

P15

Assessment of signs of foot infection using photographic foot imaging in diabetic patients with clinical suspicion of infection.

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Background: We have developed a photographic foot imaging device (PFID) for the early recognition of diabetic foot problems in the home-environment. The aim of this study was to assess the validity of using the PFID for the diagnosis of signs of infection and to assess the additional value of infrared measurements. **Methods:** A total of 38 patients were photographed at the multidisciplinary diabetic foot clinic using the PFID. Inclusion criterion was hospital admission because of diabetic foot related infection. After the photographs were taken, the feet were assessed live by one observer on the presence of (pre-) signs of ulceration and infection using PEDIS definitions. Furthermore, at admission the (infrared) temperature of six different regions of the feet was assessed, using the TempTouch®. A hotspot (presence of infection) was defined as a temperature difference larger than 2,2°C. Photographs were assessed (on erythema) 2 weeks and again 4 weeks after live assessment by the same observer. Agreement between live assessments (LA) and photographic assessments (PA) was calculated (kappa, κ 0-1) to determine the validity and between occasions to determine the intra-observer agreement. Agreement between LA (presence of infection) and infrared temperature (presence of a hotspot) was calculated (Sensitivity). **Results:** The agreement between LA and PA was moderate for erythema (κ 0.49). The intra-observer agreement for erythema was also moderate (κ 0.52). Agreement between LA for infection (PEDIS) and infrared temperature was good (Se 83%). In total 17 ulcers were scored without erythema, but scored as infected 4 times according to PEDIS classification during live assessment: there was a hotspot present in 11 cases (65%). **Conclusion:** The data from this study imply that it is difficult to assess diabetic foot related infection from photographic images using the PFID by trained professionals. Infrared temperature measurements seem to be of additional value in the diagnosis of infection of the foot. A combination of foot imaging for the remote assessment of (pre-) signs of ulceration and infrared temperature measurements for the remote assessment of infection may be therefore of clinical value. Further studies are needed to judge the validity and reliability of this combination of remote monitoring of the diabetic foot.