

## Introduction

The location of New Orleans, Louisiana allows a large industry of fishery and fish processing and a majority of its citizens to take up aquatic pastime. As such, they are at an increased risk of *Mycobacterium marinum* infection due to its increased risk of exposure. *M. marinum* is a non-tuberculosis mycobacterium that is frequently found in soil, plants, and fish(1). There are rare reports of disseminated infections in the immunocompromised, but in the immunocompetent, *M. marinum* infections are limited to a nodular granulomatous disease constrained to the skin and soft tissues(2). Infections occur when open wounds are exposed to contaminated water or animals, and if treated early and correctly, the morbidity is low. Untreated, however, lesions can lead to osteomyelitis and tenosynovitis

The diagnosis and treatment of *Mycobacterium marinum* is difficult. It requires a lengthy time for growth, and antibiotics are required for at least a few months for the complete resolution and eradication of the infection. We performed a retrospective analysis on patients with confirmed *M. marinum* infection and outlined the empiric antibiotics used as well as its sensitivities.

## Methods

All patients treated in the Ochsner Health System in Louisiana from January 1, 2015 to February 15, 2021 with a microbiological diagnosis of *M. marinum* were identified. The clinical presentation, treatment, and outcomes were assessed.

## Results and Discussion

Table 1

<b>Clinical Characteristics</b>		<b>Total (N = 21)</b>
		No. (%)
<b>Demographics</b>		
	Age in years, mean (SD)	63 (13)
	Male	20 (95)
	White race	18 (86)
	Immunocompromised	2 (10)
<b>Aquatic exposure (a)</b>		
	Total	16 (76)
	Fish tank	0
	Handled fish/seafood	5 (24)
	boating/fishing	11 (52)
<b>Site of disease</b>		
	Involved fingers/hand	18 (86)
	Involved wrist	3 (14)
	Involved arm	7 (33)
	Empiric abx prior to dx	15 (71)
	Months to dx, median	2.7

Table 2

<b>Treatment and outcomes</b>		<b>Total (N = 21)</b>
		No. (%)
<b>Initial antibiotic regimen (b)</b>	0 Drugs	1 (5)
	1 drug	8 (38)
	2 drugs	9 (43)
	3 drugs	1 (5)
<b>Backbone antibiotic regimen (b)</b>	0 Drugs	1 (5)
	1 drug	7 (33)
	2 drugs	9 (43)
	3 drugs	2 (10)
<b>No of cases with regimen change</b>		6 (29)
<b>No of regimen changes per case, median</b>		2
<b>Antibiotic agent used</b>	Ciprofloxacin	0
	Moxifloxacin	0
	Amikacin	0
	Clarithromycin	8 (38)
	Doxycycline	4 (19)
	Minocycline	2 (10)
	TMP-SMX	2 (10)
	Linezolid	0
	Rifampin	5 (24)
	Rifabutin	0
	Ethambutol	3 (14)
	Azithromycin	2 (10)
	Other	4 (19)
<b>Total duration in months, median</b>		5.5

<b>No. of cases requiring surgery</b>		<b>15 (71)</b>
	Debridement only	10 (48)
	Tenosynovectomy/synovectomy only	0
	Both debridement and tenosynovectomy/synovectomy	5 (24)
<b>No of surgical procedures per case, median (IQR)</b>		1
<b>Outcome</b>	Improved	14 (67)
	Improved w/ morbidity	1 (5)
	Lost to follow-up	6 (29)

Over a seven-year period, 21 *M. marinum* cases were identified (Table 1). The majority of patients had aquatic exposure during boating and fishing activities (52%) and handling seafood (24%) prior to infection. The median duration to diagnosis was 2.7 months and diagnosis was confirmed on surgical cultures (62%) or outpatient biopsy or aspiration (38%) (Table 2). Treatment practices varied as patients were treated with one (33%), two (43%), or three drug (10%) regimens (Table 3). One drug therapy was limited to patients with superficial skin and soft tissue infection and consisted of any of the following: Doxycycline, Clarithromycin, Minocycline, or Trimethoprim-Sulfamethoxazole. All patients on one drug therapy were cured and none reported adverse effects.

## Conclusions

- A higher clinical suspicion is needed for *M. marinum*, especially if it involves an aquatic or fishing injury. The susceptibility of the bacteria in the New Orleans region should be taken into consideration when starting empiric antibiotics.
- One drug therapy was safe and effective for patients with *M. marinum* infections limited to the skin and soft tissue.

## References

1. Akram SM, Aboobacker S. *Mycobacterium Marinum*. StatPearls. Treasure Island (FL): StatPearls Publishing
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2. Parent LJ, Salam MM, Appelbaum PC, Dossett JH. Disseminated *Mycobacterium marinum* infection and bacteremia in a child with severe combined immunodeficiency. Clin Infect Dis. 1995;21(5):1325-7.