Letter to the Editor

The use of MolecuLight™ for early detection of colonisation in dermal templates

Sir,

Fluorescent imaging is as a non-invasive method for visualising both wound tissue and microbiome load [1]. MolecuLight™ i:X is a real-time imaging modality that uses violet light (405nm) to create a map of bacterial burden, thereby guiding surgeons for targeted sampling, debridement and tailored wound therapies. The system is designed to detect moderate-to-heavy loads of bacteria, which equates to more than $10^4$ colony forming units per gram of tissue [2]. When using MolecuLight™, endogenous tissues emit green fluorescence. Bacteria with porphyrins fluoresce red (most commonly Staphylococcus aureus) and those with pyoverdine fluoresce cyan (Pseudomonas aeruginosa) [3].

Dermal templates and acellular dermal matrices are now routine in burn reconstruction, but are prone to bacterial colonisation and infection, resulting in matrix loss and further expense. Herein, we illustrate that MolecuLight™ may play roles in monitoring dermal templates for colonisation in the outpatient department.

A chronic non-healing wound to the knee was surgically debrided and biodegradable temporising matrix (BTM) (NovoSorb™) applied (Fig. 1), together with empirical Acticoat dressings, due to previous P. aeruginosa isolation. Serial MolecuLight™ images were taken weekly. Two weeks

Fig. 1 – Biodegradable temporising matrix (BTM) applied to chronic wound, with no suggestion of infection or colonisation under standard clinic lighting.

Fig. 2 – BTM viewed under MolecuLight™ illustrating halo of cyan fluorescence (arrow) confined to dermal template; microbiology confirmed this to be P. aeruginosa colonisation, which was debrided in clinic.

Please cite this article in press as: S. Redmond, et al., The use of MolecuLight™ for early detection of colonisation in dermal templates, Burns (2019), https://doi.org/10.1016/j.burns.2019.10.011
following surgery, a halo of cyan fluorescence (Fig. 2) suggested P. aeruginosa BTM colonisation. This area was debrided and microbiology of the area confirmed the presence of P. aeruginosa. One week later, there was a major improvement in wound fluorescence and no further colonisation of the dermal template (Fig. 3).

Thus, we feel that MolecuLight™ can be successfully used to evaluate both wounds and dermal templates for bacterial colonisation, thereby allowing prompt treatment in the outpatient clinic.

Conflicts of interest

We, the authors, have no conflicts of interest to declare.

Funding

Nil.

REFERENCES


S. Redmond
C.J. Lewis*
S. Rowe
E. Raby
S. Rea

State Adult Burn Service, Fiona Stanley Hospital, Perth,
Western Australia, Australia

* Corresponding author at: State Burn Service of Western Australia, Fiona Stanley Hospital, Perth, Western Australia WA6150, Australia.
E-mail address: Christopher.lewis2@health.wa.gov.au (C. Lewis).

Available online xxx

http://dx.doi.org/10.1016/j.burns.2019.10.011
© 2019 Elsevier Ltd and ISBI. All rights reserved.