HEMANGIOMA VASCULAR LESION CHARACTERIZATION BY OPTICAL COHERENCE TOMOGRAPHY

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Hemangioma vascular lesions are common childhood tumors appearing mainly in the neck and head. It affects 10% of children worldwide [1]. In most cases the lesions does not bring consequences for the patient's health, although some patient can develop complications caused by tissue deformities. In extreme cases, it could be a life risk. The early diagnosis of the lesion could lead to an early treatment and a reduction on its aesthetic and psychological consequences. In this work, we evaluate the use of the Optical Coherence Tomography to differentiate between hemangioma vascular lesions from normal skin.

Using a swept source OCT (9 μm and 18 μm axial and lateral resolution) 541 images of hemangioma lesion and 50 image of normal skin on the hand region was acquired. IMIP Ethics Committee approved this study (protocol no. 728.993). In order to characterize the normal skin and the hemangioma vascular lesion it was implemented an automated analysis using Matlab ©. Two approaches was implemented, a morphological analysis [2] to evaluate the epidermis thickness and an attenuation coefficient analysis [3] to evaluate the optical feature of the tissue.

It was possible to evaluate the depth distribution of epidermis for booth normal skin and hemangioma lesion. Normal skin presented a thicker epidermis layer and a broader distribution, while hemangioma lesion presented a narrower epidermis layer and uniform distribution. The attenuation coefficient of hemangioma lesion presented 9.2% higher values than normal skin. Booth approaches proved to be valid for hemangioma diagnosis and could be complementary to each other and the combination of these approaches will be discussed in this work.

References:

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