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NDA research grant 2024 report: *Thermal imaging in the diagnostics of atypical ulcers and skin grafting as a treatment for atypical ulcers.*

Laura Suoniemi, MD

Dermatology Department of Tampere University Hospital, Finland

Chronic ulcers cause a remarkable burden to society and atypical ulcers such as vasculitic (VU) and pyoderma gangrenosum ulcers (PGU) constitute approximately 20 % of these. Diagnostics of atypical ulcers can be difficult, as typical histopathological changes of vasculitis gradually disappear after 48 hours, and validated PG diagnosis criteria is still lacking. Infrared thermography (IRT) is a non-invasive diagnostic tool where thermal images of the skin surface are generated by infrared cameras measuring the heat dissipated at the skin surface. It has been shown to be useful when assessing the healing of a venous ulcer and when screening diabetic foot complications. In addition, it has been studied with atherosclerosis and after revascularization but not with atypical ulcers for our knowledge. Thus, the aim of our study is to examine, whether IRT imaging can be used as a diagnostic tool of VUs and PGUs, and to distinguish these from ulcers of vascular aetiology. We also aim to evaluate, if IRT can be used to assess the inflammatory activity of atypical ulcers.

The recruiting process for the IRT study has begun in March 2023 and during year 2025, recruiting project has continued as planned and we have been able to recruit 44 of the intended 50-100 patients. During the recruiting process, we, however, realized that the follow-up study planned previously, couldn't be successfully carried out as an individual study because of inadequate number of follow-up patients. Therefore, the follow-up study will be carried out with smaller group of patients and reported within one paper together with the results considering the diagnostics of atypical ulcers and IRT.

In 2025, a new study considering the use of pneumocystis jirovecii prophylaxis among patients with VUs and PGUs was initiated. The study is a retrospective register study covering a material of 466 patients with atypical ulcers and we aim to examine how pneumocystis prophylaxis is used among these patients – i.e. which medication and doses are used, what are the indications for the prophylaxis and at what time, is the prophylactic drug started. We also aim to study, whether some patients with VUs or PGUs get affected by pneumocystis infection and what are the demographic factors of these patients. This study is planned to be the third part of doctoral thesis of yours truly. Thus far, 21 % of register data has been processed.
The analysis of both IRT and pneumocystis studies are initiated after the required data has been collected.
The generous NDA 2024 grant has enabled full time research work of yours truly and thus far, 46 % of the given grant has been used.
Our first study considering the use of split-thickness skin grafting in the treatment of VUs and PGUs has been published in June 2024 in the International Wound Journal.