

Medical > In Vivo > Other material

3

Characterization of Laser-Resistant Port Wine Stain Blood Vessels Using In Vivo Reflectance Confocal Microscopy.

Fu Z, Huang J, Xiang Y, Huang J, Tang Z, Chen J, Nelson JS, Tan W, Lu J. *Lasers Surg Med.* 2019 Jul 16. doi: 10.1002/lsm.23134.

ABSTRACT

BACKGROUND AND OBJECTIVES: Port wine stain (PWS) is a congenital vascular malformation of the human skin. Laser is the treatment of choice for PWS. Laser-resistant PWS is one crucial factor accounting for inadequate treatment outcome, which needs to be fully characterized. This study aims to quantitatively characterize the morphology of laser-resistant PWS blood vessels in the upper papillary dermis using in vivo reflectance confocal microscopy (RCM). **STUDY DESIGN/MATERIALS AND METHODS:** A total of 42 PWS subjects receiving laser treatment from August 2016 through July 2018 were enrolled into this study. Thirty-three subjects had facial PWS; nine had extremity PWS. All subject's PWS received multiplex 585/1,064 nm laser treatment. RCM images were taken before and after treatment. The density, diameter, blood flow, and depth of PWS blood vessels were analyzed. **RESULTS:** We found 44.4% PWS on the extremities (four out of nine subjects) were laser-resistant, which was significantly higher ($P < 0.001$) when compared with those PWS on the face (15.2%, 5 out of 33 subjects). The laser-resistant facial PWS blood vessels had significantly higher blood flow (1.35 ± 0.26 U vs. 0.89 ± 0.22 U, $P < 0.001$), larger blood vessel diameters (109.60 ± 18.24 μm vs. 84.36 ± 24.04 μm , $P = 0.033$) and were located deeper in the skin (106.01 ± 13.87 μm vs. 87.82 ± 12.57 μm , $P < 0.001$) in the skin when compared with laser-responsive PWS on the face. The average PWS blood vessel density ($17.01 \pm 4.63/\text{mm}^2$ vs. $16.61 \pm 4.44/\text{mm}^2$, $P = 0.857$) was not correlated to the laser resistance. **CONCLUSIONS:** Laser-resistant PWS blood vessels had significantly higher blood flow, larger diameters, and were located deeper in the skin. RCM can be a valuable tool for a prognostic evaluation on laser-resistant lesions before treatment, thereby providing guidance for tailored laser treatment protocols, which may improve the therapeutic outcome. The limitations for this study include relative small sample size and acquisitions of different blood vessels before and after 2 months of treatment. *Lasers Surg. Med.* © 2019 Wiley Periodicals, Inc. © 2019 Wiley Periodicals, Inc. **KEYWORDS:** laser; port wine stain; reflectance confocal microscopy; resistant PMID:31310339 DOI:10.1002/lsm.23134