

Implementation of Medical Treatment for Diabetic Foot Osteomyelitis in Routine Clinical Practice

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Aim

Obtaining a bone specimen to diagnose diabetic foot osteomyelitis (DFO) is the generally accepted standard for diagnosing the infection and the only definitive way to identify the causative pathogens. However, percutaneous bone biopsy is typically not performed in most suspected cases of DFO due to a lack of healthcare professionals adequately trained to perform the procedure and/or concerns about potential adverse effects, such as bone fractures or induced infections [1]. Our aim is to evaluate the results of implementation of medical treatment for DFO in routine clinical practice.

Methods

In 2024, the Multidisciplinary diabetic foot team (MDT) applied medical treatment for DFO to 4 patients who either refused amputation or did not meet the criteria for surgical treatment. A percutaneous bone biopsy was performed for all 4 patients after at least 2 weeks of antibiotic-free interval. Two samples were sent for microbiological, and one for histological analysis.

Results

The pathogen was identified in 3 out of 4 cases (*Peptostreptococcus* species, *Proteus mirabilis* and *Pseudomonas aeruginosa*, *Staphylococcus aureus*). The histological examination helped make the decision regarding the infection diagnosis despite a negative culture. Treatment was adjusted based on the culture results, with an average treatment duration of 6 weeks, using an antibacterial treatment with good bone penetration. The patients were monitored for at least 6 months, and remission was observed in all cases (no need for reoperation, additional antimicrobial treatment, or wound recurrence) (Figure 1).



From the patient's personal archive. At the onset of the pathology, after 1 month and 1 year following the bone biopsy



From the personal archive. At the onset of the pathology on November 20, 2024, 1 week later (November 26, 2024), and 2 months later (January 21, 2025) after the bone biopsy



From the MDT and the personal archive. At the onset of the pathology, 1 month (October 15, 2024), 2 months (November 5, 2024), and 3 months (December 17, 2024) after the bone biopsy



From the personal archive. At the onset of the pathology on December 4, 2024, 1 month and 6 months after the bone biopsy

Figure 1. Follow-up of the patients treated with medical treatment.

Conclusions

In conclusion, these cases challenge the commonly held belief that osteomyelitis always requires surgery and that it cannot be cured without surgical intervention. Remission was observed in all patients treated with medical treatment over the course of one year, with no complications. Routine clinical practice in our centre now newly includes percutaneous bone biopsy, bone histological examination, and antibacterial therapy with good bone penetration, although there were logistical challenges in performing this procedure.

References

1. International Working Group on the Diabetic Foot. *IWGDF guidelines on diabetic foot infection*. 2023.