

[O8] THE ASSOCIATION BETWEEN PLANTAR SKIN MICROCIRCULATION AND THE INDICATORS OF PERIPHERAL ARTERIAL DISEASE IN PATIENTS WITH DIABETES

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Aim: The aim of this study was to assess the relationship between plantar skin microcirculation against macrocirculation measures and indices that assess the presence of Peripheral Arterial Disease in people with diabetes.

Method: 32 diabetic patients (Age = $61 \pm (12)$ years, height = $1.54 (\pm 0.1)$ m, weight = $70.36 (\pm 17.4)$ kg, BMI = $29.66 (\pm 6.87)$ kg/m², duration of diabetes = $9 (\pm 7)$ years) of whom consented to participate in this study were recruited. Skin microcirculation measurements were performed at six sites (Hallux, 1st, 3rd, 5th metatarsal heads, midfoot, heel) using a propriety Imaging photoplethysmography (iPPG) prototype device (Cadscan, Chester, United Kingdom). The participant was positioned supine, with their feet positioned at the edge of an examination couch. The iPPG camera placed 40-45cm away from the foot, dependent on foot size. Three, 30 second, recordings were taken, for both feet. Patients with active ulcers, iPPG was only measured at the contralateral limb.

Macrocirculation was assessed using the Ankle Brachial Index (ABI), measured separately for the dorsalis pedis and posterior tibial artery for both left and right feet and the presence of Peripheral Arterial Disease was classified based on the Fontaine Classification. Demographic data was collected from the patients' medical records.

Results / Discussion: Spearman's Rank test indicated a significant low strength correlation ($r=0.267$, $p=0.046$, $n=56$) between microcirculation at the heel and ABI at the dorsalis pedis. However, no other significant associations were observed between the microcirculation at any other sites, and the ABIs measured at dorsalis pedis and posterior tibial arteries. Kruskal-Wallis test was then used to investigate if there were any significant differences in microvascular perfusion in patients with different levels of peripheral arterial disease (PAD). Significantly lower values of microcirculation at the 1st ($\eta_{H2}=0.14$) and 3rd ($\eta_{H2}=0.11$) metatarsal heads and midfoot ($\eta_{H2}=0.14$) were observed in in patients with moderate to severe PAD compared to those with mild PAD.

Conclusion: The associations between the measures of macrocirculation and skin microcirculation parameters that were observed in this study indicated that some of these measures are interrelated. However, the relationship indicated a weak association further highlighting that for the assessment of tissue perfusion, both macro and microcirculation need to be considered.