

Personalising treatment strategy in psoriasis

As global life expectancy has increased and chronic diseases have become more prevalent, scientific research has delivered an expanding repertoire of potential treatment options. However, an emerging challenge is to ensure that the most effective and appropriate drug is selected for each individual, early in the patient journey.

Aim

This study aims to determine whether a tool that predicts response to treatments in psoriasis will improve patient outcomes, including disease severity and quality of life.

Background to research

Psoriasis is a common and debilitating skin disease that affects between 2 and 4 in every 100 people worldwide. Patients develop red, scaly patches of skin that are itchy and painful. It causes poor quality of life and increased rates of heart and joint disease, in addition to anxiety and depression. Recent research has led to the introduction of several 'biologic' treatments for psoriasis, however almost one third of patients fail to respond to these medications in everyday practice. The treatments are prescribed in a 'trial and error' fashion until satisfactory disease control is achieved. This process is costly, since biologic treatments cost around £10,000 per year, per patient. Importantly, current practice places patients at risk of prolonged periods with poorly controlled disease and exposes them to avoidable side effects from medications that are otherwise ineffective for their psoriasis. It is therefore important to understand which patients will have lasting benefit from a particular biologic drug.

Since it is now recognised that each patient with psoriasis has multiple unique factors (such as changes in their genetic code) that contribute to the development of their disease, there is an urgent need to allocate medications to patients in a more strategic, personalised manner. The Psoriasis Stratification to Optimise Relevant Therapy (PSORT) consortium have uncovered markers of treatment response in psoriasis, however it is not yet known whether this knowledge will translate into better outcomes for patients with psoriasis.

Design and methods

I will design a treatment allocation tool using predictors of treatment response, such as an individual's genetic code ('DNA'; measured from a blood sample), sex, age, weight and smoking status. This tool will enable doctors to predict which type of biologic drug will be the most effective for a particular patient with psoriasis.

I will validate this tool by interrogating a large, high quality multi-centre database that has periodically followed up patients with psoriasis while on biologic treatments. Detailed genetic and clinical information, including patient outcomes, has been captured. The database will thus enable assessment of the treatment algorithm's predictive accuracy.

I will then perform a pilot clinical study in patients attending an NHS psoriasis clinic, to assess whether the treatment allocation tool may lead to improved outcomes in psoriasis, including quality

of life. A cost analysis will also be performed so that the financial impact of the treatment algorithm can be assessed.

Impact

The treatment allocation tool designed and tested in this project has the exciting potential to optimise psoriasis management pathways and also guide the care of patients with other immune-related conditions that require biologic drugs, such as rheumatoid arthritis and inflammatory bowel disease. It will therefore have far-reaching benefits to both patients and the NHS.