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Human tissue engineered skin substitutes based on hyaluronic acid for wound healing: Epidermal barrier study

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Background: Hyaluronic acid (HA), a natural component of skin which is highly used in cosmetic dermatology, has not been fully studied, in terms of clinical bio-integration and cutaneous homeostasis parameters, as biomaterial for human tissue engineered skin substitutes (hTESSs).

Objective: To analyze clinical, histologic integration and homeostasis parameters of a hTESS based on hyaluronic acid (HA-Skin), grafted in immunodeficient mice for eight weeks, and compared with a secondary wound healing dressing and the gold standard treatment (Autograft).

Methods: HA-Skin manufactured under GMP requirements, biosynthetic porcine collagen wound dressing (Collagen-Dressing) and autografts were implanted into 20 BALB/c mice after surgical excision. Clinical integration and homeostasis parameters were evaluated every two weeks for two months. Histologic and immunohistochemical analysis were performed four and eight weeks after grafting.

Results: HA-Skin and Autograft groups showed a proper clinical integration and epithelization and better scar evaluation after eight weeks. Analysis of homeostasis parameters indicated similar values of transepidermal water loss and elasticity between HA-Skin (6.42 $\pm$ 0.75 g/h/m^2, 0.42 $\pm$ 0.08 μm), Autograft (6.91 $\pm$ 1.28 g/h/m^2, 0.40 $\pm$ 0.08 μm) and healthy mouse skin (6.40 $\pm$ 0.43 g/h/m^2, 0.35 $\pm$ 0.03 μm). Temperature, pH, and moisture analysis reported better values for HA-Skin (33.09 $\pm$ 0.07°C, 5.56 $\pm$ 0.26, 22.08 $\pm$ 2.23 AU) than Collagen-Dressing (30.33 $\pm$ 0.05 °C, 4.19 $\pm$ 0.01, 20.41 $\pm$ 0.13 AU). Histologic results showed that hTESSs and autografts presented better skin structuration and higher expression of cytokeratins. HLA immunostaining confirmed the presence of human cells in HA-Skin after 8 weeks.

Conclusions: This study suggests that a hTESS based on hyaluronic acid could be suitable for patients' application in several dermatologic pathologies.

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Achieving a PASI 50 at 2 weeks was associated with better long-term clinical outcomes and low discontinuation: A subgroup analysis of a phase 3 trial of ixekizumab and etanercept in moderate to severe psoriasis

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Background: While many patients prioritize rapid improvements in their treatment goals, it is not clear if rapid improvements are associated with better long term outcomes. In this analysis, we evaluate the association between rapid onset of efficacy (PASI 50 at 2 weeks) and long-term clinical outcomes.

Methods: This post hoc analysis included patients receiving the labeled dosing regimen of ixekizumab (IXE; n = 385) and etanercept (ETN; n = 382; only through 12 weeks) from the UNCOVER-3 trial. PASI 90 and PASI 100 were calculated at week 12 and week 60 among patients with early response (PASI 50 at week 2) vs early non-response. Discontinuations were also summarized for these subgroups. Missing data was imputed using non-response.

Results: At two weeks, 63% of IXE patients and 18.1% ETN patients had PASI 50. For IXE early responders, week 12 PASI 90 and PASI 100 response rates were, 79.3% and 47.3%, respectively, vs 49.3% and 21.5% in week 2 non-responders. ETN early responders also had greater week 12 outcomes vs non-responders. At week 60, PASI 90 and PASI 100 response rates were 85.7% and 66.1% in IXE early responders vs 64.4% and 46.2% in non-responders. Early response was also associated with lower discontinuation rates vs non-response (8% vs 18%) at 1 year.

Conclusions: In this analysis, rapid responders treated with IXE or ETN had a higher response rates at week 12 and 60 and a lower rates of discontinuations; however, many slower responders still achieved PASI 90/ 100 at week 60.

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Treatment goals of patients with psoriasis as assessed by the Patient Benefit Index: Results of a National Psoriasis Foundation survey

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Background: Meeting patient expectations and treatment goals are critical for optimizing long term outcomes. Using the annual survey of the National Psoriasis Foundation we evaluated patient treatment goals. Method Survey participants responded to the 25-item Patient Benefit Index (PBI) and indicated how much they value different treatment attributes from 0 ('not at all'), to 4 ('very'). Answers were assessed by subgroups according to the 6-point Patient Global Assessment (<3: lower severity and ≥3: higher severity). Additional subgroups were also evaluated.

Results: A total of 1200 participants completed the survey. Mean age was 51.5 years, 65.3% were female, and mean $\pm$ SD psoriasis duration was 22.8 $\pm$ 17.3 years. The 5 treatment goals with the highest score (mean $\pm$ SD) were "to have confidence in the therapy" (3.46 $\pm$ 1.01), "to regain control of the disease" (3.46 $\pm$ 1.03), "to have no fear that the disease will become worse" (3.41 $\pm$ 1.03), "to get better skin quickly" (3.27 $\pm$ 1.11) and "to be free of itching" (3.27 $\pm$ 1.19). In the lower severity subgroup (n = 698) the 5 treatment goals with the highest score were the same as those for the overall study population. Unique to the higher severity subgroup (n = 502), "to find a clear diagnosis and therapy" was a top 5 goal. Discussion This study represents the first US application of the PBI and shows that treatment preferences can differ between patients with different characteristics such as severity. Further exploration of this data will help inform treatment decisions and optimize patient outcomes.

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The association of frontal fibrosing alopecia with skin and hair care products

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Background: Frontal fibrosing alopecia (FFA) is a primary cicatricial alopecia that is characterized by progressive recession of the frontotemporal hairline in a band-like pattern and often includes loss of eyebrow hair. The number of reported cases of FFA has been increasing, with some studies suggesting an association between FFA and the use of leave-on facial skincare products and sunscreens.

Methods: A questionnaire was developed to examine exposures to a wide variety of skin and hair care products and practices. Patients who were seen in the Department of Dermatology at Mayo Clinic and diagnosed with FFA between 1992 and 2016 were invited to participate.

Results: Fifty-six women with FFA completed the questionnaire (36.1% response rate). Response to treatment included unaltered disease progression in 20 (45.5%), slowing of disease progression in 17 (38.6%), and disease stabilization in 7 (15.9%). Daily facial sunscreen product use was reported by 35 patients (62.5%). The association between daily facial sunscreen product use and unaltered hair loss progression was not significant ($P = .2268$). The association between hair texture and hair loss progression was also not significant ($P = .7213$).

Conclusions: Patients in our study reported high rates of regular sunscreen product use, higher than what has been reported nationally. However, we did not find a significant association between daily facial sunscreen product use and worsening disease progression in patients who received treatment for FFA. Self-reported extreme hair textures (either fine or thin, or thick or coarse hair) were also not associated with hair loss progression.

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