AARS HOT TOPICS MEMBER NEWSLETTER

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TABLE OF CONTENTS

AARS Event

Save the Date: 14th Annual AARS Reception, Friday, March 1, 2019 6P – 9PM, Washington, DC

Industry News

Biophotonic system earns CE mark. Dermatology Times. Volume: 39 Issue: 10. October 2018. http://www.dermatologytimes.com/current-and-emerging-treatments-acne/biophotonic-system-earns-ce-mark

Kleresca's biophotonic system includes the multi-LED Kleresca lamp. It uses pre-programmed wavelength settings and a photoconverter gel to convert light waves from the lamp into dynamic, pulsing fluorescent energy to stimulate the skin's repair mechanism. Kleresca is expanding the biophotonic technology into the US., Canada, Australia and Europe. Kleresca, a U.K.-based company offering biophotonic technology for various skincare treatments, recently received CE mark approval, which will allow it to expand into the U.S., Canada, Australia and throughout Europe, according to a news release. The company's technology uses a propriety multi-LED lamp designed with preprogrammed wavelength settings in combination with a "specially formulated photoconverter gel." Chromophores in the gel then convert the light waves into "pulsing fluorescent energy," resulting in stimulation of the skin's repair mechanisms, according to the company. Kleresca's system is used for addressing acne, rosacea and skin rejuvenation. The company operated under the CE mark of one the brands that founded it, LEO Pharma, until June. Kleresca also offers a pre-post biophotonic treatment that prepares the skin for invasive or high-energy laser procedures. It claims to help increase collagen buildup, activate the skin's regenerative processes, and reduce inflammation and erythema.

Almirall updates. Practical Dermatology, Oct. 2018. http://practicaldermatology.com/2018/10/news

Almirall, S.A. finalized its acquisition of products from Allergan's Medical Dermatology unit in the US: Aczone (dapsone), Tazorac (tazarotene), Azelex (azelaic acid), and Cordran Tape (flurandrenolide). The newly approved sarecycline (Seysara) is also part of the transaction. These portfolio additions further enhance Almirall's presence in the U.S. dermatology space through their subsidiary Aqua Pharmaceuticals. In other company news, Alrimal and Evotec have formed a Dermatology Research Collaboration. The companies aim to discover and develop first-in-class therapeutics through a novel approach to disrupt cell signaling, that is expected to deliver highly potent and durable treatments for debilitating dermatology diseases such as psoriasis and atopic dermatitis. The two companies have formed a collaboration that combines Evotec's cutting-edge drug discovery and pre-clinical development platforms with Almirall's leading expertise in dermatology diseases. Under the terms of the agreement, Evotec will receive research funding and may be eligible to receive discovery, pre-clinical, clinical and sales milestone payments as well as tiered royalties.

Nestlé to explore strategic options for Nestlé Skin Health. Practical Dermatology, Oct. 2018. http://practicaldermatology.com/2018/10/news

As part of its regular strategy review earlier this year, the Board of Directors assessed Nestlé's Nutrition, Health and Wellness strategy. The Board fully confirmed the company's strategic direction and resolved to sharpen its focus on

food, beverage, and nutritional health products. After further analysis and consideration, the Board reported that it has come to the conclusion that the future growth opportunities of Nestlé Skin Health lie increasingly outside the group's strategic scope and has therefore decided to explore strategic options for Nestlé Skin Health. This review is expected to be completed by mid-2019. Nestlé Skin Health provides science-based solutions to meet the specific skin health needs of healthcare professionals, patients and consumers with a range of medical and consumer brands through three complementary business units, including Epiduo and Soolantra in prescription, Restylane and Azzalure in aesthetics, and Cetaphil and Proactiv in consumer care. Mark Schneider, CEO, commented: "Nestlé Skin Health has made significant progress under its new leadership team over the past two years. The company has developed convincing growth strategies for each of its business units and regained a competitive cost structure. Now is the right time to explore the best ownership structure for Nestlé Skin Health and to consider ways of taking it to the next level."

Scar-less healing may be on the horizon. Practical Dermatology, DermWire. Wednesday, September 26, 2018. http://practicaldermatology.com/dermwire/2018/09/26/scar-less-healing-may-be-on-the-horizon

Stromal cell-derived-factor-1 (SDF1), a compound secreted in the bloodstream, may be the key factor that causes wounds in older people to heal with less scarring than in younger people, according to researchers from the Perelman School of Medicine at the University of Pennsylvania. What's more, blocking SDF1 could influence scar formation and tissue regeneration in mouse and human skin, potentially providing a path to scar-less wound healing in humans. "Dermatologists and plastic surgeons have consistently observed that older people's wounds heal with thinner scars than younger patients', but until now, no one has been able to answer the question of why that's the case," says the study's senior author Thomas H. Leung, MD, PhD, an assistant professor of Dermatology at Penn, in a news release. In the study, Dr. Leung and his team pierced the ears of mice of different ages – the equivalent of a 12-year-old and a 70-year-old if converted to human years. The hole closed with no scar formation in older mice, while younger mice healed with a visible scar. Researchers then exchanged the blood of young mice with old mice, pierced their ears, and found that the ears of old mice now scarred. They concluded whatever was causing the scarring must be something in the blood. The team then took tissue samples from young and old mice and compared their gene expression signatures. They identified 80 differences, too many to study. But when they asked which gene products are found in the blood stream, the list narrowed to 13 suspects. One was SDF1, a signaling molecule that was previously shown to play a role in scar formation in the skin, liver, and lung, and it seemed like a promising possibility. They confirmed that SDF1 was expressed in younger mice but not older. To prove that SDF1 may be the causal factor, they created a mouse that lacked SDF1 in the skin. When SDF1 function was inactivated, even young mice began to regenerate skin, behaving, in this sense, like older mice. "This is a rare instance where aging actually improves the body's ability to heal rather than diminishing it," Dr. Leung says. "When we're younger, we secrete more SDF1 into the blood stream to form scars, but as we age, we lose this ability, which allows tissue to regenerate." To prove it, researchers exchanged the blood between young SDF1-deficient mice and older mice. This time, neither mouse scarred. The team went one step further and grew human skin in the lab, then injured it with a scalpel. Human skin also exhibited an age-dependent expression of SDF1. Dr. Leung says this work has the ability to impact the clinic relatively quickly. SDF1 inhibitors already exist on the market and currently used as a treatment to mobilize stem cells. He and his team plan to study its use in preventing scar formation in humans. The findings appear in Cell Reports.

Canfield Scientific acquires leading German dermoscopy company VISIOMED AG. Practical Dermatology, DermWire. Wednesday, September 05, 2018. http://practicaldermatology.com/dermwire/2018/09/05/canfield-scientific-acquires-leading-german-dermoscopy-company-visiomed-ag

Canfield Scientific has acquired German company VISIOMED AG, which designs and manufactures dermoscopy systems. The resulting business has decades of experience in aesthetic documentation, 3D imaging, clinical photography, and reflected light microscopy leading to more choices and services for customers. "The addition of VISIOMED's best-in-class optical and digital dermatoscopes are a perfect extension to our imaging portfolio" says Doug Canfield, President of Canfield Scientific, in a news release. "Furthermore, their commitment to excellence andorganizational culture was a natural fit with our own." According to Canfield, the acquisition brings a talented management team that will assume leadership roles in the expanded Canfield business. Dipl.- Ing. (FH) Dirk Holle, previously VISIOMED CEO, will lead Canfield Scientific GmbH, a wholly-owned subsidiary of Canfield Scientific, Inc. Canfield Scientific GmbH will become a center of excellence for high magnification imaging research and development, as well as a customer support and logistics center for Canfield in Europe. Peter Klar, previously the VISIOMED global head of sales and marketing, will assume responsibility for commercial sales of Canfield's imaging systems as Chief Sales Officer (CSO) for Europe. "Canfield Scientific and VISIOMED's collaborative synergy allows us to not only grow our product portfolio and research efforts, but also continue expansion of our European footprint." Klar says "In this way, we can offer our customers a complete line of medical and aesthetic imaging solutions while still maintaining the highest level of quality that has always been synonymous with both companies." The new operation, located in Bielefeld, Germany complements Canfield's existing clinical services organization in Utrecht Netherlands. Opened over 10 years ago by Peter Kollias, the Utrecht office will continue to support clinical studies in Europe, Middle East, and Africa. Canfield Scientific and Canfield Scientific GmbH will be exhibiting together at the 27th EADV Congress on 13-15 September 2018 in Paris, France. The merged product line, including the full range of VISIOMED dermatoscopes, will be available directly from Canfield Scientific, Inc. in the US and Canfield Scientific GmbH in Germany. For purchases in other countries, the Canfield and VISIOMED global distribution partner networks will be combined to reflect the integrated product lines.

New Medical News

Minocycline as foam topical under study in acne. Torjesen I. Dermatology Times, Nov 12, 2018. http://www.dermatologytimes.com/current-and-emerging-treatments-acne/minocycline-foam-topical-under-study-acne?rememberme=1&elq_mid=4239&elq_cid=895859&GUID=8314888D-05AB-4533-940F-FFBC944DD372

Study shows novel minocycline foam appears to be effective in moderate to severe acne vulgaris. A novel topical minocycline foam has been found to significantly reduce both inflammatory and noninflammatory lesions and improve acne scores in patients with moderate-to-severe acne vulgaris in phase three clinical trials. American Academy of Dermatology guidelines recommend minocycline and doxycycline as first-line therapies for moderate and severe acne. However, concerns about side-effects limit their use. No topical minocycline is currently licensed but topical minocycline 4% foam has been tested in three phase three clinical trials and shown to produce significant improvements while minimizing systemic side effects associated with oral administration. A total of 961 patients were enrolled in the first two identical randomized double-blind phase three trials (466 in trial 04 and 495 in trial 05) and randomized 2:1 to once-daily minocycline 4% foam or foam vehicle for 12 weeks. The two co-primary endpoints were: the absolute change in the number of inflammatory lesions (papules and pustules); and the proportion of

patients achieving treatment successes, defined as an Investigator's Global Assessment (IGA) score of "clear" or "almost clear" and at least a two-grade improvement from baseline at week 12. The results published in the Journal of the American Academy of Dermatology showed that in both studies patients randomized to the active minocycline 4% foam experienced a significantly greater reduction in inflammatory lesions (P <0 .05). In study 04, the mean reduction in inflammatory lesions was -14.13 with the minocycline 4% foam compared with -11.19 with foam vehicle (P = 0.0083), and in study 05, lesion count fell by -13.46 with minocycline foam compared with -10.70 with foam vehicle (P = 0.0051). Significant reductions in non-inflammatory lesions were also seen with minocycline 4% foam in both studies (study 04: -16.45 vs -10.30 [P = 0.0042] and study 05: -13.20 vs -7.00 [P = 0.0320]). However, only in study 05 did a significant number of patients achieve treatment success according to the Investigator's Global Assessment (P < 0.05) - 14.66% using the minocycline 4% foam compared with 7.89% using the foam vehicle (P = 0.0424). In study 04 8.09% of patients treated with minocycline 4% foam and 4.77% treated with foam vehicle achieved treatment success (P = 0.2178). Overall, minocycline 4% foam appeared to be safe and well tolerated across the two studies. A total of 113 adverse events were reported in 17.4% of the subjects in study 04, and 249 in 30.9% of the subjects in study 05 and most were mild or moderate. Skin-related adverse events were reported in less than 1% of patients. Cont.

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Evaluation of the efficacy of microneedle fractional radiofrequency in Turkish patients with atrophic facial acne scars. Bulbul Baskan E, Akin Belli A. J Cosmet Dermatol. 2018 Nov 11. doi: 10.1111/jocd.12812. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30417509

Background: Scarring is an undesirable and severe complication of acne resulting in loss of self-esteem in young people. Although microneedle fractional radiofrequency (MFR) system has emerged as a good option to treat acne scars in recent years, it was examined in a few studies which were commonly from Asian countries. Aims: We sought to evaluate the efficacy of MFR in Turkish patients with facial acne scars. Methods: Nine patients with atrophic facial acne scars treated with MFR device were included in the study. The number of treatment sessions was varied from one to five (median three) with 4-week intervals. Demographic and basal clinical features were recorded. Efficacy of the device was evaluated by the physicians' global assessment and patients' self-assessment scales 4 weeks after the last treatment session. Results: Of nine patients, two were male and seven were female (mean age, 31.33 years). Two patients had mild, four had moderate, and three had severe facial acne scars. Mean acne scar age was 13.22 ± 8.79 years. According to the predominant scar subtype, three patients had V-shaped, three had U-shaped, and three had M-shaped atrophic acne scars. A clinical improvement of >25% has been reported in seven patients (77.7%) and eight patients (88.9%) by the physicians and patients, respectively. U-shaped atrophic acne scars responded better to the treatment than the other types, as statistically nonsignificant. There were no severe side effects. Conclusions: Microneedle fractional radiofrequency system showed a quite good efficacy and safety in the treatment of atrophic facial acne scars (Department of Dermato-Cosmetology, Uludag University Medical School).

Novel nicotinamide skin-adhesive hot melt extrudates for treatment of acne. Nasr M, Karandikar H, Abdel-Aziz RT, et al. Expert Opin Drug Deliv. 2018 Nov 9. doi: 10.1080/17425247.2018.1546287. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30411631

Objectives: Hot melt extrusion is a continuous process with wide industrial applicability. Till current date, there have been no reports on the formulation of extrudates for topical treatment of dermatological diseases. Methods: The aim

of the present work was to prepare and characterize medicated hot melt extrudates based on Soluplus polymer and nicotinamide, and to explore their applicability in acne treatment. The extrudates were characterized using DSC, FTIR, XRD, and DVS. The extrudates were also tested for their skin adhesion potential, ability to deposit nicotinamide in different skin layers, and their clinical efficacy in acne patients. Results: The 10% nicotinamide extrudates exhibited amorphous nature which was reserved during storage, with no chemical interaction between nicotinamide and Soluplus. Upon contrasting the skin adhesion and drug deposition of extrudates and nicotinamide gel, it was evident that the extrudates displayed significantly higher adhesion and drug deposition reaching 4.8 folds, 5.3 folds, and 4.3 folds more in the stratum corneum, epidermis and dermis respectively. Furthermore, the extrudates significantly reduced the total number of acne lesions in patients by 61.3% compared to 42.14% with the nicotinamide gel. Conclusion: Soluplus extrudates are promising topical drug delivery means for the treatment of dermatological diseases.

Efficacy of two plant extracts against acne vulgaris: Initial results of microbiological tests and cell culture studies. Kılıç S, Okullu SÖ, Kurt Ö, et al. J Cosmet Dermatol. 2018 Nov 9. doi: 10.1111/jocd.12814. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30414245

Background: Acne vulgaris is a common skin disease characterized by increased sebum production, inflammation, and colonization of Propionibacterium acnes (P. acnes) on pilosebaceous follicles. Aims: To determine the efficacy of two different plant extracts against P. acnes and to analyze the gene expression levels of IL-1α, SRD5A1, and TNFα in HaCaT cells treated with these plant extracts. Methods: Anti-acne extract 1 (AE1) consisted of Juglans regia (walnut husk), Myrtus communis (myrtle leaves), Matricaria chamomilla (chamomilla flowers), Urtica dioica (stinging nettle leaves), and Rosa damascena (rose flowers). Anti-acne extract 2 (AE2) contained Brassica oleracea var. botrytis (broccoli) and B. oleracea var. italica (cauliflower). The antimicrobial activities of the extracts were tested on two different P. acnes strains: the reference strain of P. acnes (ATCC 51277) and the clinical isolate from a patient. The minimum inhibitory concentration (MIC) of the extracts was determined using the broth dilution method. Human keratinocyte cells were used for in vitro tests. Gene expression analyses were performed with RT-qPCR. Results: The MIC values of the extracts were below 1/2048 µg/mL. In the gene expression analysis, AE1 increased the expression level of TNFα (1.1719, $P < 0.0001$), suppressed the expression level of IL-1α, SRD5A1 (0.0588, $P = 0.0231$; 0.3081, $P = 0.0351$), respectively. AE2 suppressed gene expression level of IL-1α, SRD5A1, TNFα (0.3815, $P = 0.0254$; 0.3418, $P = 0.0271$; 0.1997, $P = 0.0623$). Conclusions: Both herbal extracts demonstrated strong antibacterial and anti-inflammatory activity in this preliminary trial. In conclusion, the topical application of these botanical extracts can be good candidates for local acne treatment.

The effect of continuous high versus low dose oral isotretinoin regimens on dermcidin expression in patients with moderate to severe acne vulgaris. El Aziz Ragab MA, Omar SS, Collier A, et al. Dermatol Ther. 2018 Nov 5: e12715. doi: 10.1111/dth.12715. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30397984

The continuous low dose (LD) isotretinoin is frequently used in the treatment regimen for acne vulgaris. However, data about its antimicrobial are lacking. The present study aimed to investigate dermcidin expression and the effects of low and conventional dose isotretinoin on its expression in acne vulgaris patients. Skin dermcidin expression was investigated in 30 patients with moderate-severe acne vulgaris and 15 healthy control subjects using ELISA. 15 patients were given continuous low-dose isotretinoin (20 mg/day) and the other 15 given the conventional high dose (0.5 mg/kg/day). Skin biopsies were taken at the start of the study and 6 months later. Dermcidin was significantly lower in acne vulgaris patients ($p < .001$). Both isotretinoin regimens significantly raised dermcidin levels compared to

pre-treatment values ($p < .001$). Relapse after 12 months was not statistically different among the two isotretinoin regimens ($p = .464$). Pretreatment global acne grading system score of 28.6 ± 6.4 was reduced to 6 ± 6.1 following isotretinoin treatment ($p < .001$). Relapse was significantly related to posttreatment dermcidin levels ($p = .017$). Dermcidin expression is reduced in acne vulgaris. Conventional and LD isotretinoin regimens are associated with increased dermcidin expression.

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Microbiological profile of sarecycline: A novel targeted spectrum tetracycline for the treatment of acne vulgaris. Zhanel G, Critchley I, Lin LY, Alvandi N. Antimicrob Agents Chemother. 2018 Nov 5. pii: AAC.01297-18. doi: 10.1128/AAC.01297-18. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30397052

Sarecycline is the first narrow spectrum tetracycline-class antibiotic being developed for acne treatment. In addition to exhibiting activity against important skin/soft tissue pathogens, sarecycline exhibits targeted antibacterial activity against clinical isolates of Cutibacterium acnes In the current study, sarecycline was 16 to 32-fold less active than broad spectrum tetracyclines-such as minocycline and doxycycline-against aerobic Gram-negative bacilli associated with normal human intestinal microbiome. Also, reduced activity against Escherichia coli was observed in vivo in a murine septicemia model with PD50 values at >40 mg/kg and 5.72 mg/kg for sarecycline and doxycycline, respectively. Sarecycline was also 4 to 8-fold less active against representative anaerobic bacteria that also comprise normal human intestinal microbiome. Additionally, sarecycline displayed a low propensity for resistance development in C. acnes strains, with spontaneous mutation frequencies of 10-10 at 4 to 8-times the MIC, similar to minocycline and vancomycin. When tested against Gram-positive pathogens with defined tetracycline resistance mechanisms, sarecycline was more active than tetracycline against the tet(K) and tet(M) strains, with MIC ranging from 0.125 to 1.0 ug/mL and 8 ug/mL, respectively, compared with 16 to 64 ug/mL and 64 ug/mL for tetracycline, respectively. However, sarecycline activity in the tet(K) and tet(M) strains were decreased compared to wildtype, which demonstrated MIC ranging from 0.06 to 0.25 ug/mL, though not as pronounced as tetracycline. These findings support sarecycline as a narrow spectrum tetracycline-class antibiotic that is an effective agent for the treatment of acne and further warrants investigation into the potential reduced effects on the gut microbiome.

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Rates of antibiotic resistance / sensitivity in bacterial cultures of hidradenitis suppurativa patients. Bettoli V, Manfredini M, Massoli L, et al. J Eur Acad Dermatol Venereol. 2018 Nov 5. doi: 10.1111/jdv.15332. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30394587

Background: Antibiotic (AB) treatment is one of the first steps in the management of Hidradenitis Suppurativa (HS). Bacteria, in HS patients, may play a double role, as triggering factors of inflammatory reactions and/or agents of infection. Objectives: The aims of this study are: 1) to assess prevalence and AB resistance of bacterial growths in HS patients 2) assessment of the clinical relevance of obtained data in guiding the selection of the most effective AB therapy. Methods: Purulent material from 137 skin lesions of HS patients was collected with swabs. Bacterial flora and AB sensitivity were determined using microbiological cultures for aerobic and anaerobic bacteria. Results: A total of 114 samples resulted positive for bacteria. Sample were collected from the axillae, groin and perianal areas. A total of 163 single bacterial growths were observed; 55% were gram-positive and 44% were gram-negative. Among them, 18.4% were anaerobic. The most frequent bacterial families included enterobacteriacee (30.7%), staphylococcus (25.2%), and streptococcus (14.1%). The most frequent genus or species were proteus spp. (13.5%)

and e.coli (9.8%). The prevalence of AB resistance observed was clindamycin 65.7%, rifampicin 69.3%, penicillin 70.0%, ciprofloxacin 74%, tetracycline 84.7% and erythromycin 89.0%. A limitation of the study is represented the short culture period adopted which may have impaired the isolation of anaerobes. Conclusions: Bacterial growth in HS patients has shown a high level of resistance to ABs, including rifampicin, clindamycin and tetracyclines, cited as an empiric choice in HS therapeutic guidelines. A targeted and specific AB therapy, driven by microbiological evaluations with prolonged culture periods, seems more appropriate than empiric, generic, non-specific, therapeutic approaches. Current knowledge regarding HS bacterial AB resistance should be considered in the update of current therapeutic guidelines for HS.

Association between rosacea severity and relative muscle mass: A cross-sectional study. Nam JH, Yang J, Park J, et al. J Dermatol. 2018 Oct 31. doi: 10.1111/1346-8138.14689. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30379346

Rosacea is thought to be associated with factors involved in metabolic syndrome (MetS). Muscle mass has a beneficial role in preventing MetS, but its link to rosacea remains unknown. We sought to investigate the association between rosacea severity and relative skeletal muscle mass. A cross-sectional study was conducted on subjects who attended a skin check-up program at the Kangbuk Samsung Hospital Health Screening Center between 2014 and 2016. Polarized light photographs of the face were taken and evaluated by two dermatologists. Skeletal muscle mass index (SMI, [%] = total skeletal muscle mass [kg] / bodyweight [kg] × 100) was estimated using a bioelectrical impedance analyzer. A logistic regression model was used to evaluate an association between SMI and rosacea. Of 110 rosacea subjects who were finally enrolled, 17 (15.5%) and 93 (84.5%) were classified as having papulopustular and erythematotelangiectatic rosacea, respectively. Categories of SMI comprised the following tertiles: 22.86-38.40%, 38.41-43.44% and 43.45-80.65%. In severity, compared with mild rosacea (75.5%), moderate rosacea (24.5%) incrementally increased as SMI decreased (Ptrend < 0.01). Severe rosacea was not observed. After adjustment for age and sex, odds ratios (95% confidence intervals) for moderate rosacea comparing SMI tertiles 1 and 2 to the highest tertile (reference) were 5.66 (1.22-26.20) and 4.43 (1.12-17.55), respectively (Ptrend = 0.03). This association was present in women with marginal significance (Ptrend = 0.06), but not in men. Relative muscle mass is negatively associated with an increased risk of more severe rosacea, suggesting that skeletal muscle can have a protective effect on rosacea exacerbation.

Combination chemical peels are more effective than single chemical peel in treatment of mild-to-moderate acne vulgaris: A split face comparative clinical trial. Nofal E, Nofal A, Gharib K, et al. J Cosmet Dermatol. 2018 Oct;17(5):802-810. doi: 10.1111/jocd.12763. Epub 2018 Sep 10. https://www.ncbi.nlm.nih.gov/pubmed/30203434

Background: Successful management of acne involves choosing proper medication. Chemical peeling is a well-known option in treatment of acne vulgaris. Objective: To evaluate and compare the clinical efficacy and safety of combination chemical peels vs single peel in treatment of mild-to-moderate acne. Methods: The study included 45 patients with mild-to-moderate acne divided into three equal groups. Group A underwent combination sequential peels with modified Jessner's solution (MJ) followed by trichloro acetic acid (TCA20%) on the right (Rt) side of the face vs TCA 30% on the left (Lt) side. Group B was treated by combination peels of salicylic (20%) mandelic (10%) (SM) mixture on the Rt half vs salicylic acid 30% on the Lt half. Group C underwent combination sequential peeling of MJ and TCA on the Rt side vs SM combination peels on the Lt side. All patients received six sessions with 2-week intervals and followed up for 3 months after the last session. Side effects were reported. Results: Both sides of the face showed significant improvement of acne lesions, but improvement was significantly higher and earlier in sides

treated by combination peels. Side effects were minimal. Conclusion: In conclusion, combination peels achieved a higher and earlier therapeutic response with a reasonable cost that is maintained for a relatively long periods than single peel. Combination sequential peels gave the best results.

Serum zinc levels in hidradenitis suppurativa: A case-control study. Poveda I, Vilarrasa E, Martorell A, et al. Am J Clin Dermatol. 2018 Oct;19(5):771-777. doi: 10.1007/s40257-018-0374-5. https://www.ncbi.nlm.nih.gov/pubmed/30043129

Background: Serum zinc levels in patients with hidradenitis suppurativa (HS) have not been previously studied. Objective: The aim was to investigate the association between HS and serum zinc levels. Methods: A multicenter, prospective clinical and analytical case-control study was designed to assess the possible association between HS and serum zinc levels. Consecutive patients with moderate or severe HS (Hurley II or III exclusively) were enrolled. A control population was recruited from primary care clinics. Fasting blood samples were extracted from each patient and serum zinc levels determined. Candidate predictors for low serum zinc levels were determined using logistic regression models. Results: In total, 122 patients with HS and 122 control subjects were studied. Of the 122 HS patients, 79 (64.8%) were Hurley II and 43 (35.2%) were Hurley III. Low serum zinc levels (≤ 83.3 μg/dL) were more prevalent in HS (adjusted odds ratio [ORa] 6.7, P < 0.001). After logistic regression analysis, low serum zinc levels were associated with Hurley III (ORa 4.4, P < 0.001), Dermatology Life Quality Index ≥ 9 (ORa 3.1, P = 0.005), number of affected sites ≥ 3 (ORa 2.4, P = 0.042), genital location (ORa 2.9, P = 0.009), and perineal location (ORa 2.5, P = 0.025). Conclusion: Low serum zinc levels are more prevalent in HS than in a healthy population, an indicator that may also be associated with disease severity.

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Association of caffeine intake and caffeinated coffee consumption with risk of incident rosacea in women. Li S, Chen ML, Drucker AM, et al. JAMA Dermatol. 2018 Oct 17. doi: 10.1001/jamadermatol.2018.3301. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30347034

Importance: Caffeine is known to decrease vasodilation and have immunosuppressant effects, which may potentially decrease the risk of rosacea. However, the heat from coffee may be a trigger for rosacea flares. The relationship between the risk of rosacea and caffeine intake, including coffee consumption, is poorly understood. Objective: To determine the association between the risk of incident rosacea and caffeine intake, including coffee consumption. Design, setting, and participants: This cohort study included 82 737 women in the Nurses' Health Study II (NHS II), a prospective cohort established in 1989, with follow-up conducted biennially between 1991 and 2005. All analysis took place between June 2017 and June 2018. Exposures: Data on coffee, tea, soda, and chocolate consumption were collected every 4 years during follow-up. Main outcomes and measures: Information on history of clinician-diagnosed rosacea and year of diagnosis was collected in 2005. Results: A total of 82 737 women responded to the question regarding a diagnosis of rosacea in 2005 in NHS II and were included in the final analysis (mean [SD] age at study entry, 50.5 [4.6] years). During 1 120 051 person-years of follow-up, we identified 4945 incident cases of rosacea. After adjustment for other risk factors, we found an inverse association between increased caffeine intake and risk of rosacea (hazard ratio for the highest quintile of caffeine intake vs the lowest, 0.76; 95% CI, 0.69-0.84; P < .001 for trend). A significant inverse association with risk of rosacea was also observed for caffeinated coffee consumption (HR, 0.77 for those who consumed ≥4 servings/d vs those who consumed <1/mo; 95% CI, 0.69-0.87; P < .001 for trend), but not for decaffeinated coffee (HR, 0.80; 95% CI, 0.56-1.14; P = .39 for trend). Further analyses

found that increased caffeine intake from foods other than coffee (tea, soda, and chocolate) was not significantly associated with decreased risk of rosacea. Conclusions and relevance: Increased caffeine intake from coffee was inversely associated with the risk of incident rosacea. Our findings do not support limiting caffeine intake as a means to prevent rosacea. Further studies are required to explain the mechanisms of action of these associations, to replicate our findings in other populations, and to explore the relationship of caffeine with different rosacea subtypes.

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The spectrum and sequelae of acne in black South Africans seen in tertiary institutions. Dlova NC, Mosam A, Tsoka-Gwegweni J. Skin Appendage Disord. 2018 Oct;4(4):301-303. doi: 10.1159/000488689. Epub 2018 May 30. https://www.ncbi.nlm.nih.gov/pubmed/30410901

Introduction: Acne is a chronic disorder of the pilosebaceous unit affecting all ethnic groups. It remains in the top 5 skin conditions seen worldwide. The paucity of data characterizing acne in South African Blacks led us to the documentation of types and sequelae of acne. Methods: This is a cross- sectional study describing the spectrum and variants of acne in 5 tertiary hospitals in the second most populous province in South Africa over 3 months (January 1 - March 31, 2015). Results: Out of 3,814 patients seen in tertiary dermatology clinics, 382 (10%) had a primary diagnosis of acne or rosacea, forming the fourth most common condition seen. Acne accounted for 361 (94.5%); acne vulgaris was the commonest subtype at 273 (75.6%), followed by steroid-induced acne 46 (12.7%), middle-age acne 6 (1.7%), acne excoriée 2 (0.6%), and "undefined" 34 (9.4%). Conclusion: The observation of steroid-induced acne as the second most common variant in Black patients underlines the need to enquire about steroid use and education about the complications of using steroid-containing skin-lightening creams. Treatment of post inflammatory hyperpigmentation should be part of the armamentarium for holistic acne treatment in Blacks, as it remains a major concern even after active acne has resolved.

Efficacy of adalimumab in moderate to severe hidradenitis suppurativa: Real life data. Kyriakou A, Trigoni A, Galanis N, et al. Dermatol Reports. 2018 Oct 1;10(2):7859. doi: 10.4081/dr.2018.7859. eCollection 2018 Oct 1. https://www.ncbi.nlm.nih.gov/pubmed/30370041

Hidradenitis suppurativa (HS) is a relapsing, inflammatory disease characterized by painful nodules, abscesses, sinuses track formation and scarring. HS has a great impact on patients' quality of life and its treatment may be really challenging. Adalimumab provides a new therapeutic option for HS. Our aim was to assess the therapeutic potential of adalimumab on patients with HS based on the data from the daily clinical practice of an HS Outpatient Clinic. 19 patients with clinically evident moderate to severe HS, under adalimumab treatment for at least 24 weeks, participated in this observational, retrospective study. The Hidradenitis Suppurativa Physician's Global Assessment scale, Modified Santorius scale and Dermatology Life Quality Index (DLQI) at baseline, week 4, week 12 and week 24 were retrieved from the records. Both Modified Santorius score and DLQI were significantly decreased during the weeks of evaluation (Friedman's test; $P < 0.001$). The proportion of patients who achieved clinical response was 10.5% ($n = 2$) at week 4, 42.1% ($n = 8$) at week 12 and 63.2% ($n = 12$) at week 24. Treatment with adalimumab was linked with both clinical remission of HS and improvement of patients' quality of life.

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Characterization of human cutaneous tissue autofluorescence: implications in topical drug delivery studies with fluorescence microscopy. Hermsmeier M, Jeong S, Yamamoto A, et al. Biomed. Opt. Express 9, 5400-5418 (2018) https://www.osapublishing.org/boe/abstract.cfm?uri=boe-9-11-5400

In pharmacokinetic studies of topical drugs, fluorescence microscopy methods can enable the direct visualization and quantification of fluorescent drugs within the skin. One potential limitation of this approach, however, is the strong endogenous fluorescence of skin tissues that makes straightforward identification of specific drug molecules challenging. To study this effect and quantify endogenous skin fluorescence in the context of topical pharmacokinetics, an integrating sphere-based screening tool was designed to collect fluorescence yield data from human skin specimens. Such information could be utilized to select specific donors in the investigation of drug uptake and distribution. Results indicated human facial skin specimens from a group of more than 35 individuals exhibited an at least 6-fold difference in endogenous fluorescence. In visualizing drug distributions, the negative impact of autofluorescence could be exacerbated in cases where there are overlapping spatial distributions or spectral emission profiles between endogenous fluorophores and the exogenous fluorophore of interest. We demonstrated the feasibility of this approach in measuring the range of tissue endogenous fluorescence and selecting specimens for the study of drug pharmacokinetics with fluorescence microscopy.

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Continuous dark chocolate consumption affects human facial skin surface by stimulating corneocyte desquamation and promoting bacterial colonization. Chalyk N, Klochkov V, Sommereux L, et al. J Clin Aesthet Dermatol. 2018 Sep; 11(9): 37–41. Published online 2018 Sep 1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6169599/

Background: Nutrition can influence skin health. Dark chocolate possesses health promoting properties, but its consumption can exacerbate acne vulgaris in young people. Objective: We evaluated effects of continuous dark chocolate intake on morphological characteristics of the residual skin surface components (RSSCs) collected from the facial skin of young and middle-aged men. Methods: RSSC samples were taken from 17 young and 16 middle-aged men before and after a four-week consumption period of dark chocolate (10g per day). Lipid droplet size, corneocyte desquamation, and microbial presence levels were measured in the collected RSSC. The project was registered as ISRCTN89815519 in the ISRCTN registry (https://www.isrctn.com/). Results: Chocolate consumption caused a significant increase in corneocyte desquamation only in the group of young men, whereas Gram-positive microorganism presence significantly increased in both the young and middle-aged men, though this effect was noticeably stronger in the young men. Conclusion: Dark chocolate consumption appears to affect the facial skin of young men by enhancing corneocyte desquamation and promoting bacterial colonization of the RSSC. These changes might potentially contribute to acne development.

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Clinical Reviews

Laser treatment for facial acne scars: A review. Sadick NS, Cardona A. J Cosmet Laser Ther. 2018 Nov 5:1-12. doi: 10.1080/14764172.2018.1461230. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30395754

Background and objectives: Acne scarring is a widely prevalent condition that can have a negative impact on a patient's quality of life and is often worsened by aging. A number of options are available for the treatment of acne scarring, including retinoids, microdermabrasion, dermal fillers, and surgical techniques such as subcision. The aim of this review is to evaluate the different laser modalities that have been used in peer-reviewed clinical studies for treatment of atrophic acne scars and summarize current clinical approaches. Materials and methods: A Medline search spanning from 1990 to 2016 was performed on acne scarring. Search terms included "atrophic acne scars," "ablative", "nonablative," "fractional," "nonfractional," "neodymium," "alexandrite," "pulsed dye" lasers, and results are summarized. Results: Various types of lasers have been evaluated for the treatment of atrophic acne scars. While they are efficacious overall, they differ in terms of side effects and clinical outcomes, depending on patients skin and acne scar type. A new emerging trend is to combine lasers with other energy-based devices and/or topicals. Conclusion: Evaluation of the literature examining acne scar treatment with lasers, revealed that clinical outcomes are dependent on various patient factors, including atrophic acne scar subtype, patient skin type, treatment modality, and side-effect profile.

The treatment of genitoperineal hidradenitis suppurativa: A review of the literature. Michel C, DiBianco JM, Sabarwal V, Stein DM. Urology. 2018 Nov 1. pii: S0090-4295(18)31099-9. doi: 10.1016/j.urology.2018.10.013. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30391681

Hidradenitis suppurativa (HS) is a chronic inflammatory condition affecting the axilla, genitals, perineum, and perianal regions. The pathophysiology of HS is complex and requires a multidisciplinary approach to treatment involving medical and surgical management when indicated. We describe our multidisciplinary protocol for treatment, which includes: rheumatology monitored immunotherapy, medical management, wide surgical resection, wound care and reconstruction. The multidisciplinary care team includes: rheumatology, wound care, and reconstructive urologic surgery. Surgical management includes wide local surgical resection, negative pressure dressing, delayed reconstruction and perioperative immunotherapy. Multimodal treatment with surgical, medical, wound and immunotherapy care is vital to successful treatment.

Dermatology-related uses of medical cannabis promoted by dispensaries in Canada, Europe, and the United States. Lim M, Kirchhof MG. J Cutan Med Surg. 2018 Oct 31:1203475418808761. doi: 10.1177/1203475418808761. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30380925

There is a growing interest in the use of medical cannabis for a variety of dermatologic conditions. Despite the lack of evidence to validate the effectiveness and safety of marijuana, it is approved to treat a variety of dermatologic conditions in the United States. Furthermore, medical cannabis dispensaries have been making unsubstantiated claims about medical cannabis. It is important for dermatologists to know about the purported use of medical cannabis to help patients navigate this new treatment option, particularly as cannabis becomes legal in Canada in October 2018. We collected and tabulated the dermatologic indications for medical cannabis from Canada, the United States, and Europe. In the United States, dermatologic-approved indications vary by state but include psoriasis, lupus, nail-

patella syndrome, and severe pain. Health Canada has listed psoriasis, dermatitis, and pruritus as potential therapeutic uses for cannabis but does not endorse its use for therapeutic purposes. We also surveyed the websites of dispensaries in Canada, the United States, and Europe and found that numerous unsubstantiated claims were being made and advertised to consumers. Dermatologic uses of medical cannabis, as claimed by dispensaries, included treating acne, aging, allergic contact dermatitis, chronic pain, herpes, dermatitis, lupus, Lyme disease, nevi, psoriasis, epidermolysis bullosa, and melanoma. Psoriasis, dermatitis, and chronic pain were the most commonly cited indications for medical cannabis listed by dispensaries. Our data indicate that the suggested and advertised uses of medical cannabis are largely unsubstantiated. Further research is necessary to validate the indications, effectiveness, and safety of medical cannabis.

Patient-reported outcomes in hidradenitis suppurativa: a review. Vellaichamy G, Braunberger TL, Jones JL, et al. G Ital Dermatol Venereol. 2018 Oct 29. doi: 10.23736/S0392-0488.18.06021-2. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30375207

Hidradenitis suppurativa, also known as acne inversa, is a chronic recurrent inflammatory disease of the skin making management challenging and continuously evolving. A large number of modalities exist aimed at quantifying the efficacy of treatment in studies on hidradenitis suppurativa. Both physician-reported and patient-reported outcomes

are used as endpoints in these studies; however, the vast majority of the modalities used to survey these reported outcomes lack validation and congruence between studies. Heterogeneity of outcome measures and lack of standardization from study to study make it difficult to design future hidradenitis suppurativa trials and to compare results. This high variability between studies further contributes to the lack of high- quality evidence available to guide clinical management decisions of this inflammatory skin disease. Therefore, this review aims to assess the modalities frequently used to assess patient- reported treatment outcomes in hidradenitis suppurativa. Patient-reported outcomes in hidradenitis suppurativa include outcomes regarding symptoms and disease progression, measures of treatment satisfaction, quality of life surveys, impairment of function, pain, and patient-reported outcomes combined with physician-reported outcomes. Nearly all surveys demonstrate significant heterogeneity, lack standardization, and many are not validated or constructed specifically for the assessment of hidradenitis suppurativa. Yet patient-reported outcomes on symptoms and disease severity, treatment satisfaction, and quality of life are instrumental in evaluating hidradenitis suppurativa treatment efficacy in clinical trials. As such, standardization and validation of patient- reported outcome instruments are essential for comparability among studies and improved quality of evidence.

Association of demographic and socioeconomic characteristics with differences in use of outpatient dermatology services in the United States. Tripathi R, Knusel KD, Ezaldein HH, et al. JAMA Dermatol. 2018 Sep 26. doi: 10.1001/jamadermatol.2018.3114. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/30267073

Importance: Knowledge regarding differences in dermatologic care for patients with a broad range of dermatologic conditions is limited. Objective: To elucidate nationwide differences in use of outpatient dermatologic care. Design, setting, and participants: Retrospective analysis of nationally representative data from the 2007 to 2015 Medical Expenditure Panel Survey (MEPS) provided by the Agency for Healthcare Research and Quality. Health care use outcomes for dermatologic conditions (skin cancers, infections, dermatologic inflammatory conditions/ulcers, and other skin disorders) were examined via multivariable logistic regression analyses of outpatient and office-based dermatologist visit rates accounting for sex, age, race/ethnicity, educational level, income, insurance status, region, self-reported condition, and self-reported health status. Participants were 183 054 MEPS respondents who visited a

dermatologist from 2007 to 2015. Main outcomes and measures: The primary outcome measure was whether the patient received outpatient care for any dermatologic condition (by payment). The secondary outcomes were annual health care use by individuals with dermatologic conditions (including per capita expenditure for the visit). Results: Of 183 054 MEPS respondents (mean [SD] age, 34 [23] years; 52.1% female), 19 561 (10.7%) self-reported a dermatologic condition; 9645 patients had a total of 11 761 outpatient visits to dermatologists. Hispanic (adjusted odds ratio [aOR], 0.55; 95% CI, 0.49-0.61) and black (aOR, 0.42; 95% CI, 0.38-0.46) patients were both less likely to receive outpatient care for their dermatologic condition relative to non-Hispanic white patients. Male patients were less likely to receive outpatient dermatologic care than female patients (aOR, 0.66; 95% CI, 0.62-0.70), and Midwestern patients were less likely to receive outpatient dermatologic care than Northeastern patients (aOR, 0.80; 95% CI, 0.70-0.91). Patients with Medicaid or Medicare coverage (aOR, 0.75; 95% CI, 0.68-0.83) and uninsured patients (aOR, 0.39; 95% CI, 0.33-0.47) were both less likely to receive outpatient dermatologic care than privately insured patients. Increasing educational level and income were associated with increased odds of receiving outpatient care for the dermatologic condition. Conclusions and relevance: These findings highlight wide-ranging differences in use of dermatologic care in the United States across various demographic and socioeconomic lines. Results of this study suggest an urgent need to further characterize potential dermatologic health care differences and improve use of outpatient dermatologic care among disadvantaged populations.

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Collagen deposition in chronic hidradenitis suppurativa: potential role for CD163+ macrophages. Byrd AS, Kerns ML, Williams DW, et al. Br J Dermatol. 2018 Sep;179(3):792-794. doi: 10.1111/bjd.16600. Epub 2018 Jun 29. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6141310/

Hidradenitis suppurativa (HS), an inflammatory disorder of hair follicles in intertriginous areas, manifests as debilitating acute subcutaneous nodules with subsequent chronic sinus tract formation and scarring. Given the limited effectiveness of medical therapies, targeting the immunomodulatory mechanisms that mediate disease progression is of great interest. Histological studies demonstrate macrophage infiltration in both acute and chronic HS lesions. Macrophage polarity is a vital regulator of inflammatory disease. Upon tissue extravasation, blood monocytes differentiate into tissue resident macrophages and depending on environmental cues polarize into M1/M2 subsets. M1 macrophages promote a pro-inflammatory environment in response to intracellular pathogens, IFNγ, TNFα, among other cytokines. Whereas M2 macrophages mediate wound healing, differentiation of fibroblasts to myofibroblasts, collagen deposition, attenuation of inflammation, and tissue fibrosis. Emerging data suggest that macrophage-mediated release of TNFα, IL-12, and IL-23 contribute to HS disease pathogenesis indicating a potential role for M1 macrophages in HS lesions. As the disease progresses, sinus tract formation and scarring predominate suggesting dysregulation of the homeostasis between fibroblast-mediated collagen deposition and extracellular matrix (ECM) degradation exemplifying a role for M2 macrophages in chronic HS lesions. CD163, a member of the cysteine-rich scavenger receptor family and M2 marker, plays a key role in mediating internalization of hemoglobin-haptoglobin complexes by macrophages and has been detected in the dermis of lesional HS tissue. CD163+ M2 macrophages also contribute to the aforementioned pro-fibrotic states via the release of the chemokine CCL18. We hypothesized that CD163+ macrophage-mediated CCL18 production stimulates excess collagen deposition in chronic fibrotic HS lesions. Thus, we evaluated the expression of CD163+ macrophages and CCL18 in chronic HS lesions compared to perilesional and normal tissue. Cont.

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Patient Counseling/Communication

Ethical dilemmas for physicians in Catholic healthcare organizations. Ingrid Torjesen. Dermatology Times, Volume: 39 Issue: 10. October 2018. http://www.dermatologytimes.com/contraception/ethical-dilemmas-physicians-catholic-healthcare-organizations

Clinicians working for Catholic health care organizations are generally barred from prescribing contraceptives for birth control, but where does the clinician stand when a woman requests a prescription for an oral contraceptive pill for acne? The Catholic Church views contraception as separating sex from the purpose of procreation within a marriage and therefore does not approve of contraceptive methods. Catholic health institutions in the U.S. are explicitly prohibited from promoting or condoning contraceptive practices under the Ethical and Religious Directives for Catholic Health Care Services, established by the United States Conference of Catholic Bishops that sets rules for Catholic-affiliated health care organizations in the U.S. The treatment of acne is a well-known non-contraceptive benefit of birth control pills, so female patients may attend Catholic health institutions asking for a prescription for birth control pills as a treatment for acne, when they may really want the prescription to prevent pregnancy. The patient may even go so far as to state that she wants the prescription primarily for contraception and to hint that she knows of other women accessing oral contraceptives for this purpose where their physician codes their prescriptions as acne treatment. If the patient has a demonstrable diagnosis—such as abnormal uterine bleeding, dysmenorrhea or acne—in their medical history for which birth control is a medically accepted therapy, the clinician could prescribe contraception on the basis of the principle of "double effect,", writes Kavita Shah Arora, M.D., MBE, assistant professor of reproductive biology and bioethics at Case Western Reserve University, and Jane Morris, M.D., an obstetrics and gynecology resident at the Case MetroHealth Medical Center program in Cleveland, in the AMA Journal of Ethics. The Catholic Church does not prevent the use of medical therapies to cure diseases "even if a foreseeable impediment to procreation should result there from—provided such impediment is not directly intended for any motive whatsoever". Cont.

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PRP: What dermatologists should know. Crutchfield CE, Shah N. Practical Dermatology, Oct. 2018. http://practicaldermatology.com/2018/10/prp-what-dermatologists-should-know

Long used in orthopedic medicine and made popular on social media, PRP has science to support its use in dermatology. Although it had been used for some time in orthopedic medicine and related specialties, platelet rich plasma or PRP entered the national consciousness just a few years ago via celebrity endorsement on social media of its purported aesthetic benefits. With time, aesthetic physicians have grown more familiar with the procedure and a body of evidence has accumulated. Skepticism has yielded to acceptance, and while there are no good statistics on adoption available at this time, it seems a significant proportion of dermatology practices now offers PRP. Despite a number of studies now showing that PRP provides benefit for multiple aesthetic and/or medical applications, there is no consensus on the appropriate role for PRP in practice, nor are there clear expectations of effect or standardization of technique. However, the procedure is considered safe, with little to no risk associated with it. It has a low cost to the patient and the practice, and it has no downtime. Ahead is a look at some of the literature on PRP, a review of its applications in dermatology, and an assessment of its current and future role in patient care. Cont.

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Acne stigma linked to lower overall quality of life. Practical Dermatology, Oct. 2018. http://practicaldermatology.com/2018/10/news

Acne patients perceived social stigma negatively affects their quality of life, according to a new study from the University of Limerick. In a survey of 271 people with acne, those respondents with negative perceptions of how society viewed their appearance had higher psychological distress levels and additional physical symptoms, such as sleep disturbance, headaches and gastrointestinal problems. Females in the study reported greater impairment of life quality and more symptoms than males. Acne severity was significantly correlated with health-related quality of life and psychological distress, the study, published in PLOS One, shows. University of Limerick researchers conducted the study to investigate whether acne sufferers' perceptions of stigmatization significantly predicts psychological and physical health outcomes; specifically health-related quality of life, psychological distress, and somatic symptoms. According to the article's lead author, Jamie Davern, a lack of representation of people with acne in popular culture can increase the perceived stigma around the skin condition. "Like many physical attributes that are stigmatized, acne is not well represented in popular culture, advertising or social media. This can lead people with acne to feel that they are 'not normal' and therefore negatively viewed by others. Online campaigns like #freethepimple and the recent 'acne-positive' movement emerging on social media is an encouraging development for people of all ages that are affected by acne," he explains. "Importantly, the findings provide further support for the comparatively limited amount of studies investigating physical health problems experienced by acne sufferers. This is important information for clinicians dealing with acne conditions. It's also useful for those who are close to acne sufferers. The wider negative impacts some acne sufferers experience are very challenging and require sensitivity and support," Mr. Davern, a graduate student, concludes.