CAS-062

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A Case Report of a Skin Infection Caused by *Mycobacterium mageritense* in a Healthy Patient in Japan

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Introduction

Mycobacterium mageritense (newly classified as *Mycolicibacterium mageritense*) is a rapidly growing nontuberculous mycobacterium (NTM) that rarely causes skin infections in both immunocompromised and healthy individuals. Here, we report a case of skin infection caused by *M. mageritense* in a healthy adult patient, with the results of genomic characterization.

Case presentation

1. Patient symptoms

A 48-year-old healthy male patient presented with a persistent skin infection on his right lower leg (**Fig 1A**), accompanied by inguinal lymphadenitis (**Fig 1B**). Bacterial cultures from both infected foci detected a mycobacterium, which was identified as *M. mageritense* using mass spectrometry.

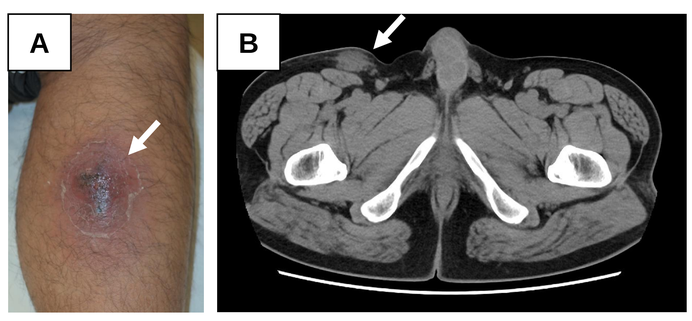

Figure 1: Skin infection on right lower leg (**A**) and right inguinal lymphadenitis (**B**).

2. Therapeutic course and outcome

During treatment (**Fig 2**), the abscess was surgically opened, repeatedly irrigated, and treated daily with povidone-iodine-sugar paste. Various antibiotic regimens were administered and adjusted based on previous case reports and antibiotic susceptibility testing (**Table 1**). The isolated bacteria from the skin and inguinal lymph showed resistance to tobramycin, trimethoprim–sulfamethoxazole, and clarithromycin. Although linezolid was susceptible, it was discontinued due to hepatotoxicity. Finally, the patient was treated mostly with a combination of levofloxacin and minocycline, which resulted in gradual improvement and recovery after four months of therapy.

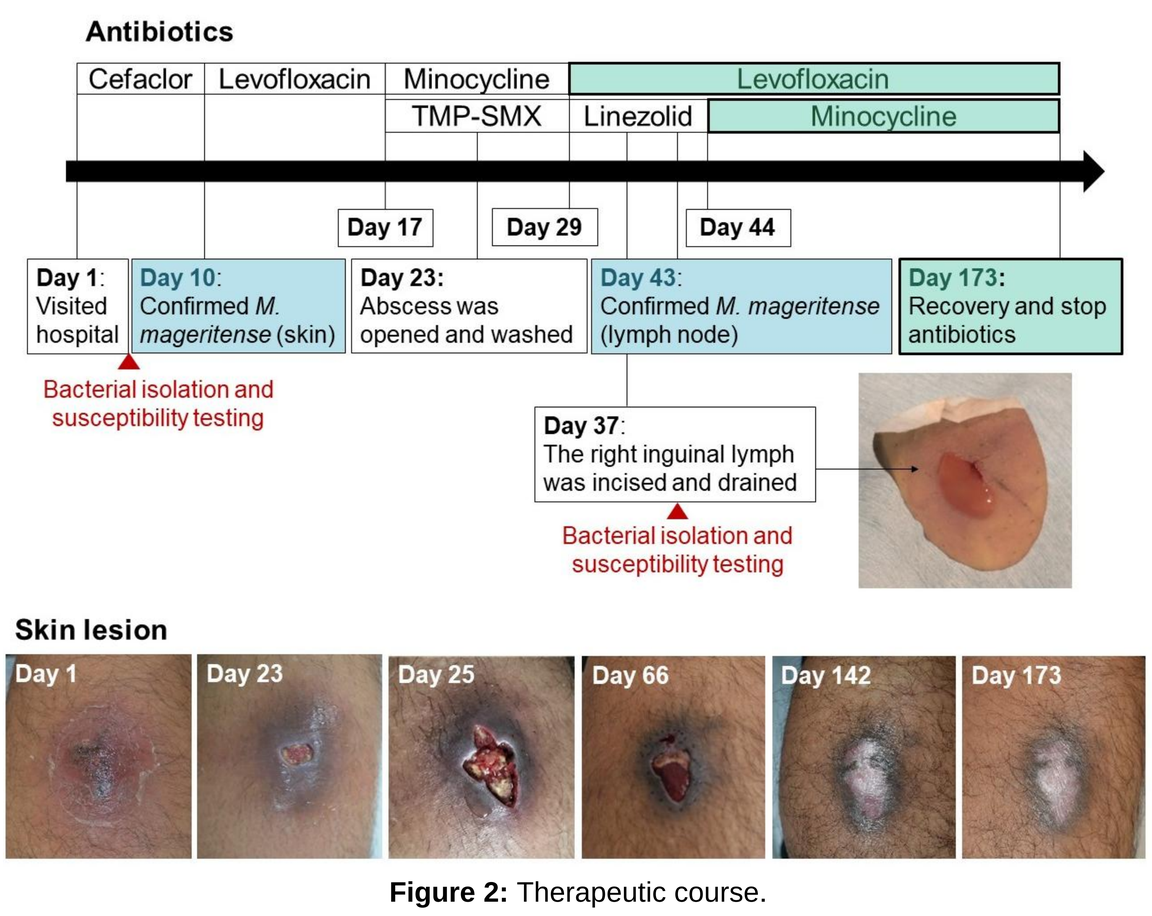

Figure 2: Therapeutic course.

Table 1: The antibiotic susceptibility testing of isolated *M. mageritense*.

Antibiotics	MIC (μg/mL)	Susceptibility
AMK	16	S
TOB	**>16**	**R**
IPM	<=2	S
FPM	4	n.d.
MEPM	4	S
LVFX	<=1	n.d.
MOFX	<=0.25	S
STFX	<=0.25	n.d.
TMP-SMX	**80**	**R**
DOXY	2	I
LZD	2	S
CZM	1	n.d.
AZT	>64	n.d.
CAM	**>64**	**R**

MIC = minimum inhibitory concentration, S = susceptible, R = resistance, I = intermediate, n.d. = not determined

Antibiotic abbreviations

AMK = amikacin, TOB = tobramycin, IPM = imipenem, FPM = faropenem, MEPM = meropenem, LVFX = levofloxacin, MOFX = moxifloxacin, STFX = sitafloxacin, GFLX = gatifloxacin, OFX = ofloxacin, TMP-SMX = trimethoprim-sulfamethoxazole, DOXY = doxycycline, TG = tigecycline, MINO = minocycline, LZD = linezolid, TDZ = tedizolid, CZM = clofazimine, CFX = cefoxitin, CTX = ceftriaxone, CFP = cefepime, AZT = azithromycin, CAM = clarithromycin

Conclusion

This case highlights that the rare NTM, ***M. mageritense***, can cause a skin infection in a healthy patient. The patient was successfully treated through wound management and antibiotic therapy. ***M. mageritense*** shows resistance to macrolides, which are often used for NTM infections. More clinical case studies are required to understand this infection.

Characterization of *M. mageritense*

Antibiotic resistance genes were identified and compared with five other *M. mageritense* strains deposited on the NCBI database. We found *erm(40)*, *aac(2')-Ib*, *tet(V)*, *RbpA*, *dfrA3*, and *sul4* genes in all *M. mageritense* strains (**Fig 3**). These results were consistent with the resistance to TOB, TMP–SMX, and CAM (**Table 1**). Core genome analysis revealed three distinct clusters based on isolation source and country, including clinical Spanish strains, clinical Japanese strains, and environmental strains (**Fig 3**).

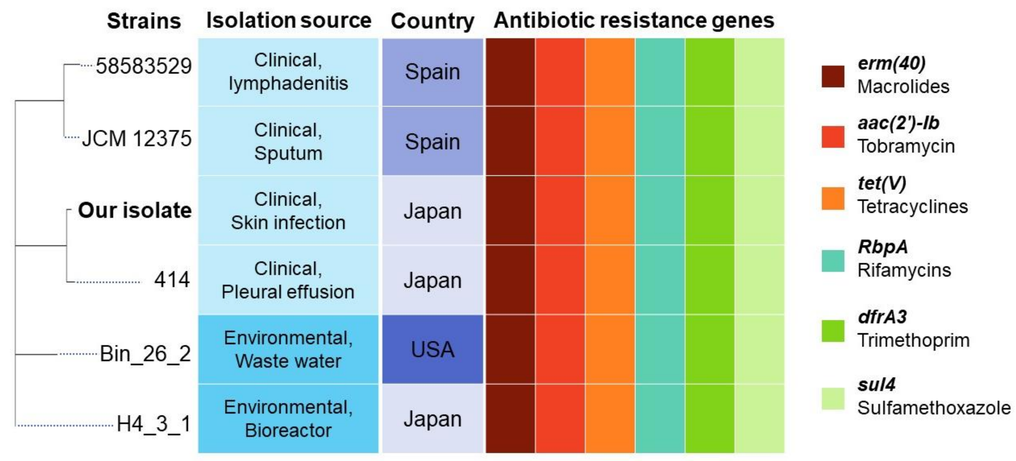

Figure 3: Antibiotic resistance gene identification, and core-genome phylogeny.

Discussion

Several case reports demonstrated skin infections caused by *M. mageritense* even in healthy individuals (**Table 2**). Surgical intervention and antibiotic therapy successfully treated various patients for a duration ranging from 2 to 6 months. **Fluoroquinolones** were susceptible and effective against *M. mageritense* skin infection. Although **clarithromycin** is the first-line antibiotic for rapidly growing NTM infections, it is consistently resisted by *M. mageritense.*

Table 2: The case reports of skin infection caused by *M. mageritense*.

Age (y)/ Sex	Immune status	Country, years	Antibiotic susceptibility			Treatment	Surgery	Duration (m)
			S	I	R			
43/F[1]	HC	USA, 2004	**LVFX**, AMK, IPM, LZD, SMX	CFX	**CAM**	**LVFX**, TMP-SMX	No	3
56/F[1]	HC	USA, 2004	**GFLX,** AMK, CFX, IPM, LZD, SMX	-	**CAM**	**GFLX**	No	2
70/M[2]	IC	Japan, 2018	**LVFX**, MINO	-	**CAM**	**LVFX**, MINO	No	9
48/M[3]	HC	USA, 2020	**MOFX,** MINO	-	-	**MOFX**, MINO	No	3
38/M[4]	HC	India, 2020	**LVFX**, **MOFX**, AMK, CFX, IPM, LZD, DOXY, TG	-	**CAM**, CTX, CFP	**LVFX**, AMK, LZD, TMP-SMX	Yes	6
40/F[5]	IC	USA, 2021	**CPFX,** AMK, CFX, IPM, LZD	-	**CAM**, TMP-SMX	**CPFX**, AMK, IPM, TDZ	Yes	4
66/F[6]	HC	India, 2021	**MOFX,** DOXY, AMK	-	-	**OFX**, DOXY	Yes	2
25/M[7]	HC	Australia, 2021	**CPFX**, **MOFX**, TMP-SMX, LZD	-	**CAM**, TOB, AMK	**CPFX**, TMP-SMX	No	3
49/F[8]	IC	Japan, 2024	**LVFX**, **MOFX**, IPM, LZD	AMK, DOXY, MEPM	**CAM**, TOB, TMP-SMX	**LVFX**, DOXY	Yes	6
51/F[9]	HC	Japan, 2025	**LVFX**, **MOFX**, AMK, LZD, DOXY	-	**CAM**, TOB, TMP-SMX, MEPM	**LVFX**, DOXY	Yes	4
Our case	HC	Japan, 2025	**MOFX,** AMK, IPM, MEPM, LZD	DOXY	**CAM**, TMP-SMX, TOB	**LVFX**, MINO	Yes	4

F = female, M = male, HC = healthy/immunocompetent, IC = immunocompromised, y = years, m = months

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