Hong Kong J. Dermatol. Venereol. (2023) **31**, 28-37

Reports on Scientific Meetings

31st Congress of the European Academy of Dermatology and Venereology

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Date: 7-10 September 2022
Venue: Virtual
Organiser: European Academy of Dermatology and Venereology

Hidradenitis suppurativa bacterial resistance: an update

Speaker: T Tzellos
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Hidradenitis suppurativa (HS) is a chronic, recurrent inflammatory skin condition that are characterised by painful nodule, abscess and fistulas over apocrine bearing area. Different theories involving genetics, immune dysfunction, ungraded innate immunity and inflammosome released by bacterial colonization were proposed. Apart from adjuvant therapies of weight reduction, tobacco abstinence, pain and wound management, antibiotic remained the first line therapeutic option for treating HS.

According to the European guideline for treating HS, tetracycline was recommended in mild HS while combination of clindamycin and rifampicin were suggested in moderate to severe HS. However, there is a rising concern regarding bacterial resistance especially in those with prolonged prescription. Antibiotics have a role in eradicating early biofilm. However, in chronic biofilm, antibiotics are no longer effective. Antibiotic are efficacious in bacteria that multiply while biofilm is usually composed of dormant bacteria embedded in an extra-cellular matrix. The extra-cellular matrix prevents the diffusion of medication into the biofilm. Hence, surgery is a better option than systemic antibiotic in treating the chronic biofilm. Moreover, with the theories of immune dysfunction and ungraded innate immunity, there is doubt regarding if the use of antibiotics has any bearing on the disease trajectory.

There is little long-term data regarding the use of antibiotics in HS. They should be stopped in time when there is a lack of efficacy. Despite initial response, relapse is common. Hence, it is suggested to use only one antibiotic of the same class for a maximum of 12 weeks. In the latest Europe-wide, prospective cohort study (Van Straalen KR, et al. JAAD 2021), patients treated with oral tetracycline for 12 weeks were compared to those treated with clindamycin plus rifampicin for 12 weeks. There was no significant difference between groups, regardless of disease severity. Tetracycline as first-line treatment was suggested in moderate to severe disease instead of clindamycin plus rifampicin.

Biologic treatment should be considered in-patient with active moderate to severe HS which is not responsive to adequate first-line antibiotic therapy. According to the above latest cohort study, not responding to adequate tetracycline alone in moderate to severe HS could already prompt the consideration of biologic to target the immune dysfunction or upgraded innate immunity.

Learning points:

- Tetracyclines as the first-line treatment was suggested in moderate to severe Hidradenitis suppurativa instead of clindamycin plus rifamipicin.
- Early consideration of biologic for non-responder to antibiotic may help with the disease trajectory and decrease antibiotic resistance.

Primary and secondary prevention of atopic dermatitis in children

Speaker: S Christen-Zach
Head of the Paediatric Dermatology Unit in the Department of Dermatology and Paediatics at the University Hospital Lausanne, Lausanne, Switzerland

Primary and secondary prevention of Atopic Dermatitis (AD) in children were questions commonly asked by concerning parents. This talk provided an update on the latest evidence on various common suggestions.

There was a growing interest regarding the link between GI system and skin. Multiple diet modification and supplements were suggested as primary prevention of AD. Exclusive or prolonged breastfeeding was advocated for clear benefit for infants in general. However, there was no change in trajectory of AD with breastfeeding. Breastfeeding did not show to be protective of AD development. Maternal avoidance of allergic foods was suggested by some professionals. However, maternal dietary antigen avoidance during pregnancy or lactation did not appear to be beneficial for AD prevention. Moreover, this practice was associated with higher risk of preterm birth, lower mean gestational weight-gain and lower mean birth weight. While introducing allergenic food in the first 12 months of life did not increase AD or food allergy risk, it might prevent egg and peanut allergy.

Vitamin D had a regulatory function on skin barrier and immune system and low level were associated with increased AD incidence and severity. Nevertheless, there was no evidence of benefit regarding vitamin D supplement in women and children in preventing allergic disease. No benefit of infant vitamin D supplement in primary prevention of AD was found. Omega-3 long chain polyunsaturated fatty acids consumption during pregnancy had a protective association with allergic disease incidence in infants but the results for AD prevention were mixed. There might be a protective effect for early onset AD.

Probiotics were recently gaining attention in management of AD. Trials on probiotics during pregnancy and infancy showed reduction of AD incidence. Benefits were strongest for those who received Lactobacillus and Bifidobacterium. Probiotics received during pregnancy and infancy showed greater benefit than that received later in life. Some evidence implied maternal rather than infant probiotic intake was important for the protective benefit. According to the evidence currently available, World Allergic Organization guideline panel concluded that there was net benefit of probiotics for AD prevention while evidence of benefits of prebiotics and synbiotics was weak.

Regarding the external source of primary prevention of AD, house dust mite and emollients were highly debatable. House dust mite was the most important domestic source of allergic

disease. However, reduced exposure to house dust mite at birth did not decrease the risk of AD development in high risk infants compared with randomised controls. The evidence regarding skin care interventions in infants for preventing AD was controversial. Emollients during the first year of life in healthy infants were probably not effective for preventing AD and there was a probable increase risk of skin infection.

In secondary prevention of AD, basic emollient therapy had a definite beneficial role. House dust mite avoidance provided potential benefit only in sensitised patients who were refractory to optimal AD management. Similarly, pollen avoidance might help to prevent AD flare in those highly sensitised patients. When allergies to furry animal were suspected, identification by specific IgE or skin prick test were recommended. Avoidance was recommended only when it was evident.

Active smoking was significantly associated with AD flares. Passive smoke was also associated with prevalence and severity of AD in all age groups. Despite there was no high quality evidence that certain fabrics improve AD severity, irritant textiles such as wool were generally recommended to be avoided. Perspiration was an exacerbation factors in AD. Washing off excessive sweat followed by application of emollients was recommended. This should not be a reason to avoid physical activity. Psychological stress could be both cause and consequence of AD exacerbation, hence patients with AD were recommended to learn strategies to cope with stress.

Learning point:

- Regarding primary prevention of atopic dermatitis in children, probiotics demonstrated net benefit while Omega-3 long chain polyunsaturated fatty acids consumption during pregnancy might also offer protective effect.
- In secondary prevention of AD, basic emollients had a definite beneficial role while allergen avoidance provided potential benefit mainly in sensitised patients.

How to prevent and manage atrophic acne scars

Speaker: A Layton
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Acne scarring is a frequent complication of acne and resulting scars may negatively impact on an affected patients' psychosocial and physical well-being. Patients with combined facial and truncal scarring are likely to experience higher burden than those with just facial scarring. Therefore, recognition of potential risk factors and early effective interventions are essential for acne scarring prevention and outcomes.

Research studies showed that acne scars are associated with inflammation and abnormal remodeling which include inflammation extent, duration, prolonged angiogenesis, different immune response and overactive collagenases. There are different profiles of skin innate immunity in the normal skin of acne patients who develop scars. There is strong increase in level of IL-2 and moderate increase in level of IL-10 in normal skin and acne lesions in patients who are prone to scarring. In normal skin of acne patients who are prone to scar, TIMP-2 is significantly

increased and MMP-9 is significantly decreased. 99% of scars were derived from papules or pustules and post inflammatory lesions. Only 1% of scars were derived from comedones. 82% of scars that appear during the first 6 months are likely still present at 2 years. Other risk factors associated with facial atrophic scarring include site of acne lesions (face versus back and chest), acne severity and timing of effective treatment. Studies have shown that the degree and duration of clinical inflammation influences resultant scarring, and that acne scarring is more likely if treatment is delayed. Therefore, early treatment which aimed at inflammation are essential to reduce the likelihood of scarring.

Treatment modalities will depend on types of scars present. There are several challenges which were demonstrated in Cochrane Systematic Review including paucity of well controlled studies, and difficulty and inconsistencies in defining and quantifying scars. One of the commonly used tools include FASET (Facial Acne Scar Evaluation Tool), which assess dimensions of SGA (Scar Global Assessment), dispersion and scar counting. Current management of atrophic acne scars include resurfacing procedures (chemical peels, dermabrasion and laser resurfacing), lifting procedures (subcision, fillers and punch elevation), excisional techniques and skin needling.

For medical modalities, very few clinical trials have investigated the effect of topical acne treatment on scarring. A pilot study was conducted in New Mexico in May 2014 to assess the efficacy of topical retinoids in treating atrophic acne scars by examining clinical outcomes and molecular markers of collagen synthesis in patients treated with 0.3% adapalene gel in 24 weeks. Result showed clinical improvement in atrophic scarring by its smoothing effect and stimulation of collagen production by molecular markers as seen in facial wrinkling. Another randomised controlled trial was conducted in March 2018 in Canada which aimed to evaluate the efficacy of adapalene 0.3% / benzoyl peroxide 2.5% gel (A0.3/BPO2.5) in atrophic acne scar formation in acne patients. Assessments included investigator atrophic acne scar count, Scar Global Assessment (SGA), acne lesion count, IGA, skin roughness and skin texture, subject self-assessment of clinical acne related scars and satisfaction questionnaire, tolerability and safety. Results showed A0.3/BPO2.5 is effective in the treatment of moderate to severe acne vulgaris. It also prevented the formation of scars and reduced the number of existing scars after 24 weeks of treatment.

For future aspect, there are ongoing studies for microRNAs as biomarkers of atrophic scarring, which are recently found significantly overexpressed in acne patients. miRNA targeted treatments, especially miR-21 and miR-250, may be a novel approach and will need further study.

Learning points:

- Inflammation is one of the main pathophysiological processes of acne scarring.
- Recognition of potential risk factors for acne scarring are important for early effective interventions. Treatment should be aimed at the inflammatory processes involved in the genesis of scarring.
- Topical retinoids can enhance dermal repair from acne to mitigate the risk of acne induced scarring. Novel effective 4th generation retinoids show favorable clinical efficacy of scars.
- miRNA targeted treatments may be a novel approach of future acne scars intervention.