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Autologous hair follicle transplantation in a recessive dystrophic epidermolysis bullosa (RDEB) patient: A promising way to heal recalcitrant wounds

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Recessive dystrophic epidermolysis bullosa (RDEB) is a severe hereditable blistering disease caused by mutations in the type VII collagen gene, consequencing in tenuously fragile skin prone to wounds. The chronic non-healing ulcers found in RDEB patients may ultimately lead to the notoriously complication of RDEB-associated squamous cell carcinoma (SCC) with a mortality rate of 80%. Unfortunately as of today, the perturbing and painful disease still remains incurable with no available specific treatments hitherto.

Nonetheless, we have recently reported the first ever success of healing the extensive chronic wounds found in an intermediate RDEB patient through an autograft procedure of transplanting hair follicles onto her wounds. Through an immunofluorescence study, type VII collagen was shown to be expressed along the epidermal and follicular basement membrane zone in the donor and recipient sites, and some hairs grew in the recipient sites.

The same therapy also helped to heal chronic leg ulcers in non-DEB patients. In addition, devoid of laboratory procedures in the treatment protocol also guarantees a safe and simple operation. Autologous follicular grafting therefore appears to potentially be an effective and innovative solution for RDEB patients or patients with recalcitrant wounds.

Recent publications

1. Ming-Hsien Lin, Julia Yu-Yun Lee, Shin-Chen Pan, and Tak-Wah Wong. Enhancing wound healing in recalcitrant leg ulcers with aminolevulinic acid-mediated antimicrobial photodynamic therapy. Photodiagnosis and Photodynamic Therapy. Volume 33, March 2021, 102149.

2. Tak-Wah Wong, Chao-Chun Yang, Chao-Kai Hsu, Cheng-Han Liu, JuliaYu-Yun Lee. Transplantation of Autologous Single Hair Units Heals Chronic Wounds in Autosomal Recessive Dystrophic Epidermolysis Bullosa: A Proof-of-Concept Study. Journal of Tissue Viability. Volume 30, Issue 1, February 2021, Pages 36-41.

3. Wen-Tai Chiu, Thi-Tuong Vi Tran, Shin-Chen Pan, Ho-Kai Huang, Ying-Chi Chen, and Tak-Wah Wong. Cystic Fibrosis Transmembrane Conductance Regulator: A Possible New Target for Photodynamic Therapy Enhances Wound Healing. Advances in Wound Care. 2 Apr 2019.

Speaker Biography

Tak-Wah Wong works in the departments of dermatology, biochemistry and molecular biology, Center of Applied Nanomedicine, at the National Cheng Kung University Medical Center of Taiwan. He sits on the board of directors of the Taiwanese Society of Investigative Dermatology. He spent two years as a visiting scientist with professor Thomas Dougherty and Dr. Allan Oseroff's team at the Roswell Park Cancer Institute Photodynamic Therapy (PDT) Center in New York. As Taiwan's pioneer in PDT to treat skin cancer since 1999, the research of PDT in his lab has been extended from neoplastic diseases to wound healing.

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