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Effect of maggot debridement therapy on diabetic foot infection

Bém R.¹, Jirkovská A.¹, Novotný K.², Fejfarová V.¹, Dubský M.¹, Wosková V.¹

¹ Diabetes Centre, Institute for Clinical and Experimental Medicine, Prague; ² Department of Cardiosurgery, Motol University Hospital, Prague

Background and Aims: Necrotic tissue is often the source of infection and the reason for non-healing of diabetic foot ulcers (DFU). Maggot debridement therapy (MDT) is suggested to successfully remove sloughy necrotic tissue from ulcers and to facilitate healing. The aim of our study was to assess the effect of MDT on infected DFU.

Material and Methods: Between January 2005 and February 2008, 62 patients with infected DFU treated in our diabetic foot clinic were enrolled in the present study; 55 patients were treated during hospital admission and 7 patients on outpatient basis. Sterile free-range larvae of the green bottle fly *Lucilia Sericata* were applied to the ulcers. All patients also were treated with antibiotics and offloading of the affected foot; in the presence of Peripheral Arterial Disease (PAD), patients were indicated for vascular reconstruction. Swabs or tissue samples were taken from deep structures of the wound after debridement. Specimens for culture were obtained immediately before and after MDT; control specimens were taken 10 (\pm 3) days after the end of MDT. Methicillin-resistant *Staphylococcus aureus* (MRSA) was identified according to positive test for *mec* gene. The clinical effect of the therapy was classified as improvement (complete debridement), no change (incomplete debridement) or impairment (persisting necrosis, progression of infection or major amputation in 3 months after MDT). **Results:** The mean duration of MDT was 3.25 days (range 3-5 days); 5-10 larvae per cm². MRSA was cultivated in 16/62 (25.8%) before MDT. There was a significant reduction of MRSA infection immediately after MDT - 5/62 (8.1%), $p < 0.01$ and after 10 (\pm 3) days from ending of MDT - 6/62 (9.7%), $p < 0.01$. Similar results were seen in *Enterococcus* sp. [before: 18/62 (29%), immediately after MDT: 7/62 (11.3%), $p < 0.01$ and after 10 (\pm 3) days from ending of MDT: 8/62 (12.9%), $p < 0.02$] and *Staphylococcus coagulase negative* [16/62 (25.8%) vs. 7/62 (11.3%), $p < 0.02$ vs. 6/62 (9.7%), $p < 0.01$]. MDT had no effect on *Pseudomonas* sp. infection [7/62 (11.3%) vs. 9/62 (14.5%), NS vs. 8/62 (12.9%), NS]. Improved healing was seen in 69.4%, no change in 19.3% and impairment of healing in 8.1% of patients; results were not valid in 3.2% of patients due to the death of the larvae. No adverse events of MDT were recorded. **Conclusions:** Maggot debridement therapy has been shown to be a safe and effective method for debridement and elimination of MRSA infection in patients with DFU. This study was supported by the MZO 00023001.