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A clinico-microbiological study of diabetic foot ulcers in an Indian tertiary care hospital.

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Abstract

OBJECTIVE:

To determine the microbiological profile and antibiotic susceptibility patterns of organisms isolated from diabetic foot ulcers. Also, to assess potential risk factors for infection of ulcers with multidrug-resistant organisms (MDROs) and the outcome of these infections.

RESEARCH DESIGN AND METHODS:

Pus samples for bacterial culture were collected from 80 patients admitted with diabetic foot infections. All patients had ulcers with Wagner's grade 3-5. Fifty patients (62.5%) had coexisting osteomyelitis. Gram-negative bacilli were tested for extended spectrum beta-lactamase (ESBL) production by double disc diffusion method. Staphylococcal isolates were tested for susceptibility to oxacillin by screen agar method, disc diffusion, and mec A-based PCR. Potential risk factors for MDRO-positive samples were explored.

RESULTS:

Gram-negative aerobes were most frequently isolated (51.4%), followed by gram-positive aerobes and anaerobes (33.3 and 15.3%, respectively). Seventy-two percent of patients were positive for MDROs. ESBL production and methicillin resistance was noted in 44.7 and 56.0% of bacterial isolates, respectively. MDRO-positive status was associated with presence of neuropathy ($P = 0.03$), osteomyelitis ($P = 0.01$), and ulcer size >4 cm(2) ($P < 0.001$) but not with patient characteristics, ulcer type and duration, or duration of hospital stay. MDRO-infected patients had poor glycemic control ($P = 0.01$) and had to be surgically treated more often ($P < 0.01$).

CONCLUSIONS:

Infection with MDROs is common in diabetic foot ulcers and is associated with inadequate glycemic control and increased requirement for surgical treatment. There is a need for continuous surveillance of resistant bacteria to provide the basis for empirical therapy and reduce the risk of complications.

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