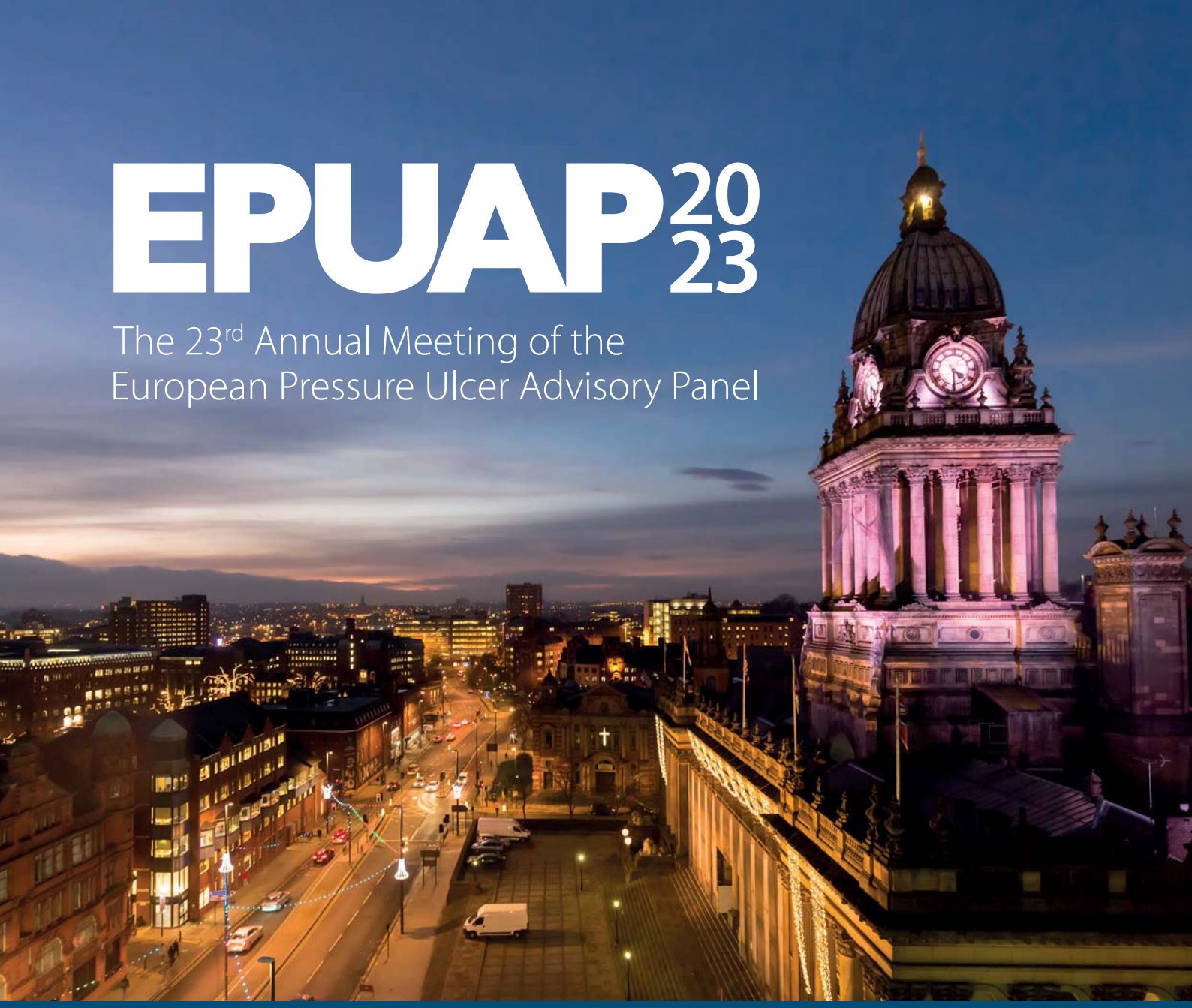
EPUAP 2023

The 23rd Annual Meeting of the
European Pressure Ulcer Advisory Panel



ABSTRACT BOOK

INNOVATIONS IN PRESSURE ULCER PREVENTION AND TREATMENT

13 – 15 September 2023, Leeds, United Kingdom

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EUROPEAN PRESSURE ULCER ADVISORY PANEL

Local Society Collaborator

Society of Tissue Viability

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GETTING UNDER THE SKIN OF A STAGE I PRESSURE ULCER

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Introduction: The most common type of pressure ulcer is a stage 1, characterized by non-blanchable erythema over intact skin [1]. However, little is known regarding the local changes in skin structure and function over the site of injury and what factors are implicated in its prognosis (healing or progression to a wound). The aim of this study was to evaluate local changes in skin structure and function over the site of a stage 1 pressure ulcer in cohort of elderly inpatients.

Methods: This was a single center longitudinal cohort study based at a large university hospital [2,3]. Skin was characterized in 50 patients over 2-3 time points using an array of measurements including biophysical parameters (Transepidermal water loss, hydration), biomarkers (inflammatory markers in sebum, local cell changes in the corneocytes) and imaging (optical coherence tomography). Two sites were assessed including the stage 1 pressure ulcer (sacrum or buttock) and a contralateral control site (10mm away) (Figure 1). Analysis was conducted to evaluate the spatial and temporal changes in each skin site.

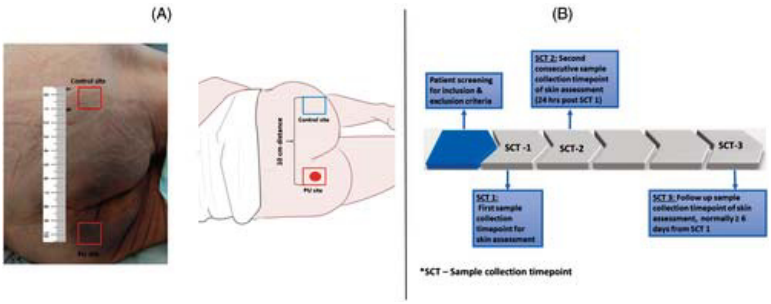
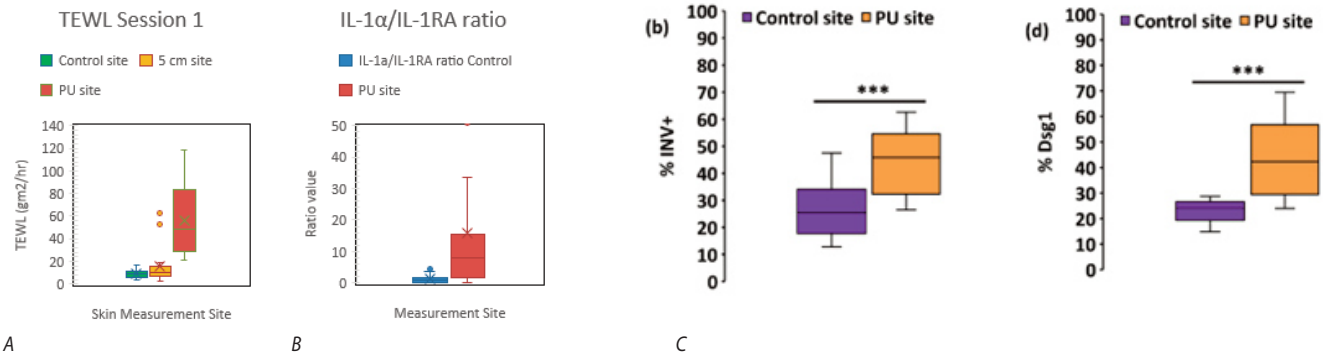


Figure 1. (A) Measurement sites of the stage 1 pressure ulcer. (B) Time course of measurements.

Results: There were significant difference between the PU site and control site in skin barrier function (Figure 1A), inflammatory biomarkers (Figure 1B) and corneocyte properties (Figure 1C). By contrast, there were no differences between stratum corneum hydration levels, with a high degree of inter-subject variability. The optical coherence tomography revealed distinct differences in skin roughness, microvascular function, and attenuation in the skin layers. Changes in these skin properties varied substantively over time, with additional analysis ongoing to evaluate their prognostic capability.



A B C

Figure 2. Values from PU and control site for (A) TEWL, (B) cytokines and (C) % INV corneocyte envelopes and % Dsg1.

Conclusions: This study represents a comprehensive characterization of local changes in skin structure and function over stage I pressure ulcer, with distinct changes in skin barrier, inflammation and cell properties observed. These have the potential to support skin assessment when diagnosing damage and with further analysis could provide indication regarding the prognosis of pressure ulcer development.

References:

[1] PUAP/NPIAP/PPPIA. In: E Haesler, ed. Prevention and Treatment of Pressure Ulcers/Injuries: Quick Reference Guide. 3rd ed. EPUAP/NPIAP/PPPIA; 2019. [2] Abiakam, NS, et al. Int Wound J. 2023; 1- 13. [3] Jayabal, H., et al. Int Wound J, 2023. 10.1111/iwj.14131.

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