

Multidrug Resistant *Mycoplasma salivarium* Septic Arthritis with Osteomyelitis Treated with Distal Femoral Resection and Endoprosthetic Reconstruction

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INTRODUCTION:

- Mycoplasma salivarium*, a common commensal mycoplasma in the oropharynx is found in biofilms of dental plaque associated with periodontal disease.
- It can cause disseminated and invasive infections such as culture negative septic arthritis especially in patients with hypogammaglobulinemia.
- Diagnosis and management of this rare pathogen can be challenging.
- There is no treatment guidance for this infection.

CASE SUMMARY:

- A 56-year-old male with a past medical history of hypogammaglobulinemia presented with chronic left knee pain and swelling.
- Serial arthrocentesis was performed and results are shown in the table below.
- All cultures are negative

Table 1. Results of Synovial fluid analysis and Inflammatory markers

Date	9/20/20	9/22/20	1/6/21
SF cell ct	12,063	16,400	15,520
WBC/ μ L			
SF % PMN	81%	92%	74%
Crystals	none	none	none
Culture	negative	negative	negative
ESR	No data	52	No data
CRP mg/dL	10.12	9.9	No data

- X-ray exhibited moderate suprapatellar joint effusion.
- MRI showed septic arthritis with diffuse synovial and subchondral periarticular inflammation.
- He was treated with multiple prolonged courses of antibiotics without improvement.
- Next Generation Sequencing (NGS) from synovial fluid was positive for *Mycoplasma salivarium*.
- A 2- staged procedure composed of radical resection of the distal femur and proximal tibia with placement of antibiotic spacer and antibiotic beads which culminated in an endoprosthetic reconstruction was performed.
- Pathology confirmed osteomyelitis of the femur and the tibia.
- He received Clindamycin but was transitioned to a prolonged course of Lefamulin, because intraoperative cultures sent to a reference laboratory grew multidrug resistant (MDR) *Mycoplasma salivarium*.
- He had been in remission for more than 2 years.

AIM:

- This case report aims to elucidate the diagnosis and management of this uncommon pathogen.

FIGURES:

Figure 1A and 1B. MRI of the left knee showed diffuse synovial and subchondral/periarticular inflammation.

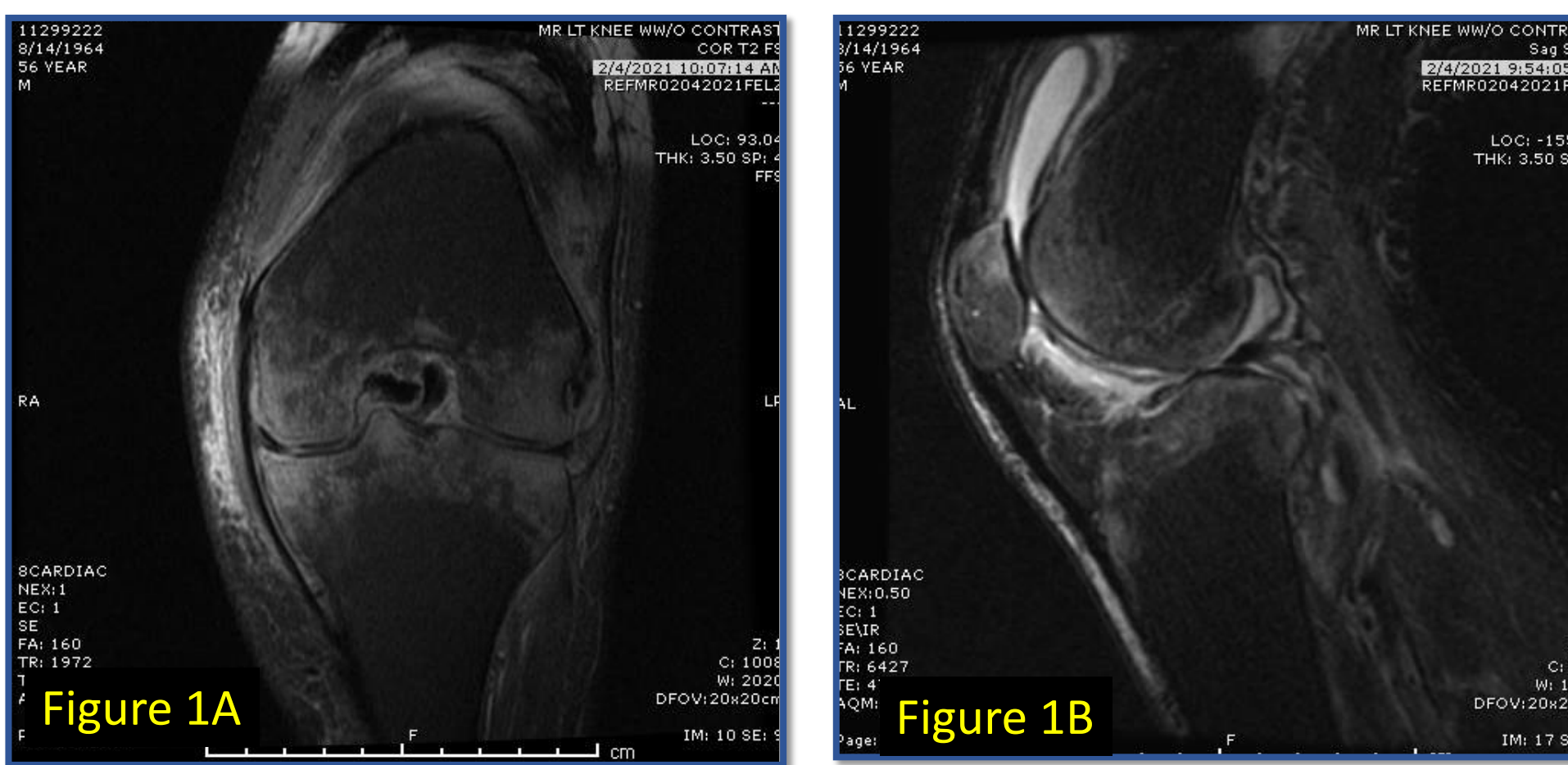


Figure 2A and 2B. Histopathology confirmed articular bone of the femur and tibia with subchondral acute osteomyelitis.

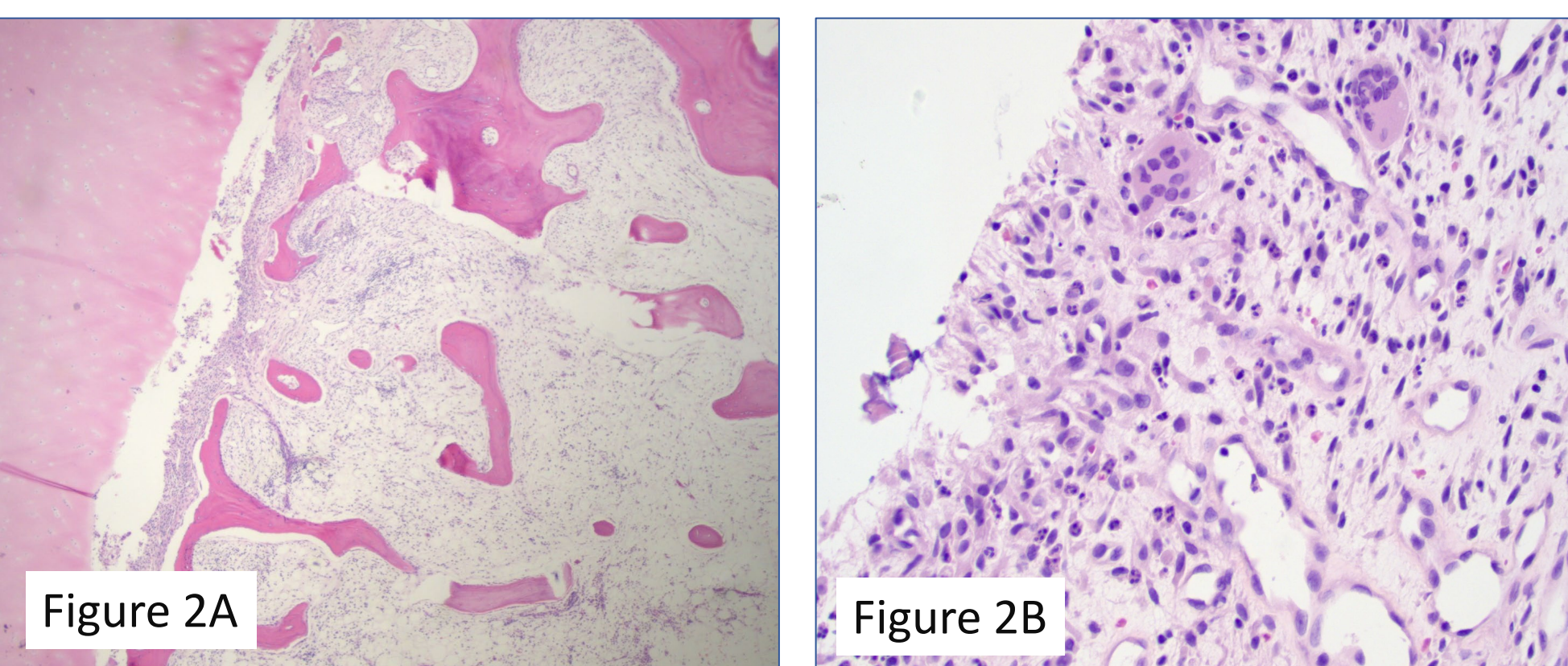


Figure 3A, 3B, and 3C. X-rays of Septic arthritis with chronic osteomyelitis of the left knee treated with resection and delayed endoprosthetic reconstruction.

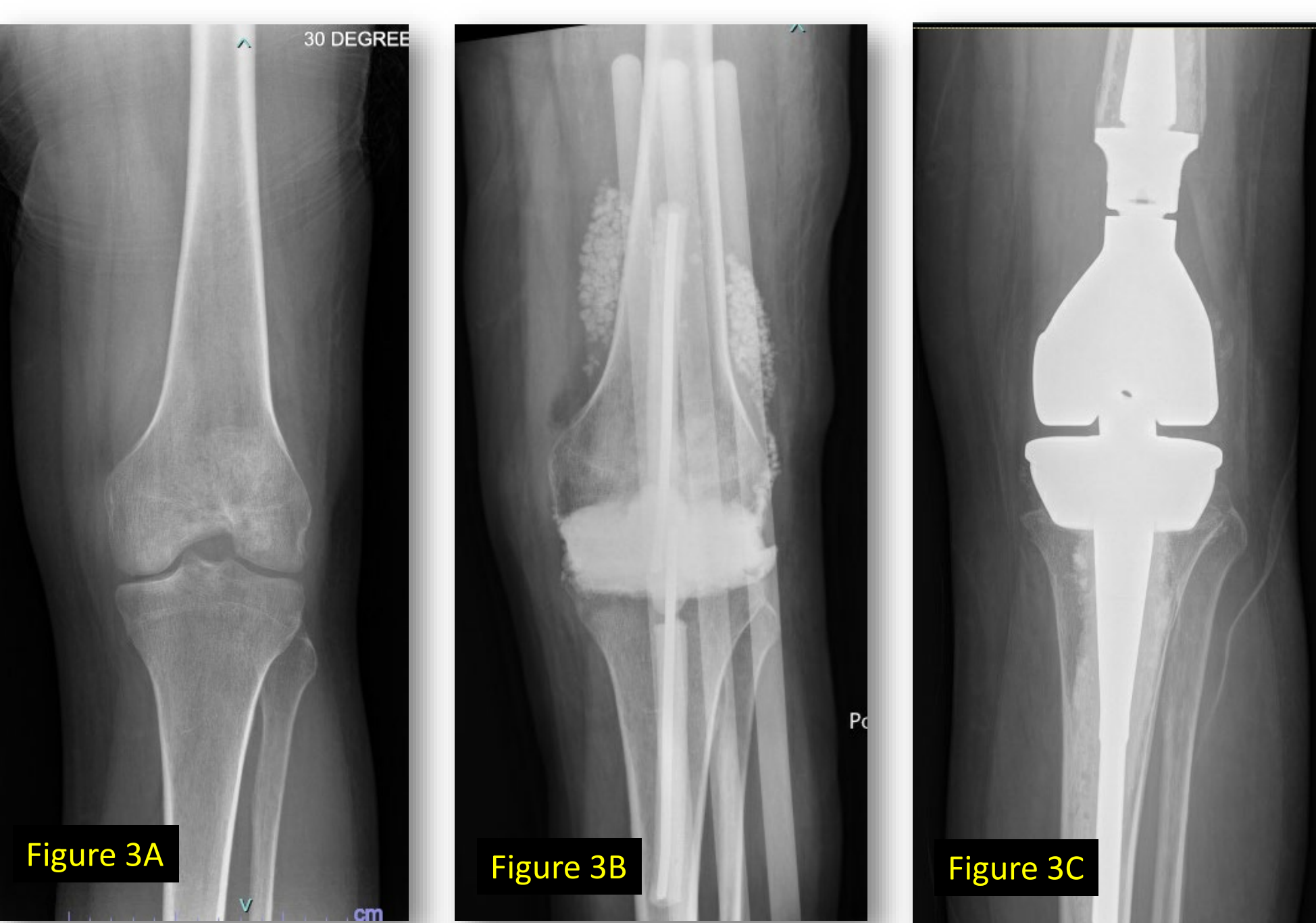


Table 2. Cases of *Mycoplasma salivarium* joint infection from 1983-2022

Year/Author	Medical Condition	Affected Joint	Antibiotics	Surgery	Outcome
1. 1983 Webster et al. BMJ	Hypogammaglobulinemia	Right Knee	Erythromycin, then Minocycline for months	Synovectomy	Resolved
2. 2016 Buchsel et al Diag Micro ID	B – Cell CLL on rituximab + bendamustin	Bilateral shoulders	Clindamycin x 5 weeks	none	Improved but later died 3 weeks after
3. 2017 Thoendel et al. CID	Common Variable Immunodeficiency (CVID)	Right Total Knee Arthroplasty	PMMA cement (Gentamicin)--- Doxycycline	2 stage-exchange arthroplasty	Still on treatment
4. 2021 Totten et al. Access Microbiol	Common Variable Immunodeficiency (CVID)	Polyarthrits Right wrist Bilateral Knees Left Ankle	Doxycycline, then Moxifloxacin >4 months	None --- Left knee total arthroplasty after 4 years	Resolved
5. Our Patient, A.F.	Agammaglobulinemia	Left Knee	Clindamycin then Lefamulin	DFR w/ Megaprosthesis	Resolved

METHOD:

- We described a case of *Mycoplasma salivarium* septic arthritis of the knee with osteomyelitis treated with distal femoral resection (DFR) and endoprosthetic reconstruction in an immunosuppressed patient as limb salvage therapy.

DISCUSSION:

- Hematogenous dissemination of *M. salivarium* to the left knee occurred in this hypogammaglobulinemic patient.
- NGS is an efficient method to obtain definitive identification but culture and susceptibility is needed to guide treatment.
- Lefamulin, a novel pleuromutilin antibiotic can be used in MDR cases.
- Successful resolution required prolonged antimicrobial administration and relapses could occur.
- In septic arthritis with osteomyelitis, radical resection of infected bone was crucial for eradication of infection.
- Table 2 enumerates cases of *M. salivarium* in the literature.

CONCLUSION:

- This is the first case of MDR *Mycoplasma salivarium* septic arthritis of the knee with osteomyelitis in a patient with hypogammaglobulinemia diagnosed thru NGS managed by distal femoral resection with endoprosthesis and Lefamulin.
- Tumor treatment principle was employed as a limb salvaging procedure with an acceptable functional outcome.
- The osteomyelitis was treated similar to a malignancy by resecting the infected bone and replaced by a distal femoral replacement.

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