

Characteristics of patients with future diabetic foot ulceration. Can those be used to predict the ulceration incident?

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Aims

The aim of this study was to investigate if clinical assessment during foot check-up can be used to predict the diabetic foot ulceration in people with diabetes.

Methods

Following ethical approval, data from 203 (M/F: 99/104) patients with diabetes who visited the foot clinic from January 2017 to December 2018 were collected. A set of demographic and generic clinical as well as the foot specific parameters were collected from participants. The foot-specific parameters included: muscle wasting, dry skin, Tinea pedis, Onychomycosis, foot deformity, Callus, nail deformity and neuropathy measures. Ankle Brachial Pressure Index (ABPI) was measured to assess vascular sufficiency. During a two years follow-up 24 (M/F: 17/7) participants ulcerated.

Results

Mann-Whitney U test indicated that participants who ulcerated had significantly ($p < 0.05$) higher: weight ($r = 0.32$), HbA1C ($r = 0.20$), and creatinine ($r = 0.19$), while they were more likely to be male ($\chi(1) = 5.30$), and have history of ulceration ($\chi(1) = 5.30$) or amputation ($\chi(1) = 8.79$).

Logistic regression analysis indicated that the prediction accuracy of the model was 92% (sensitivity: 65% and specificity: 96%). The presence of nail deformity and ulceration history, absence of sensation to monofilament, and presence of numbness in the foot were the only parameters that were statistically significant in the model.

Conclusions

People with diabetes who are more vulnerable to future diabetic foot ulceration have few distinct characteristics which can be used to distinguish them from those who don't ulcerate. Previous ulcer, and presence of neuropathy and nail deformity can be used to predict ulceration incident in 2 out of 3 cases.