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Wearable UV/HEV light sensor and smartphone application for personal monitoring and personalized recommendations

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Prolonged exposure even to suberythemal UV doses has many associated risk factors, including skin cancer and photo-aging. Recent studies also indicate that high-energy visible light (HEV) induces oxidative stress in the skin which is ultimately linked to visible signs such as pigmentation and aging. Personalized monitoring of UV/HEV radiation is necessary for recommendations of personal sun-safe behaviors. Here, we demonstrate a wireless, battery-free, miniature, wearable UV/HEV sensor that can be mounted on t-shirt, sunglasses, wristband, shoes or necklace. The sensor is the first electronic UV/HEV dosimeter that measures true cumulative UV/HEV exposure that is directly comparable to skin exposure. It also operates as a personalized digital skin coach that provides user with actionable data and recommendations to improve skin health. We run several clinical evaluation studies to demonstrate functionality of the sensor. One study involved healthy volunteers engaged in recreational activities. Subjects wore devices on the thumbnail or the middle fingernail, while they participated in causal activities including playing games, showering, swimming with use of skin care product. Another study demonstrated that measurements from different body locations can be used to extrapolate total body UV/HEV exposure. The studies demonstrated sensor accuracy, reliability, and versatility. They also showed that measurements of UV/HEV exposure from different body locations can be used for reliable estimations of personal UV/HEV exposures.

Commercial disclosure: None identified.

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Treatment with secukinumab of severe plaque psoriasis in pediatric patients: Study design and baseline characteristics of a double-blind study

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Background: Psoriasis is prevalent in ~1% of children and adolescents in the general population. Current treatment options are few, including mostly off-label systemic therapies and limited use of currently approved biologics for pediatric psoriasis, resulting in a high-unmet medical need. Secukinumab, a fully human monoclonal antibody that selectively neutralizes IL-17A, has demonstrated sustained long-term efficacy with a favorable safety profile in various psoriatic disease manifestations in adults. Here we report the study design, baseline demographics and baseline disease characteristics from a double-blind study in pediatric patients.

Methods: This multicenter, randomized, double-blind, parallel-group, placebo and active (etanercept)-controlled study was conducted in pediatric patients with severe plaque psoriasis (CAIN457A2310/NCT02471144). High and low secukinumab doses were based on patient bodyweight groups. These doses were selected based on adult phase III study results and the corresponding population-PK modelling.

Results: Patients with severe plaque psoriasis (n = 162), ranging from 6 to <18 years of age (mean ± SD 13.5 ± 3.1 years) were randomized to treatment. The proportion of patients <12/≥12 years of age was 22.8%/77.2%, respectively. Baseline Psoriasis Area Severity Index score (mean ± SD) was 28.0 ± 8.2, total body surface area involved was 40.0 ± 17.3, Investigator's Global Assessment modified 2011 3/4 was 0.6%/99.4%, respectively. Duration since first diagnosis of psoriasis was 5.2 ± 4.5 years.

Conclusions: This study, being one of the largest conducted to date with a biologic in pediatric psoriasis patients, will evaluate efficacy and safety of secukinumab versus placebo and etanercept in children/adolescents with severe plaque psoriasis. An additional ongoing open-label study in pediatric patients with moderate to severe psoriasis will be reported later.

Commercial disclosure: None identified.

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Long-term treatment effects of ixekizumab among psoriasis patients who achieved early high-level treatment outcomes in a real-world setting: Results from a single US dermatology referral practice

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Background: Ixekizumab (IXE) has demonstrated an early and high level treatment response in the real-world setting. This study assessed two-year disease severity and quality of life (QoL) outcomes among IXE-treated plaque psoriasis patients.

Methods: Medical charts were reviewed for adult psoriasis patients starting IXE from 3/22/2016 and 2/28/2018. sPGA, BSA, and DLQI were summarized 1-month post-index and 3-month intervals. Logistic regressions were performed to evaluate 1-month response in relation to long-term outcomes.

Results: 154 patients were included with mean disease duration of 14.7 years (median age 48; 94% Caucasian; 66% male). Among 136 patients with sPGA data at 1-month, 80 patients achieved sPGA(0,1), 88% of patients with 24-month data maintained such response. Of 1-month sPGA(0,1) patients, 50% achieved sPGA 0, 85%, BSA ≤1% and 70% DLQI(0,1). These outcomes were maintained in the majority of 1-month sPGA responders for the 24-month follow-up period (67%, 94%, and 76%, respectively), among those with data. Of patients not achieving sPGA(0,1) at 1 month, 77% had sPGA 2 (7-point scale); at 3 months, 44% achieved sPGA(0,1) while 72% achieved, BSA ≤1% and 54% achieved DLQI (0,1). 1-month sPGA(0,1) was associated with achieving sPGA(0,1), BSA ≤1%, and DLQI(0,1) at 12 months (OR 4.9, 3.4, 2.8, 95% CI 2-12.2, 1.1-10.4, 1.1-6.9, respectively, $P < .05$). The results remained significant for sPGA and BSA at 24 months.

Conclusions: The majority of IXE-treated patients achieved sPGA(0,1) in one month, and improvements in clinical and QoL outcomes were maintained at the 24-month follow-up.

Commercial disclosure: None identified.

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Basal cell carcinoma: An emerging epidemic in women in Iceland

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Background: An epidemic of basal cell carcinoma (BCC) has led to a significant health care burden in Caucasian populations.

Objective: To provide an update on incidence rates and tumor burden in an unselected, geographically isolated population that is exposed to a low level of UVR.

Methods: A whole-population study using a cancer registry containing records of all BCC cases in 1981-2017. We assessed BCC incidence according to age, residence and multiplicity and assessed trends using joinpoint-analysis. Age-standardized and age-specific incidence rates were calculated along with cumulative and lifetime-risks.

Results: There was a total of 3100 first diagnosed BCCs in men (42.9%) and 4126 (57.1%) in women. The total tumor burden in the population was 1.72 times higher when accounting for multiplicity. In the beginning of the study period, the world standardized rates in men and women were similar, but by the end of the study period the WSR was 38% higher in women. This increase was most prominent in women <40 years on sites that are normally not exposed to UV radiation in Iceland, the trunk and legs.

Conclusions: This is the only reported population in which the incidence of BCC is significantly higher in women than in men. There was a notable increase after a surge in tanning-bed popularity, which women are more likely to use than men. Our data supports previous theories that tanning bed exposure at a young age might exponentially increase BCC risk. The high multiplicity rates suggest that total tumor burden worldwide might be higher than previously thought.

Commercial disclosure: None identified.