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Bacterial ecology and antibiotic resistance mechanisms of isolated resistant strains from diabetic foot infections in the North West of Algeria

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In front of the polymorphic bacterial ecology and antibiotic resistance in diabetic patients with foot infections and good patient care, collaboration between clinicians and microbiologists is needed to improve assessment and management of patients with this pathology. This study was designed to characterize the bacterial ecology of diabetic foot infection (DFIs) and to determine the different mechanisms of resistance involved. In this study bacterial strains and antibiotic resistance profiles were determined from diabetic foot infections patients (n = 117). The identification of resistance mechanisms, such as penicillinase and/or extended-spectrum β-lactamase production (ESBL), methicillin-resistant *Staphylococcus aureus* (MRSA) and efflux pump over-expression were performed.

A high prevalence of Gram-negative bacteria (61%) with *Escherichia coli*, and other Enterobacteriaceae and *Pseudomonas aeruginosa* being the predominant isolates. Gram positive bacteria mainly represented by Staphylococcus aureus accounted for 39% of the isolates. 93.5% of the *Enterobacteriaceae were* resistant to, at least, one molecule in the β-lactam family, while the majority of the *Staphylococci* were resistant to penicillin G and tetracycline (93.3% and 71.7%). The majority of non-fermenting Gram negative bacteria were also resistant to fluoroquinolones. β-lactamase detection tests revealed the presence of extended-spectrum β-lactamase in 43.5% of the *Enterobacteriaceae,* while methicillin-resistant *Staphylococcus aureus* represented 18.2% of the isolates. Additionally, 50.9% of non-fermenting Gram negative bacteria were overproducing efflux pumps.

All *Acinetobacter Baumannii* were Multidrug-Resistant (MDR), as the majority of *Staphylococci*, and *Enterobacteriaceae*. These results should be taken into account by the clinician in the prescription of probabilistic antibiotic therapy in this context.