INFECTION WITH LOW-PATHOGENIC BACTERIA IS ASSOCIATED WITH A HIGHER DIABETIC FOOT AMPUTATION RISK IN TERTIARY CARE (TOOL COHORT STUDY)

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BACKGROUND

Some bacteria seem associated with aggressive manifestations of diabetic foot infection. Other bacteria present in diabetic foot wounds are considered low-pathogenic.[1]

AIM

We assessed associations between cultured bacterial species and amputation in patients with a diabetic foot infection (DFI).

MATERIAL & METHODS

We included patients (>18 years) with a DFI in a retrospective cohort study (March 2011- January 2020, TOOL cohort) at a Dutch tertiary care hospital. We retrieved the following cultures: percutaneous bone biopsy in case of osteomyelitis, ulcer bed biopsy in case of soft tissue infection and osteomyelitis (if no bone biopsy was performed), and ulcer swab if no other cultures were obtained. If repeated cultures were taken from the same location of a patient in three months' time, we pooled results into a composite determinant with unique bacteria only. We clustered bacteria into 5 groups (Table 1).

STATISTICAL ANALYSIS

We used time-dependent Cox regression to analyse the association between bacterial groups and amputation. We used infection with one group as the exposure and infection with at least one of the other groups as the comparator. We corrected for history of amputation.

CONCLUSION

Infection with bacteria that are usually considered low-pathogenic (group 2) was associated with a higher risk of amputation, while infection with pathogenic gram-positive bacteria was associated with a lower amputation risk.

TABLE 1: RESULTS PER CLUSTER OF BACTERIAL SPECIES

Group	Bacteria	Incidence rates infection	Hazard Ratio amputation	Confidence Interval
1	*Streptococcus and Staphylococcus aureus*	1.1	0.61	0.37 - 1.04
2	Coagulase- negative *Staphylococcus, Cutibacterium, Corynebacterium and Enterococcus*	0.48	2.8*	1.70 - 4.80
3	Gram-negative bacteria	0.99	1.3	0.79 - 2.20
4	Anaerobic bacteria	0.37	1.5	0.89 - 2.60
5	Less common gram-positive bacteria (e.g. *Actinomyces, Lactococcus lactis*)	0.085	1.9	0.67 - 5.30

*P-value <0.001

RESULTS

We extracted data from 138 patients, with 311 infective episodes. Incidence rates for infection per group per person year and hazard ratios for amputation are shown in Table 1.

1. Lipsky BA et al. Diabetes Metab Res Rev. 2020;36 Suppl 1:e3280.

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