



**Welcome to
this issue of
Pso Pscience 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!

Dr David Ashton MD PhD

Living skin patches



We are all used to electronic devices for measuring heart rhythm and blood pressure etc, but could a similar wearable electronic device be used to manage skin conditions such as psoriasis, by providing continuous feedback to the wearer? Now a collaboration between several groups of scientists in the US has developed a unique prototype that appears to do just that.

Using a combination of advanced microelectronics, living cells, and hydrogel, the researchers have created a patch – 'a living bioelectronic device'. The patch is about 1 inch in diameter and contains electronic chips, bacterial cells (*S. Epidermis*), and a gel made from starch and gelatine. *S. Epidermis* lives perfectly normally on human skin and has been shown to reduce inflammation. Thus, when the patch is placed in contact with the skin, the bacteria secrete compounds that reduce inflammation, while sensors in the flexible electronic circuits, monitor the skin for signals indicating healing – i.e., skin impedance, temperature, and humidity.

The data collected by the circuits is then sent wirelessly to a computer or a mobile device, thus enabling the patient to monitor their skin condition. Initial tests with the device are encouraging and the next step will be formal clinical trials to establish safety and efficacy.

Comment

This is a remarkable development that could revolutionise the management of a wide range of skin conditions – including psoriasis. It may also have applications in wound care and other forms of skin trauma, such as burns. One potential problem is the size of the patch or the number of patches to be used. Psoriasis often involves a large surface area, so it would be impractical to cover the whole area involved. Individual patches may possibly be able to monitor relatively large areas.

Reference: Jiuyun Shi, Saehyun Kim, et al. Active bio-integrated living electronics for managing inflammation. *Science*, 2024; 384 (6699)

Promising new treatment for psoriatic arthritis

Around 30% of patients with psoriasis, go on to develop psoriatic arthritis (PsA), the main symptoms of which are fatigue, pain, swelling, and stiffness in one or more joints as well as swollen fingers or toes. The condition can impact people's quality of life and their day-to-day activities.

When someone develops PsA, doctors usually prescribe conventional synthetic disease-modifying antirheumatic drugs. However, if these do not work well, the doctor may switch to (or add) biologic drugs, such as tumour necrosis factor-alpha (TNF- α) inhibitors. These drugs are highly specific and target a particular immune system pathway to reduce inflammation, but whilst they often relieve symptoms and slow the progress of the disease, not everyone responds positively and some patients are left with ongoing symptoms.

The good news is that the pharmaceutical company UCB has developed a new treatment option called Bimzelx (bimekizumab), which will hopefully prove to be especially effective in PsA. Bimzelx belongs to the general group of biologic agents which target specific pathways involved in the inflammatory process, leading to psoriasis and PsA.

Published clinical trials have shown that Bimzelx is well-tolerated, reduces the severity of symptoms, and slows structural damage to the joints. Trial participants also reported improvements in their physical function, with less pain and fatigue.



Importantly, Bimzelx appears to be superior to existing treatments for PsA, but with a similar safety profile. The drug is administered by injection and was approved for use in the UK in 2023.

Comment

PsA is a very debilitating condition, which is sometimes difficult to manage. For those who do not respond adequately to more conventional treatments, Bimzelx is a powerful and effective alternative.

Reference

Mease PJ, Gladman DD, et al. Comparative efficacy and safety of bimekizumab in psoriatic arthritis: a systematic literature review and network meta-analysis

Rheumatology, 2024, 63: 1779–1789

Risk of deep vein thrombosis in psoriasis

Psoriasis is an inflammatory skin disease affecting around 1-2% of the global population. It is well known that patients with psoriasis are more at risk for cardiovascular disease which is due to the inflammation which underlies both conditions.

Inflammation is also believed to be the primary mechanism involved in venous thromboembolism (VTE), more commonly known as deep vein thrombosis (DVT). Given that psoriasis and VTE share similar

inflammatory mechanisms, it is possible that patients with psoriasis may be more prone to developing VTE. This study conducted in Taiwan, was designed to explore that possibility.

Nine studies with 12,052,781 participants examined the association of psoriasis with incident VTE. They found that patients with psoriasis had an approximately 30% increased risk for VTE. Since the severity of psoriasis influences the inflammatory burden, it seems reasonable to conclude that the more severe the psoriatic disease, the greater the risk of VTE, though this needs to be confirmed in further studies.

Comment

This study, along with a number of others, confirms an increased risk of venous thromboembolism in patients with psoriasis. The typical presentation of a DVT, is a hot, red, and painful calf, following a period of immobilisation such as a long flight or car journey. The risk is that a part of the thrombus (clot) in the vein, will break off and travel to the lung – a pulmonary embolus. Patients with psoriasis should be aware that they may be at increased risk of DVT. They should therefore consider using compression stockings and a small dose of aspirin (75mg 'junior aspirin') before a long flight or journey.

Reference

Tai-Li Chen, Ling-Ling Lee, et al. Association of Psoriasis With Incident Venous Thromboembolism and Peripheral Vascular Disease: A Systematic Review and Meta-analysis. JAMA Dermatol.2022;158:59-67.



Colitis and psoriasis



There is a well-recognised link between psoriasis and various forms of inflammatory bowel disease, including ulcerative colitis. Microscopic colitis (MC) is a recently recognised inflammatory disease of the large intestine which typically occurs in patients aged 60-70 years and is more common in women. MC is characterized by symptoms such as watery (non-bloody) diarrhoea, abdominal pain, and weight loss. Given that both psoriasis and MC are immune-mediated conditions, researchers in this Swedish study conjectured that there could be a link between them.

Data were collected from various Swedish healthcare registers, and registers on the Swedish population, operated and maintained by the government. Since all Swedish citizens have a personal identity number, researchers are able to link information from multiple sources, thus allowing for an almost complete follow-up. During the period 2007-2017, they identified 8404 patients with a first-time diagnosis of MC. These patients were then matched with 37,033 reference individuals from the general population. A total of 179 MC patients and 440 reference individuals, were subsequently diagnosed with psoriasis. After various statistical adjustments, patients with MC were found to have around twice the risk of developing psoriasis compared with the general population.



Comment

These findings are consistent with other studies detailing an association between inflammatory bowel disease and psoriasis. What is interesting about this study is that it was prospective – it identified patients with MC who went on to develop psoriasis. It underscores the fact that psoriasis is not just a skin disease, but an expression of systemic inflammation which may have an adverse effect on multiple organs throughout the body. It should alert medical practitioners to the very real association between psoriasis and various forms of inflammatory bowel disease.

Reference

Bergman D, Roelstraete B, et al. Microscopic Colitis and Risk of Incident Psoriasis: A Nationwide Population-Based Matched Cohort Study. *Clinical Epidemiology*. 2024;16 213–225

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/>