNA gene sequencing identified the pathogen as *Abiotrophia adiacens*. The patient was treated with intravenous ampicillin. At 6-month follow-up, the patient was free of symptoms.

**DISCUSSION:** Causative microorganisms remain unidentified in 25–40% of spinal infection cases. *Abiotrophia* species grow poorly on conventional solid media, and require pyridoxal or thiol group supplementation. Use of Brucella HK agar or CAM agar plate is helpful for detection of *Abiotrophia* species. We first confirmed the diagnosis by direct identification of *Abiotrophia adiacens* from infected disk. *Abiotrophia* species are one of the major pathogens of infective endocarditis accounting for 5% of cases. Considering their fastidious nature, it is likely that most cases of *Abiotrophia* discitis are falsely classified as culture-negative discitis; therefore, their role in pyogenic discitis may be underestimated.

**CONCLUSION:** Subculture using nutritionally supplemented media is crucial for their identification.

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**1. Introduction**

*Abiotrophia* species have been referred to as nutritionally variant streptococci because of their fastidious nutritional requirements for growth. The organisms are part of the normal oral, genitourinary, and intestinal floras. *Abiotrophia* species sometimes cause sepsis and bacteremia, and are especially known as one of the major pathogens of infective endocarditis. *Abiotrophia* species are difficult to identify with conventional solid culture. The authors describe a rare case of spondylodiscitis due to *Abiotrophia adiacens*.

**2. Presentation of case**

A 48-year-old unemployed woman was admitted to our hospital with a two-week history of severe low back pain. She suffered from Parkinson’s disease, but she was not a compromised host. On admission, she was unable to sit up because of the pain. Her vital signs were as follows: temperature 38.2 °C, pulse 80 beats/min, and blood pressure 100/68 mmHg. Physical examination revealed moderate tenderness to palpation on the spinous processes of lower lumbar spine. She was neurologically intact, except for slight weakness in her right toe. The peripheral white blood cell count was 11,600/mm³, and her C-reactive protein level was 9.9 mg/dl. Plain X-ray showed degenerative changes of the lumbar vertebral with narrowing of the disk spaces at L3–4, and L4–5. Magnetic resonance imaging revealed edema and contrast enhancement of the L4 and L5 vertebral bodies with high signal intensity in the L3–4 and L4–5 intervertebral discs on the T2-weighted images (Fig. 1).

The patient underwent needle biopsy of the L3–4 disk using fluoroscopy. Histological studies showed infiltration of neutrophils...
and deposition of fibrin. Cultures of disk biopsy samples and blood yielded gram positive cocci in short chains with scanty growth on chocolate agar. Further subculture with supplemented medium and subsequent 16S ribosomal RNA gene sequencing identified the pathogen as *Abiotrophia adiacens*.

As a result of the survey regarding bacteremia origin, we could detect the dental caries. The patient was treated with intravenous ampicillin (8 g/day) for 6 weeks. The clinical and laboratory test abnormalities improved within 2 weeks. At 6-month follow-up, the patient was free of symptoms without sign of relapse of the infection.

3. Discussion

Spinal infections can be devastating and result in significant pain, deformity, and neurologic deterioration.2,3 Staphylococcus aureus is the most common etiologic organism of spinal infections, followed by *Escherichia coli, Streptococcus* species, *S. epidermidis*, and *Pseudomonas* species; however, causative microorganism remain unidentified in 25–40% of the cases.

*Abiotrophia* species (*A. adiacens* and *A. defectiva*) have formerly been referred to as nutritionally variant streptococci because of their fastidious nutritional growth requirements.1 The organisms grow poorly on conventional solid media, and require pyridoxal or thiol group supplementation. Use of Brucella HK agar or GAM agar plate is helpful for detection of *Abiotrophia* species. Prolonged incubation (at least 72 h) is also recommended.

Spinal infection due to *Abiotrophia* species is extremely rare, and only four cases have been reported to date (Table 1).4–6 In the previous reports, this organism was identified only from blood sample by using Columbia blood and chocolate agar plates. In the present case, we first confirmed the diagnosis by direct identification of *Abiotrophia adiacens* from infected disk.

*Abiotrophia* species are one of the major pathogens of infective endocarditis accounting for 5% of cases. *Abiotrophia* endocarditis carries higher morbidity and mortality than endocarditis caused by other Streptococci, reflecting their strong virulence. *Abiotrophia* discitis reported previously occurred concomitantly with infective endocarditis although repeated echocardiography showed normal study in our case. Patients with history of infective endocarditis or valve disease may be candidate for exploration of *Abiotrophia* discitis. We were able to detect her dental cavity, and it could be a predisposing factor of bacteremia.

Considering their fastidious nature, it is likely that most cases of *Abiotrophia* discitis are falsely classified as culture-negative discitis; therefore, their role in pyogenic discitis may be underestimated.

4. Conclusion

Adequate diagnosis and treatment of this entity requires a high index of suspicion for the organism, even if cultures are negative. Subculture using nutritionally supplemented media is crucial for their identification.

Conflict of interest

None to declare.

Funding

None to declare.

Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy
of the written consent is available for review by the Editor-in-Chief of this journal on request.

**Author contributions**

K.U. assisted in the surgery, was involved in the preoperative work up and postoperative care of the patient, and wrote the paper.

H.C. performed the surgery, was involved in the preoperative work up and postoperative care of the patient, and helped in the preparation of the write up.

K.T., A.S. and S.T. were involved in the preoperative work up and postoperative care of the patient, and revised the final article.

Y.H. and K.O. involved in the bacteriological investigations.

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