Multidrug Resistant *Mycoplasma salivarium* Septic Arthritis with Osteomyelitis Treated with Distal Femoral Resection and Endoprosthesis 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>
<thead>
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<th>Date</th>
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<th>9/22/20</th>
<th>1/6/21</th>
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<tbody>
<tr>
<td>SF cell ct</td>
<td>12,063</td>
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<td>15,520</td>
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<tr>
<td>WBC/µL</td>
<td>81%</td>
<td>92%</td>
<td>74%</td>
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<tr>
<td>SF % PMN</td>
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<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Crystals</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>Culture</td>
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<td>52</td>
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</tr>
<tr>
<td>ESR</td>
<td>10.12</td>
<td>9.9</td>
<td>No data</td>
</tr>
<tr>
<td>CRP mg/dL</td>
<td>10.12</td>
<td>9.9</td>
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</table>

- X-ray exhibited moderate supratellar 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-stage 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.

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 endoprostheses 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.

REFERENCES:

- Totten et al., Chronic osteomyelitis of distal femur treated with resection and delayed endoprosthetic reconstruction: a report of 3 cases. Case Reports in Orthopedics. 2017; 543932.

Table 1. Results of Synovial fluid analysis and Inflammatory markers

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