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< Pso Pscience >

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A bi-annual review digest of research associated with psoriasis and psoriatic arthritis

Welcome to the first *Pso Pscience* of 2022 from PAPAA!

Over the past two-decades there has been a revolution in our understanding of psoriasis and psoriatic arthritis, both in terms of basic immunology, disease mechanisms and therapeutics.

This newsletter is designed to provide a summary of recently published research.

Of course, it's never a good time to have psoriasis or psoriatic arthritis, but if you have to have it, there has never been a better time!

Air pollution may trigger psoriasis flares

Psoriasis flares are known to be triggered by environmental factors, including infections, stressful life events, smoking, alcohol and drugs.

In this study, investigators studied the relationship between environmental air pollution and the risk of psoriasis flares, in around 1,000 patients with chronic, plaque psoriasis. Concentrations of several pollutants (carbon monoxide, nitrogen dioxide, other nitrogen oxides, benzene, coarse particulate matter) were measured and recorded in the in the 60 days preceding the psoriasis flare and control visits. In all, more than 15,000 measurements were included in the analysis.

Results showed that concentrations of all pollutants were significantly higher in 60 days before psoriasis flare compared with the control visit. These findings strongly suggest that high levels of air pollutants may be a trigger factor for psoriasis flares.

Comment:

This is an interesting finding, which is perhaps not entirely surprising, given that worsening of other diseases that share common inflammatory pathways with psoriasis - such as atopic dermatitis - have been associated with exposure to air pollution. Presumably it is due to the fact that inhalation of pollutants can lead to oxidative damage to cells and an increased inflammatory reaction. It may also be due to direct contact with the skin. More research is needed!

Reference:

Bellinato F, et al. Association Between Short-term Exposure to Environmental Air Pollution and Psoriasis Flare. JAMA Dermatol. Published online February 16, 2022.doi:10.1001/jamadermatol.2021.6019

A New Topical

One of the problems with topical treatments (those applied directly to the skin, is that they often have adverse side-effects. This is especially true of steroids, which are associated with skin discolouration and atrophy. Now a novel, topical treatment, which avoids many of these unwanted effects, is currently under development.

Tapinarof (Dermavant Sciences), works by activating the aryl hydrocarbon receptor (AhR) in the skin and thus modulates the activity of inflammatory molecules - specifically interleukin-17. Two clinical trials have demonstrated significant improvements in severity of plaque psoriasis, in patients treated with 1% tapinarof cream (once daily), from as early as the second week of treatment. Around 40% of trial subjects achieved complete skin clearance. In addition:

- 82% of patients preferred tapinarof to previous topical treatments and considered it more effective.
- Over 85% either strongly agreed or agreed they could easily manage their psoriasis with tapinarof.
- Some 83% stated that they would use tapinarof again or continue using it if available.

Comment:

Tapinarof offers a new and effective topical treatment, with high levels of patient satisfaction. It is expected to be approved for use in the US later this year (2022).

In the UK, an application for approval of tapinarof has been submitted to the National Institute for Health and Care Excellence (NICE). So, watch this space!

References:

Bissonette R, Tapinarof in the treatment of psoriasis: A review of the unique mechanism of action of a novel therapeutic aryl hydrocarbon receptor-modulating agent. J Am Acad Dermatol 2021; 84: 1059-1067.

Lebwhol MG, Stein Gold L, Strober B, et al. Phase 3 Trials of Tapinarof cream for Plaque Psoriasis. N Engl J Med 2021; 385 :2219-2229.

Fish Oils and Vitamin D

Both vitamin D and omega-3 fatty acids derived from seafood, are known to have a beneficial effect on inflammation and immunity. However, until now, no scientific trials have been carried out to establish whether taking these supplements can lower the risk of psoriasis and other autoimmune problems, such as rheumatoid arthritis. This study did just that.

Some 26,000 US adults (average age 67 years) provided information regarding age, ethnicity, region of residence, income, education, lifestyle, weight, medical history, diet and supplement use. Blood levels of vitamin D and omega-3 fatty acids were also measured.

Participants were then randomly allocated to receive vitamin D (2,000 IU/day) or matched placebo, and omega-3 fatty acids (1,000mg/day) or matched placebo, and were asked to report any diagnosed autoimmune disease – including psoriasis and rheumatoid arthritis - over an average 5-year period.

Over the full duration of the trial, vitamin D and omega-3 supplements reduced the incidence of autoimmune disease by 22% and 18% respectively. There was, however, a stronger effect the longer supplements were taken. When the last 3-years of the trial were considered, vitamin D and omega-3 supplements together, decreased autoimmune disease by 30%.

Comment:

This was a large and well conducted study in a diverse, although older population. We don't know whether these findings would apply to younger individuals or what the impact of other doses and formulations of supplements might be. Moreover, the impact on psoriasis specifically is not known. Still, this is an important milestone, because this is the first direct evidence that long-term, daily supplementation with vitamin D and omega-3 fatty acids, significantly reduces the risk of autoimmune disease.

If you have psoriasis and or psoriatic arthritis, it might be well worth discussing supplements with your GP.

Reference:

Hahn, J., et al. (2022) Vitamin D and marine omega 3 fatty acid supplementation and incident autoimmune disease: VITAL randomized controlled trial. The BMJ. doi.org/10.1136/bmj-2021-066452.

Overweight increases the risk of psoriatic arthritis

The vast majority of patients developing psoriatic arthritis (PsA), have pre-existing psoriasis. Whilst studies have suggested that smoking, obesity, and heavy alcohol consumption, may make existing psoriasis worse, their relationship to PsA is unclear.

This large study examined whether these factors may increase the risk of psoriatic arthritis in a large population of patients with pre-existing psoriasis.

Using the U.K. Clinical Practice Research Datalink between 1998 and 2014, researchers identified 90,189 cases of psoriasis, 1409 of whom subsequently developed PsA. They then examined the association between changes in body mass index (BMI), smoking habits and reported alcohol consumption in relation to the risk of developing PsA.

Results showed that being overweight or obese significantly increased the risk of developing PsA. Indeed, those with a BMI ≥35·0 kg m-2 were 2.5 times more likely to develop PsA than those with a normal body weight. Importantly, reducing BMI over a 10-year period was associated with a reduction in the risk of developing PsA compared with weight remaining constant over the same period. There was an increased risk with moderate alcohol consumption but not with heavy consumption, but no association with smoking.

Comment:

What's impressive about this study is not simply the demonstrated association between body weight and risk of PsA; many other studies have already suggested this. The key observation here, is that reducing body weight is associated with a reduction in the risk of PsA. The lack of any association with smoking was perhaps surprising.

Reference:

Green A, Shaddick G, Charlton R et al. Modifiable risk factors and the development of psoriatic arthritis in people with psoriasis. Br J Dermatol 2020, 182: 714-720

PAPAA is a UK patient-centred charity that supports and helps people affected by psoriasis and psoriatic arthritis.
For full details about PAPAA and how to contact us go to:
https://www.papaa.org/contact-us/