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Using diabetic foot ulcer development risk stratification systems for the wound healing prediction

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Purpose: We aim to validate and optimize the diabetic foot ulcer (DFU) development stratification systems for the DFU healing prediction. With this study we intend to propose a system proved valid for DFU development prediction that, with the inclusion of few DFU related variables, can also accurately predict DFU healing. **Methods:** A prospective cohort study is currently being conducted on a consecutive sample of patients presenting with DFU from September 2009 until February 2012 and achieving outcome (healing, amputation or death) until March 2012 (n= 206) [mean age of 66 years (26-91); 66% male; 97% with diabetes type 2; mean diabetes duration of 17 years (1-49)]. It will be continued until August 2012. To all patients the DFU development risk stratification systems [American Diabetes Association (ADA), International Working Group on Diabetic Foot (IWGDF), Scottish Intercollegiate Guidelines Network (SIGN), University of Texas (UT) and Seattle Risk Score] were applied (collecting the respective composing clinical variables), DFU related data were collected (ulcer foot, site, number, depth, area gangrene and infection) and outcomes assessed by a single observer. **Results:** With a median follow-up of 76 days (8-270d), 48% of patients enrolled presented previous DFU and 17% lower extremity amputation. Using the ADA system, 85% of participants were classified as being at moderate or high risk of developing DFU; 95% using the IWGDF system, 98.5% the SIGN system, 76% the UT system and 62% the Seattle Risk Score. During follow-up, 137 (67%) DFUs healed, 39 (19%) required minor amputation, 9 trans-metatarsal amputation (4%), 13 (6%) major amputation and 8 (4%) patients died. Physical impairment, onychomycosis, foot pulses, ankle-brachial index, ulcer number, depth, area, site, infection, gangrene and ADA, IWGDF and Seattle score risk groups were statistical significantly associated with foot amputation (minor or major). There were no statistical significant differences when comparing the various systems prognostic accuracy (using the area under the receiver operating curve [AUC]), except for the Seattle Risk Score that presented higher AUC value when compared with the UT system. AUC values ranged from 0.5 (UT system) to 0.7 (Seattle Risk Score). **Conclusions:** We believe that a clinical prediction tool easy to remember and apply and accurate in predicting both DFU occurrence and consequent outcome would represent an important breakthrough in the diabetic foot area. At the end of our study we will propose such model using logistic regression methods and AUC values recalculation with the inclusion of the most pertinent DFU related variables.