

Session code: FC22 | **Session title:** “Physical therapies (PDT, cryotherapy, iontophoresis, DCP)” | **Day:** Wednesday, 5th July | **Time:** 16:00-17:20 | **Room:** Level 3 - Room 327

FC Free Communication

Physical therapies (PDT, cryotherapy, iontophoresis, DCP)

Photodynamic treatment of BCCs using a biphasic activation protocol consisting of red light followed by intense pulsed light delivered with mechanical pressure

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INTRODUCTION:

We propose that haemoglobin (Hb) may be acting as a competing chromophore during photodynamic activation of BCC. Hyperaemia occurs during conventional red-light activation and there is also conversion of oxy- to deoxy-Hb. Notably, deoxy-Hb is a much stronger absorber of 630nm light than oxy-Hb

In our experience, flushing is most often observed at facial locations which may explain poorer treatment outcomes at these sites. Draining blood should increase light to tumour both directly and indirectly through interaction of light with dermal collagen. This results in recycling and redirection of light (scattering). Scattered light may be of ‘higher quality’ for photodynamic activation as it may overcome shadows created by opacities within the tumour microenvironment.

Removing blood will also facilitate penetration and scattering of stronger activating wavelengths within the green-yellow spectrum of the IPL emission. We postulate that heat generated during red-light activation leads to dissociation of oxygen from Hb so that oxygen shortfall should not be an issue for higher fluence IPL activation.

Draining blood may notably result in increased delivery of light to the peripheral cells of BCC tumour nodules. Cells of the outermost palisading layer are likely to be important growth cells. They lie in closest proximity to blood vessels.

METHODS:

Since 2018, we have adopted a photodynamic treatment protocol for BCCs where activation is performed using red light immediately followed by IPL delivered with enough mechanical pressure to remove blood.

RESULTS:

In our initial series of 36 lesions of which most lesions were nodular and most located on the face, there was 1 incomplete removal at a mean 12-months follow-up.

We have used optical coherence tomography to verify clearance of most tumours.

CONCLUSION:

A modified activation protocol consisting of red-light followed by IPL delivered with mechanical pressure to remove blood enhances photodynamic treatment efficacy of BCCs.