First Case of Skin and Soft Tissue Infection Caused by Mycoplasma hominis in a Pediatric Immunocompromised Patient

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Dear Editor,

Mycoplasma hominis is a part of the urogenital commensal flora, with higher bacterial loads in women compared with men. Thus, infections of M. hominis are usually associated with endocervicitis and pelvic inflammatory diseases. Although rare, M. hominis can also cause various extra-urogenital infections, such as skin and soft tissue infections (SSTIs) [1, 2], central nervous system (CNS) infection, mediastinitis, and disseminated infection [3-6]. Because M. hominis lacks a cell wall and shows resistance to cell wall-acting antibiotics, including carbapenem and glycopeptides, it is important to accurately identify this bacterium and initiate appropriate treatment in the case of infection. Clindamycin shows the highest in vitro activity against M. hominis, followed by fluoroquinolones [4].

A 13-yr-old girl with aplastic anemia was admitted to the Seoul St. Mary’s Hospital, Korea, for allogeneic hematopoietic cell transplantation (HCT). On HCT day 6, the patient developed a fever, but all culture analyses, including blood, urine, and sputum, were negative. It was presumed that the fever was caused by acute graft-versus-host disease (GvHD), considering the presence of a skin rash and diarrhea that accompanied the symptoms. The intravenous antibiotic treatment (meropenem, teicoplanin) was continued because of her immune-compromised state. However, gastrointestinal (GI) symptoms were aggravated, and thus methylprednisolone, methotrexate, and cyclophosphamide were added to the treatment. Despite these treatment efforts, bloody diarrhea and fever persisted. On HCT day 28, a colonoscopy and random biopsies were performed to identify the cause of bloody diarrhea, and the biopsies showed findings consistent with acute GvHD and positive immunohistochemical (IHC) staining for cytomegalovirus (CMV). CMV was also detected in the blood by real-time quantitative PCR (RQ-PCR) (AccuPower CMV Quantitative PCR, Bioneer, Daejeon, Korea). After treatment (ganciclovir) for two months, the CMV disappeared, which was confirmed by biopsies and blood RQ-PCR.

During the high-intensity immunosuppressive therapy, multifocal skin abrasions in the perianal area occurred because of persistent diarrhea. On HCT day 120, pressure sores developed on the buttocks. Vancomycin and amphotericin B were added to the regimen to treat these lesions. However, painful swelling in the left inguinal area and a high fever developed on HCT day 127; thus, antibiotic therapy was changed to tigecycline and arbekacin. A core needle biopsy was performed, and pus was aspirated. A Gram stain from this aspiration revealed no microor-
organisms. The specimen was inoculated on blood agar plates (BAPs), MacConkey agar plates, chocolate agar plates, and Brucella broth, and cultured both aerobically (35°C in 5% CO₂) and anaerobically. After two days of incubation, the growth of pinpoint and translucent colonies was observed on the BAP cultured anaerobically. Gram staining of these colonies revealed no microorganisms. For identification with Vitek mass spectrometry (MS), a colony was picked up and placed on a target plate (Vitek MS-DS, bioMérieux, Marcy-l’Etoile, France), and 1 μL of the α-cyano-4-hydroxycinnamic acid solution (CHCA) matrix solution (bioMérieux) was applied to the spot. *M. hominis* was identified by using the Vitek MS IVD v2.0 database (bioMérieux) (Fig. 1). This result was confirmed by real-time PCR (GeneFinder, Infopia, Anyang, Korea). In addition, the Mycoplasma IST2 kit (bioMérieux) showed the growth of <10⁶ *M. hominis*, which was susceptible to doxycycline, josamycin, ofloxacin, ciprofloxacin, and pristinamycin. Accordingly, the antibiotic treatment was changed to levofloxacin; however, the patient died owing to uncontrolled GvHD and SSTI on hospital day 141.

In this case, we presume that the urethral catheterization might have been the route of bacterial invasion. Although the rate of genital colonization of *M. hominis* in sexually inactive women is significantly lower than that in sexually active women [7], we report an immunocompromised prepubescent patient with SSTI caused by *M. hominis*.

Identification of *M. hominis* infections by culture is challenging because it is a fastidious process, and the median time needed for the growth of *M. hominis* is six days [3]. Therefore, when a Gram stain reveals abundant neutrophils but no bacteria, clinical microbiologists should suspect the possibility of infection caused by *Mycoplasma*, and use of special media (IST2 kit and A7, A8 agar) and culture period extension should be considered. Direct molecular detection from the specimen can be an alternative method.

The suitability of matrix-assisted laser desorption-time-of-flight MS for the identification of *M. hominis* is controversial [4, 6, 8]. Identification using molecular methods such as 16S rDNA sequencing can also be used [6].

In conclusion, the prevalence of infections caused by *M. hominis* might be underestimated because of the difficulty in identifying this potential pathogen in routine microbiological analyses. This case highlights the need for early diagnosis *M. hominis* infection and the importance of initial appropriate chemotherapy, especially in immunocompromised hosts.

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**Fig. 1.** Result of matrix-assisted laser desorption/ionization time of flight (MALDI TOF)-mass spectrometry for the identification of *Mycoplasma hominis*. Abbreviations: m, mass; z, charge; Da, Dalton.
Authors’ Disclosures of Potential Conflicts of Interest

No potential conflicts of interest relevant to this article were reported.

REFERENCES