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Clinical evaluation, cutaneous homeostasis, and epidermal barrier analysis of a human tissue engineered skin substitute for severe burn patients

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Background: Human tissue engineered skin substitutes (hTESSs) are an alternative option of wound coverage for severe burn patients when autografts are not available.

Objective: To analyze clinical integration, epidermal barrier function, and homeostasis parameters of hTESS grafted in severe burn patients during a 3-month follow-up period.

Methods: Autologous hTESSs were manufactured from 6−9-cm^2 skin biopsies under GMP requirements. Keratinocytes and fibroblasts were enzymatically isolated, then expanded in culture for 4-5 weeks using a feeder layer and finally hTESS sheets of 144 cm^2 were manufactured (no. of sheets = body surface area burned (BSAb)/144 cm^2). Clinical integration (onset and complete epithelization,% of permanent coverage), homeostasis parameters (temperature and pH: thermometer and skin pH meter) and epidermal barrier function (TEWL: Tewameter) were evaluated (0, 30, 60, and 90 days after surgery).

Results: 12 patients (4 women and 8 men) were included, mean age was 22 years (range: 1-45) and mean, BSAb was 62.2% (range: 30-80). A mean of 6621 cm^2/46 sheets of 144 cm^2 were grafted per patients (range: 1440-12240 cm^2). Mean onset and complete epithelization was achieved at 14.7 and 33.7 days respectively and 66.6% of grafted skin was present at patient's discharge. pH and temperature differences between grafted and healthy skin showed an improvement between day 0 and 90 (−4.13ºC vs −0.5ºC for temperature and 1.21 vs 0.07 for pH). TEWL also showed an improvement (32.1 vs 11.2 g/h/m^2).

Conclusions: This hTESS may restore cutaneous homeostasis and epidermal barrier in severe burn patients with an appropriate clinical integration.

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16880

Prevalence of mucocutaneous findings in an inception systemic lupus erythematosus cohort

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Background: Systemic lupus erythematosus (SLE) patients may present mucocutaneous adverse events related to chronic treatment. The aim of this study was to quantify the prevalence of mucocutaneous findings in an inception cohort.

Methods: 77 consecutive subjects participating in an inception SLE cohort were studied. Two dermatologists and an oral pathologist performed complete mucocutaneous examinations. Summary measures of data are expressed in medians, minimum and maximum values.

Results: 72 (94%) subjects were female with a median age of 34 (19-58) years; 72 (94%) subjects were Fitzpatrick's phototypes III-IV, and the median since SLE diagnosis was 11.2 (0.42-17.4) years. The most prevalent abnormalities were: a) fingernails [melanonychia n = 24 (34%), and splinter hemorrhages n = 18 (25%)]; b) toenails [xantonychia n = 25 (33%), pachyonychia n = 23 (31%), melanonychia n = 18 (24%)]; c) skin [xerosis n = 39 (51%), dyschromia n = 36 (47%), striae distensae n = 32 (42%), tinea pedis n = 28 (37%), livedo reticularis n = 19 (25%), and dermatofibromes n = 15 (20%)]; and d) oral mucosa [erythematous candidiasis n = 43 (57%), drug-induced hyperpigmentation n = 37 (49%), xerostomia n = 35 (46%)].

Discussion: In this study we found multiple findings associated to the use of multiple drugs for the treatment of SLE, particularly drug-induced hyperpigmentation and erythematous candidiasis. Antimalarials can induce hyperpigmentation in sun exposed areas and in photoprotected areas; cyclophosphamide can induce hyperpigmentation too. The prevalence of erythematous candidiasis in SLE has not been reported previously, but we found a high prevalence. Our findings suggest the need of educational and preventive measures to lower the incidence of mucocutaneous side effects of treatment.

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The clinical and humanistic burden of mild to moderate atopic dermatitis in the United States: Analyses of the National Health and Wellness Survey

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Background: Atopic dermatitis (AD) is a chronic inflammatory disorder associated with substantial burden; however, few studies explore patient-reported burden in mild to moderate AD.

Design: Cross-sectional real-world study.

Methods: US adult participants in the global 2017 NHWS who self-reported physician-diagnosed AD/eczema and mild to moderate severity were compared with propensity score-matched non-AD/eczema controls using chi-square/analysis of variance. Rates of self-reported comorbidities (yes/no), psychological symptoms (anxiety in past 12 months [yes/no], depression [Patient Health Questionnaire-9 (PHQ-9)]), sleep difficulties in past 12 months (none to severe, 4-level verbal rating scale), quality of life (QoL) [Short Form-36 v2 (SF 36)], and health status [EuroQoL (EQ-5D)] were collected.

Results: 4496 respondents reported an AD/eczema diagnosis, 4321 with mild to moderate severity (69.1% female; mean age = 42.9 years; 74.5% mild, 25.5% moderate). Substantial comorbidity was observed in mild to moderate AD/eczema versus controls, most commonly allergies (54.3% vs 36.2%), pain (31.3% vs 22.1%), and food allergies (21.3% vs 10.2%). For individuals with mild or moderate AD/eczema versus controls, increased frequency of anxiety (48.4%,52.0% vs 39.8%; $P < .0001$), moderate/severe depression (PHQ-9 = 10-27; 21.4%, 30.4% vs 21.0%; $P < .0001$ across categories), and moderate/severe sleep difficulties (20.8%, 27.7% vs 16.90%; $P < .0001$ across categories) were reported. Similarly, an increased burden in mild to moderate AD/eczema versus controls was consistently observed for impact of sleep difficulties, all 8 SF-36 domains, and EQ-5D total/subdomain scores.

Conclusions: US adults with mild to moderate AD frequently report anxiety, depression, and sleep difficulties. These comorbid conditions lead to significant decrements in health status and QoL, highlighting the importance of improving AD disease management and reducing impact of related comorbidities in this population.

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Characterization of cutaneous manifestations in children with amoxicillin allergy established through graded oral challenge

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Cutaneous manifestations during presumed allergic reactions to amoxicillin may predict a true allergy reaction to the drug. We aimed to determine cutaneous symptoms on history that are associated with true amoxicillin allergy established through graded oral challenge (GOC) in children. A cohort study was conducted from March 1, 2012, to April 1, 2019, at the Montreal Children's Hospital in Canada. Children with suspected allergy to amoxicillin were recruited. Data were collected on antibiotic exposure, clinical characteristics, and personal and first-degree relatives' comorbidities. All children had a supervised GOC (consisting of 10% of the age and weight−appropriate amoxicillin dose and, if well tolerated after 20 minutes, 90% of the dose). Univariate and multivariate logistic regressions were compared with characterize children who reacted immediately (within one hour), non-immediately and those that tolerated the GOC. Overall, 1614 participants were recruited. The median age of the cohort was 1.7 years and 53.5% were males. Urticaria was the most common cutaneous presentation during the initial reaction prompting a referral to the allergy clinic. Children with a known history of chronic urticaria were more likely (adjusted Odds Ratio (aOR):1.07 [95% CI 1.00-1.15]) to have an immediate reaction to the GOC while children with a known family history of drug allergy (aOR:1.04 [95% CI 1.02-1.06]) were more likely to have a non-immediate reaction while adjusting for age, sex, presence of asthma, eczema and other known allergies and cutaneous characteristics of the initial reaction. Further studies are required to further character size cutaneous findings in true allergic reactions in children.

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