

POSTSURGICAL KNEE INFECTION WITH *MYCOBACTERIUM FORTUITUM* AFTER A TENDON REPAIR OF THE QUADRICEPS MUSCLE.

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Abstract

Clinical History

A closed traumatic rupture of the tendon of the quadriceps muscle was repaired with resorbable and non-resorbable sutures in a 65 y. old male, without antibiotic prophylaxis. Two months later the patient presented with fever and a swollen inflamed knee with purulent discharge. The surgical exploration necessitated extended debridement of soft tissues and a partial resection of a necrotic patella. The patient was successfully treated with ciprofloxacin and clarithromycin for 12 months.

Microbiology

Direct examination of the pus revealed many leucocytes but no microorganisms were seen. From 5 different samples, small white colonies were growing aerobically after 3 days at 37°C on sheep blood agar and colistin-nalidixic acid agar, revealing Gram-positive, Ziehl-Neelsen-negative bacilli. The kit API Corynebacterium V3.0 showed a good identification as *Corynebacterium propinquum* (96.7%). Because of an unusual resistance to the routine tested antibiotics, this identification was further checked with MALDI-TOF MS (Bruker Microflex instrument, Biotyper 2.0 reference database) which suggested the presence of *Arthrobacter spp.* Definitive identification as *Mycobacterium fortuitum* was obtained by comparative sequence analysis of a part of the hsp65 gene. The strain was resistant to imipenem and cotrimoxazole but susceptible to ciprofloxacin, clarithromycin, minocycline, tigecycline, linezolid and amikacin.

Discussion and conclusion

Mycobacterium fortuitum, a rapidly growing non-tuberculous mycobacterium (NTM) is a well-recognized, yet uncommon cause of soft tissue infection. However, the incidence of post surgical wound infections caused by rapidly growing NTMs is increasing. The presentation of such infection is often atypical and difficulties with the identification of these pathogens in the routine microbiology laboratory can cause diagnostic delay and increased morbidity. At present, there is no universally accepted treatment protocol. Cure may be possible with extensive surgical debridement and a prolonged course of appropriate antimicrobial therapy.

Introduction

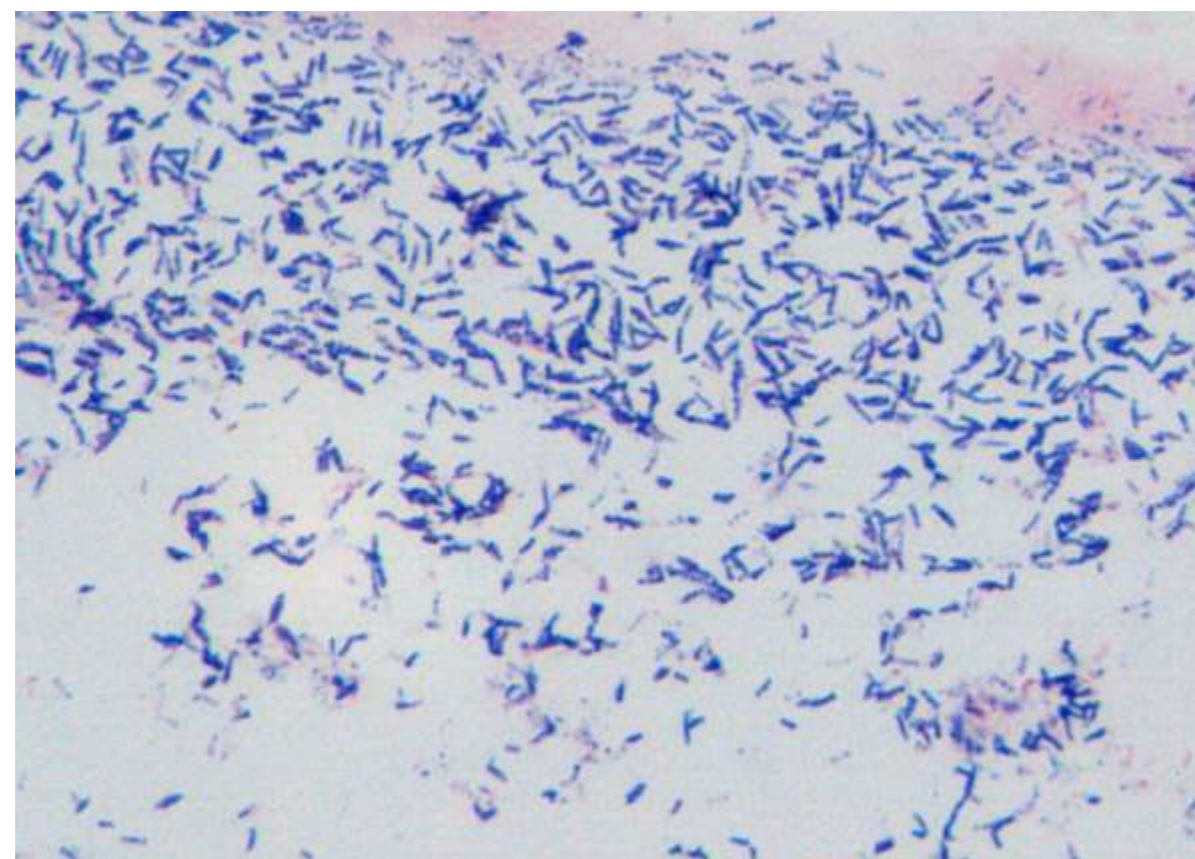
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Clinical History

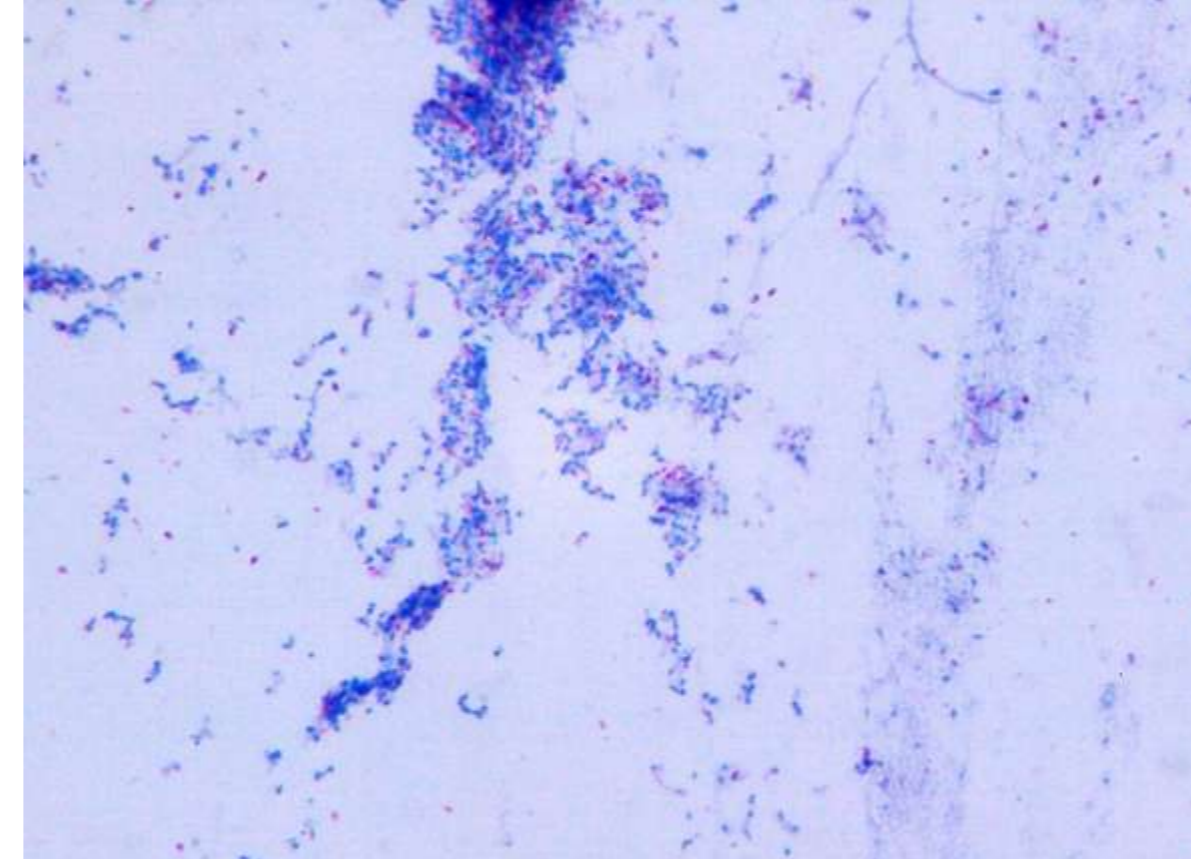
A closed traumatic rupture of the tendon of the quadriceps muscle was repaired with resorbable and non-resorbable sutures in a 65 years old male, without antibiotic prophylaxis. Two months later the patient presented with fever and a swollen inflamed knee with purulent discharge. The surgical exploration necessitated extended debridement of soft tissues and a partial resection of a necrotic patella.

Microbiological Results

Gram Stain



Ziehl-Neelsen



Culture



Characteristics

- Gram positive bacilli,
- Small colonies after 3 days 37°C on blood and chocolate agar
- Catalase +
- No growth on McConkey
- Faint growth in Rosenow broth after 2 days
- No anaerobic growth

Identification

Laboratory	Method	Identification
Unilabs	API Coryne V3.0	<i>Corynebacterium propinquum</i>
	MALDI-TOF Microflex Bruker	<i>Escherichia coli</i> (¹ <i>Arthrobacter castelli</i>)
	PCR 16S rRNA	<i>M. senegalense</i>
IMD, Zürich	PCR 16S rRNA sequencing	<i>M. conceptionense</i> resp
		<i>M. senegalense</i> resp
		<i>M. fortuitum</i>
		<i>M. farcinogenese</i> resp <i>M. houstonense</i>
Institut für med. Mikrobiologie, Zürich	Routine method	<i>M. conceptionense</i>

¹ Identified by another instrument

Susceptibility

	Unilabs Disk NCCLS (E-test)	IMM Zürich
Penicillin	R	
Amoxi/Clav	R	
Cefoxitin	R	S (8 mg/l)
Ceftriaxone	R	
Imipenem		
Gentamicin	S	
Tobramycin		S (0.5 mg/l)
Amikacin		
Ciprofloxacin	S	S (0.125 mg/l)
Lexofloxacin		
Moxifloxacin		
Erythromycin	R	
Clarithromycin		S (0.032 mg/l)
Clindamycin	R	
Rifampicin	R	R (>32 mg/l)
Cotrimoxazol	R	S (0.125 mg/l)
Tetracycline	S (0.75 mg/l)	
Doxycycline		S (0.125 mg/l)
Minocyclin		
Tigecycline	S (0.047 mg/l)	S (0.023 mg/l)
Linezolid	R (12 mg/l)	S (4 mg/l)
Daptomycine	R (32 mg/l)	
Vancomycin	R (>252 mg/l)	
Ethambutol		R (>256 mg/l)

Conclusion

- *Mycobacterium fortuitum* is a ubiquitous, non-tuberculous mycobacterial species known for rarely causing cutaneous disease, osteomyelitis, joint infections, ocular disease (keratitis, ulcer) and posttraumatic infections.
- Rapid growth on routinely used media and faintly gram-positive coloration lead to delay in diagnosis because of suspecting grampositive cocco-bacilli.
- Correct identification was obtained neither by a commercialized biochemical identification system (*Corynebacterium spp*) nor by MALDI-TOF (*E. coli*), but only by PCR 16S rRNA and sequencing.
- The multiresistant pattern of susceptibility tests must evoke the presence of a *Mycobacterium spp.*

References

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- *Mycobacterium fortuitum* infection following patellar tendon repair. Hetsroni I et al. J Bone Joint Surg Am. 2010; 92:1254-6
- *Mycobacterium fortuitum* infection following total knee arthroplasty: a case report and literature review. Knee. 2008; 15:61-3