

A Retrospective Analysis of Microbiologic Profile of Foot Infections in Patients With Diabetic End-Stage Renal Disease

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Abstract

Objective. Individuals with diabetes and end-stage renal disease (ESRD) are at increased risk of foot ulceration and lower extremity amputation. Although risk factors and microbiologic analysis of diabetic foot infections (DFIs) have been extensively studied, there are limited data available for this characteristic group. **Methods.** Clinical, demographic, laboratory, microbiological data, and foot examination information were collected retrospectively regarding 94 patients with ESRD who were referred for DFI between 2006 and 2016 to hyperbaric oxygen therapy. **Results.** In 6 of 94 patients with ESRD (mean age 60 years; 65 males [69.1%], 29 women [30.8%]; 91 undergoing hemodialysis [96.8%], one peritoneal dialysis [1%], two [2%] recent renal transplants), the lesions were bilateral; therefore, the evaluations were made over 100 DFIs. The most common pathogens isolated in deep wound cultures were *Staphylococcus aureus* and *Pseudomonas aeruginosa*, respectively, contributing to 27 (21.2%) and 16 (12.5%) of all 127 isolates. When the distribution of the isolates according to different Wagner grades were analyzed, it was found that the proportion of Gramnegative isolates increased statistically significantly with the ascending Wagner grade ($P = .004$). **Conclusion.** DFIs indicate a serious complication associated with a high risk of amputation, prolonged antibiotic treatment, increased hospital and procedure demands, and the cost of health care, on patients with ESRD. The familiarization of causative pathogens underlying DFIs can aid the clinicians in the choice of appropriate empirical antibiotic treatment. This study emphasizes the need for greater attention to risk factors and the microbiologic profile of DFIs in this characteristic group.

Keywords

diabetic foot infection, end-stage renal disease, hemodialysis

Introduction

The prevalence of diabetes mellitus continues to increase in Turkey, as well as around the world. This rapid increase in prevalence means 6.5 million diabetic individuals, almost half of whom are not aware of their illness, according to the Turkish Diabetes Epidemiology-II (TURDEP-II) study conducted in 2010. Compared with the first study conducted 12 years ago, this recent study indicated increases in diabetes, impaired glucose tolerance, and obesity prevalence as 90%, 106%, and 40%, respectively.¹ The global health care expenditure on people with diabetes was estimated to be US\$850 billion in 2017.² In the last International Diabetes Federation (IDF) Atlas, the expected numeric and economic burden for Turkey was indicated with the prediction that Turkey would take 10th place in the international diabetes ranking with 11.2 million diabetics in 2045.³

Diabetic foot problems are also common in Turkey, as they are throughout the world, with great economic consequences for patients, their families, and society. Due to impaired immune defenses and disease complications, individuals with diabetes are prone to foot infections and recurrence. Moreover, these infections can also be more severe in diabetics with end-stage renal disease (ESRD) than in those without ESRD. The current management strategy proposed for diabetic foot infections (DFIs) is that the evaluation should occur at 3 levels: first the patient as a whole, then the affected foot and limb, and finally the wound. This is

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