

INTRODUCTION

- *M. abscessus* (MA) is a rapidly growing nontuberculous mycobacterium (NTM) found in water and soil which causes pulmonary, skin/soft tissue, and bone infections in children.¹
- This uncommon infection can be difficult to treat, requiring a combination of antibiotics for prolonged periods of time.¹⁻⁵
- A newer potential agent for treatment is omadacycline, a novel synthetic tetracycline.⁶⁻⁹

CASE PRESENTATION

- 15 year old previously healthy female with open fracture of tibia/fibula following ATV accident (Fig. 1)
- Surgically debrided, open reduction and internal fixation (Fig. 2)
- Completed 42-day course of piperacillin-tazobactam for polymicrobial infection at time of initial presentation.
- Cultures cleared, but patient had poor healing of wounds and persistently exuded pus despite antibiotics.
- Returned to hospital 8 weeks after initial presentation



Figure 1: Initial radiograph of patient's severely comminuted fractures of the tibia and fibula



Figure 2: Radiograph demonstrating near-anatomic re-alignment of tibia. Note presence of retained hardware

CASE DESCRIPTION

PHYSICAL EXAM

- Vitals: T_{max} 36.9°C, HR 108, BP 115/78, RR 17, SpO₂ 100%
- Right lower extremity: medial tibial wound with bloody/cloudy drainage
- Intraoperative inspection: "Exudate diffusely around fracture and drainage had eroded through multiple spots in the closed incision."

DIFFERENTIAL DIAGNOSIS

- Osteomyelitis, septic arthritis, cellulitis, fungal infections, NTM infection

TESTS



- Intraoperative aerobic/anaerobic cultures: No growth
- Intraoperative fungal cultures: No growth
- Intraoperative Acid-Fast Bacillus cultures: *M. abscessus* sub. *bolletii* positive for *erm* macrolide resistance gene:

Antibiotic	TMP-SMX	Linezolid	Ciprofloxacin	Imipenem	Moxifloxacin	Cefoxitin	Amikacin	Doxycycline	Minoocycline	Tigecycline†	Clarithromycin	Clofazimine†
MIC	8/152	16	>4	16	>8	32	8	>16	>8	0.12	>16	0.25
Susceptibility	R	I	R	I	R	I	S	R	R		R	

† S: Susceptible; I: Intermediate; R: Resistant

‡ CLSI susceptibility break-points are unavailable for these agents; no interpretation of susceptibility can be given

FINAL DIAGNOSIS

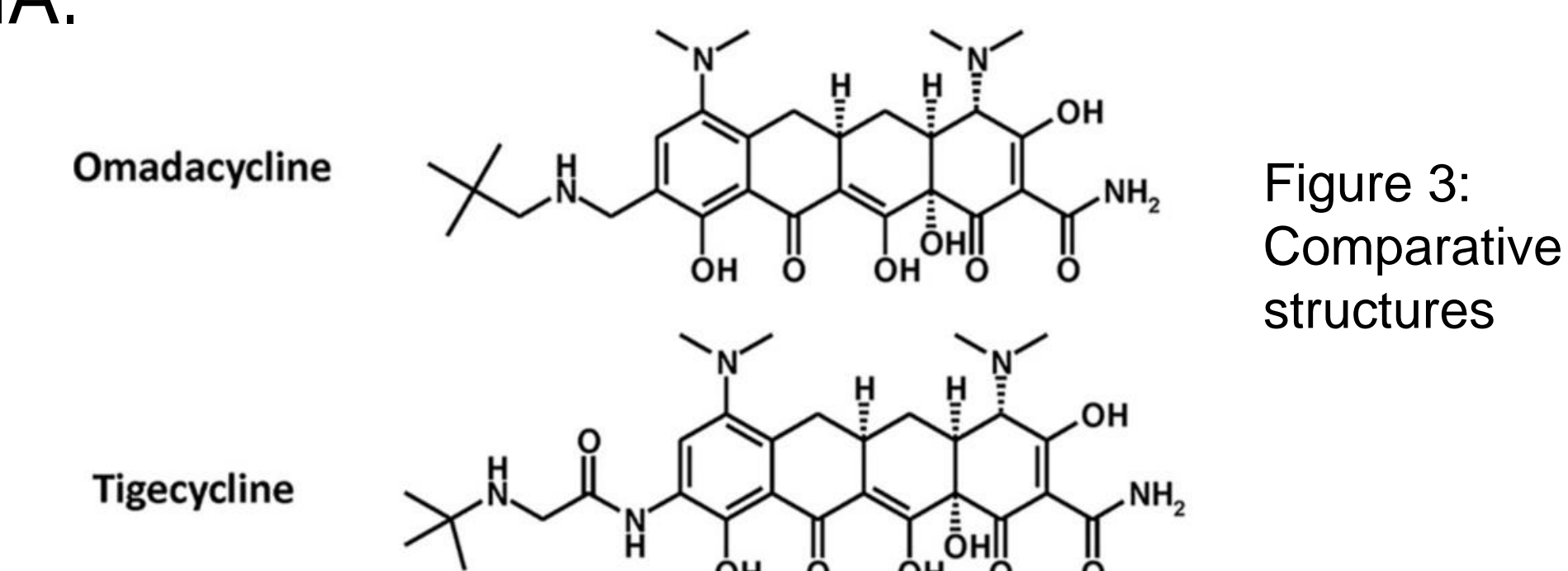
- Osteomyelitis due to *Mycobacterium abscessus* sub. *bolletii*

TREATMENT

- Intravenous amikacin, cefoxitin, and linezolid x 6 months
- Developed evidence of nephrotoxicity and mild myelosuppression, discussed with MA experts
- Given discussions, transitioned to indefinite course of oral linezolid + omadacycline + clofazimine

DISCUSSION & REVIEW

- MA is an uncommon cause of osteomyelitis, associated with significant morbidity and poor prognosis.³
- MA infections require aggressive multidisciplinary management, often requiring multiple surgeries and combination antibiotic therapy.
- There is a paucity of data regarding treatment regimens and duration for MA infection.
- There are limited data to support compassionate, off-label use of clofazimine for treatment of MA.
- Tigecycline has been used in salvage therapy for MA infections, but has an unfavorable side-effect profile.^{5,10}
- Omadacycline is structurally similar to tigecycline (Fig 3), is better tolerated, and has shown promise *in vitro* against MA.



CONCLUSION

- MA is a challenging but uncommon cause of infection in immunocompetent patients.
- Additional research is needed to identify safe and efficacious antibiotic agents and regimens with activity against MA.

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