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Multiple Intraabdominal Abscesses Caused by *Mycoplasma hominis* Infection Following Simultaneous Pancreas-Kidney Transplantation

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Dear Editor,

Mycoplasma hominis is a member of the common urogenital flora with the potential to cause genital and extragenital infections, the latter of which mainly occur in immunocompromised hosts [1]. *M. hominis* is frequently associated with post-transplant infection in extragenital cases. To expand our knowledge about post-transplant *Mycoplasma* infection of immunocompromised hosts, we report a case of *M. hominis* infection causing multiple abscesses around the pancreas graft after simultaneous pancreas-kidney transplantation in a patient with diabetes. Because this report is not a clinical trial/research, an approval from the Institutional Review Board was exempted.

The patient was a man in his 40s with a long history of type I diabetes, hypertension, and secondary hyperparathyroidism. In 2016, he received an allogeneic cadaver simultaneous pancreas-kidney transplantation. He was placed on immunosuppressive therapy from the day of surgery. On postoperative day 21, he complained of left-side abdominal pain and had a 38℃ spike-like fever, which increased to 39.0℃ the next day. Blood examination revealed a white blood cell count of 8.17×10^9/L and C-reactive protein level of 35.6 mg/L. Computed tomography (CT) scanning revealed abscesses around the pancreas graft, and antimicrobial treatment with imipenem/cilastatin (0.5 g once a day) was started. On postoperative day 24, the abscesses around the pancreas graft were drained, but the bacterial culture was negative. The antimicrobial agent was changed to sulbactam/cefoperazone (1 g three times a day); however, his fever persisted and increased to 39.2℃ on postoperative day 29, and the white blood cell count rose to 10.7×10^9/L. Another CT scan revealed the same abscesses around the pancreas graft as well as at the left inguinal and right intraperitoneal regions (Fig. 1).

On postoperative day 31, drainage was performed again and three abscess specimens were tested. Gram staining did not show any visible microorganisms. These specimens were then cultured on 5% sheep blood and chocolate agar media (Kyokuto Pharmaceutical Industrial Co., Ltd., Tokyo, Japan) under aerobic conditions with 5% carbon dioxide, bromothymol blue lactate (BTB) agar medium (Eikenkagaku Co., Ltd., Tokyo, Japan) under anaerobic conditions, and ABHK/Bacteroides Bile Esculin (BBE) agar medium (Nissui Pharmaceutical Co., Ltd., Tokyo, Japan) under anaerobic conditions at 35℃, respectively. For two days, there was no apparent growth of microorganisms

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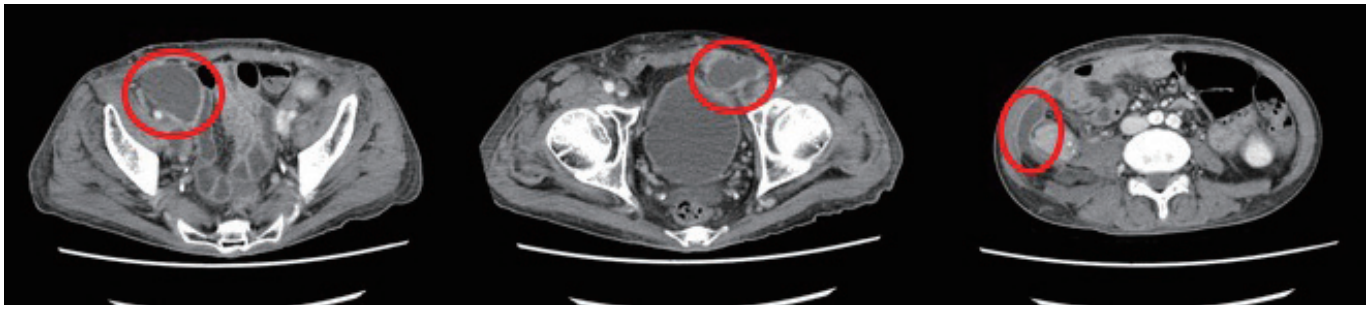

Fig. 1. Computed tomography (CT) scan of multiple abscesses. On postoperative day 29, the CT scan indicated abscesses around the pancreas graft and at the left inguinal and right intraperitoneal regions.

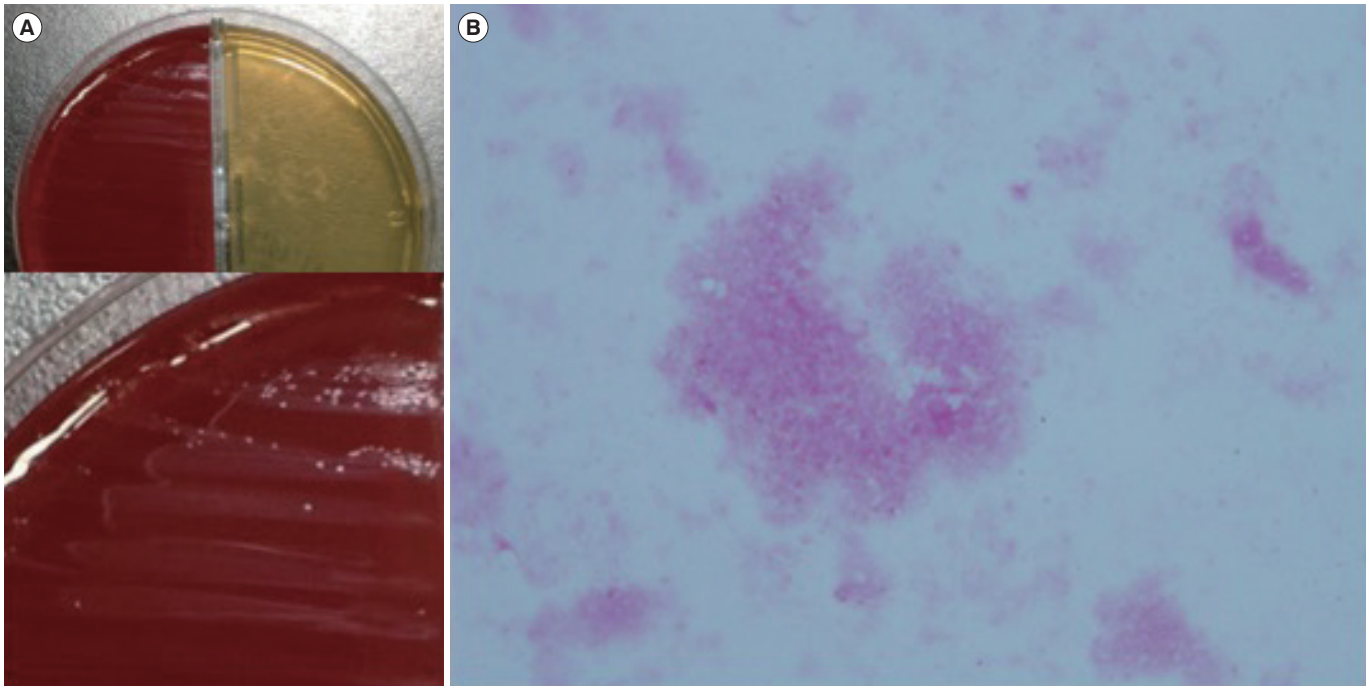

Fig. 2. Bacteriological characterizations. (A) Colonies on the ABHK/BBE agar. Colonies grown on ABHK/BBE agar medium under anaerobic conditions at 35℃; tiny translucent colonies were slightly apparent after incubation for three days. (B) Gram-stained smear of colonies. Gram stain (1,000×). No bacteria with complete cellular morphology were observed among the Gram-stained colonies, and only unclear structures such as granules were detectable.

on 5% sheep blood/chocolate or BTB agar medium. However, after three days, tiny translucent colonies slightly grew on the ABHK/BBE agar (Fig. 2A). After incubation for two more days, large water droplet-like colonies appeared on the ABHK/ BBE agar. A Gram-stained smear of colonies exhibited pink amorphous structures without a distinct bacterial morphology (Fig. 2B). Therefore, we suspected mycoplasma. The colonies were sub-cultured on blood agar medium (Eikenkagaku Co., Ltd.) under aerobic conditions with 5% carbon dioxide at 35℃ and on *Brucella* HK agar medium (Kyokuto Pharmaceutical Industrial Co., Ltd.) under anaerobic conditions at 35℃.

The organism demonstrated more rapid growth under anaerobic than aerobic conditions; colonies appeared on blood agar medium after 72-hour incubation and on *Brucella* HK agar medium after 48-hour incubation. A disk-diffusion test under anaerobic conditions yielded a growth-inhibition zone around disks containing minocycline (MINO), clindamycin, ciprofloxacin, or levofloxacin, but not around those containing β-lactams or erythromycin. Based on the antimicrobial susceptibility profile, we suspected *M. hominis* infection. Amplification of part of the

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16S rRNA region of chromosomal DNA from the colonies, using *M. hominis*-specific primers [2], yielded a 334-bp PCR product, confirming the identification of *M. hominis* from all specimens. Therefore, on postoperative day 38, the antimicrobial agent was changed to MINO (100 mg twice a day); the patient's fever resolved, pathology improved, and he was discharged on postoperative day 51.

Although rare, extragenital *M. hominis* infection is frequently associated with post-transplant infection of the lungs, heart, kidney, or liver [1, 3, 4]. Diabetes is the most common underlying condition of patients experiencing post-renal transplant infection, with five of seven case reports published after 2,000 involving diabetic patients [5-9].

Indeed, this patient was immunocompromised and at very high risk of infection following simultaneous pancreas-kidney transplantation. Generally, β-lactams are suggested for surgical-site antimicrobial prophylaxis; however, they are not applicable to *M. hominis* infection because this organism lacks a cell wall. *M. hominis* is also resistant to clarithromycin and erythromycin [10], but is susceptible to clindamycin, tetracyclines, and fluoroquinolones [1, 4].

Thus, *M. hominis* should be considered a potential etiological agent in the differential diagnosis of post-renal transplant surgical-site infections, especially in immunocompromised patients and when there is no response to broad-spectrum β-lactams. Blood cultures should be followed up for at least two - three days to monitor small colonies and recheck the Gram stain results. Upon confirmation by PCR, suggestion of *M. hominis* infection that is unresponsive to clarithromycin and erythromycin is warranted to initiate appropriate treatment.

Authors' Disclosures of Potential Conflicts of Interest

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

REFERENCES

1. Meyer RD and Clough W. Extragenital *Mycoplasma hominis* infection in adults: emphasis on immunosuppression. Clin Infect Dis 1993;17:S243-9.
2. Blanchard A, Yañez A, Dybvig K, Watson HL, Griffiths G, Cassell GH. Evaluation of intraspecies genetic variation within the 16S rRNA gene of *Mycoplasma hominis* and detection by polymerase chain reaction. J Clin Microbiol 1993;31:1358-61.
3. Sampath R, Patel R, Cunningham SA, Arif S, Daly RC, Badley AD, et al. Cardiothoracic transplant recipient *Mycoplasma hominis*: an uncommon infection with probable donor transmission. EBioMedicine 2017;19:84-90.
4. Horiuchi K, Matsumoto T, Ohno Y, Kasuga E, Negishi T, Yaguchi T, et al. Intra-abdominal *Mycoplasma hominis* infection in a liver transplant recipient: a case report. Jpn J Infect Dis 2014;67:232-3.
5. Camara B, Mouzin M, Ribes D, Esposito L, Guitard J, Game X, et al. Perihepatitis and perinephric abscess due to *Mycoplasma hominis* in a kidney transplant patient. Exp Clin Transplant 2007;5:708-9.
6. Geissdörfer W, Schörner C, Lohoff M. Systemic *Mycoplasma hominis* infection in a patient immunocompromised due to combined transplantation of kidney and pancreas. Eur J Clin Microbiol Infect Dis 2001;20:511-2.
7. Loupy A, Join-Lambert OF, Bébéar CM, Legendre C, Anglicheau D. Urogenital mycoplasma: an emerging cause of deep wound infection after kidney transplantation? NDT Plus 2008;4:239-40.
8. Pastural M, Audard V, Bralet MP, Rémy P, Salomon L, Tankovic J, et al. *Mycoplasma hominis* infection in renal transplantation. Nephrol Dial Transplant 2002;17:495-6.
9. Rohner P, Schnyder I, Ninet B, Schrenzel J, Lew D, Ramla T, et al. Severe *Mycoplasma hominis* infections in two renal transplant patients. Eur J Clin Microbiol Infect Dis 2004;23:203-4.
10. Pereyre S, Gonzalez P, De Barbeyrac B, Darnige A, Renaudin H, Charron A, et al. Mutations in 23S rRNA account for intrinsic resistance to macrolides in *Mycoplasma hominis* and *Mycoplasma fermentans* and for acquired resistance to macrolides in *M. hominis*. Antimicrob Agents Chemother 2002;46:3142-50.