

Microbiological profile in diabetic foot infections: identification and susceptibility profile of bacteria isolated in 5 years in a Portuguese tertiary care hospital



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INTRODUCTION

The diagnosis of infected ulcer is clinical.

The goals of the microbiological studies are identification of the pathogen and evaluation of susceptibility to antibiotics, minimize exposure to drugs and selection of resistant strains. Superficial ulcers are usually caused by aerobic gram-positive cocci but deep or chronic wounds often harbour polymicrobial flora including aerobic gram-negative and anaerobic bacteria. Clinician should stay updated on antibiotic-resistance patterns of common pathogens in their area of practice.

Assessment of risk factors of the patient, severity and evolution of ulcerated lesion should be considered for early empiric antibiotic therapy.

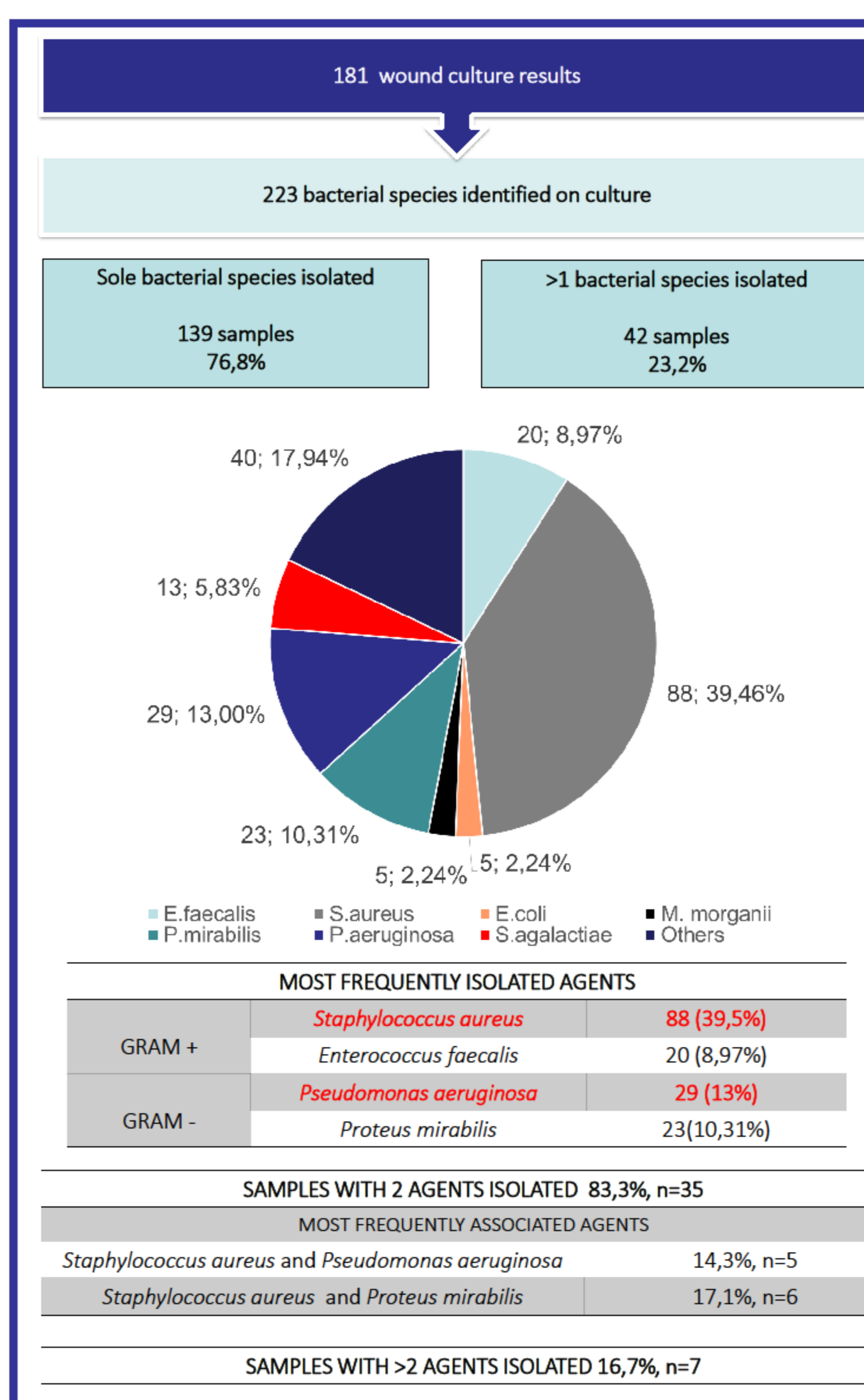
Our aim was identify the main pathogens and their antibiotic susceptibilities to enable the clinician of our hospital to select the most appropriate antimicrobial therapy.

METHODS

- Retrospective, cohort study;
- Data were collected between 1 January 2010 to 31 December 2014
- Were included samples from nonsurgical/surgical exudate, needle aspirate of purulent secretions from abscess/wound and bone fragments from diabetic foot consultation and ward at Endocrinology Department.
- Data were obtained through the clinical process and analysed in SPSS® V.22.
- Ulcerated lesions were classified according to the clinical infection criteria of the PEDIS classification of the IWGDF/IDSA:

RESULTS

PATIENTS CHARACTERISTICS	
Age (±SD) Years	62,8 ±14
Gender distribution	Male 71,3% Female 28,7%
SAMPLES' ORIGIN	
Diabetic Foot Consultation	19,7%, n=44
Endocrinology ward	78,0%, n=174
Ambulatory care unit	2,3% n=5
TISSUE SPECIEMENS FOR CULTURE	
Needle aspirate of purulent secretions from wound	4,5%, n=10
Nonsurgical wound exudate	74,0%, n=165
Surgical wound exudate	10,8%, n=24
Needle aspirate of purulent secretions from abscess	9,4%, n=21
Others	1,3%, n=3



DISCUSSION

- On gender, our sample included 71.3% of male patients with mean age of 62.8 ± 14 years.
- Concerning the origin of the requested studies, 78% were from the endocrinology ward (n=174) and 74% were samples of nonsurgical wound exudate (n=165).
- 181 samples were obtained for microbiological study with identification of 223 different agents.
- Of gram-positive agents, *Staphylococcus aureus* (SA) was the most isolated in 39.5% of the samples (n=88) followed by *Enterococcus faecalis* (EF) in 8.97%.
- Of gram-negative agents, *Pseudomonas aeruginosa* (PA) was isolated in 29 (13%) and *Proteus mirabilis* (PM) in 23 (10.31%) samples.
- Of the 42 samples with polymicrobial isolation, the combination of agents most commonly found corresponded to co-infection with PA and SA (14.3%) and SA and PM (17.1%).
- Regarding to antimicrobial susceptibility in SA strains, was found resistance in 35.2% to oxacillin, 39% for levofloxacin, 29% to clindamycin, 3% to gentamicin, 1% to trimethoprim / sulfamethoxazole and there were no vancomycin or linezolid resistance *in vitro*.

CONCLUSIONS

Microbiological study is essential in ulcerated lesions particularly in moderate and severe infections. The gram-positive agent most isolated in our sample was SA and from the gram-negative agents was PA. 35.2% of the SA strains were methicillin-resistant which may be related to chronicity, recent hospitalization and previous antibiotic therapy; factors that are frequently present in diabetic patients followed in a tertiary care hospital.

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