PSORT
Psoriasis Stratification to
Optimise Relevant Therapy

Identifying demographic, social and clinical predictors of biologic therapy effectiveness in psoriasis: a multi-centre longitudinal cohort study

Lay Summary

Biologic therapies are a form of treatment, usually given as an injection, for many common inflammatory conditions such as psoriasis and rheumatoid arthritis. It is fair to say that they have revolutionised the treatment of moderate-to-severe psoriasis. For many patients, biologic therapies are extremely effective in reducing or eliminating symptoms of psoriasis. However, data from large scale registries, which are tracking outcomes of patients on these therapies shows that 15%+ of patients discontinue treatment per annum. In addition, biologics are expensive and, in the UK, cost approximately £10,000 per year for one patient. The current approach to prescribing biologic therapies is through 'trial and error'. Clinicians prescribe a biologic to a patient and, if they do not respond, the clinician may then try a different biologic therapy. Considering it takes several weeks/months to determine if a biologic therapy is effective, this approach can be lengthy and expensive. It would therefore be beneficial to identify any patient characteristics associated with response to biologic therapy (especially any modifiable characteristics) and characteristics which may inform the choice of which biologic therapy to prescribe to individual patients.

The British Association of Dermatologists Biologic Interventions Register (BADBIR) is a UK and Republic of Ireland based, multi-centre registry for adults with psoriasis starting on biologic therapies which initiated in September 2007. This dataset includes detailed demographic, social and clinical information for all patients measured at multiple time points and thus provides a resource of sufficient size and detail to comprehensively investigate the extent to which these factors predict treatment outcomes.

Patients with chronic plaque psoriasis enrolled in the BADBIR up to 1st February 2017 who initiated one of the three most commonly prescribed biologic therapies: adalimumab, etanercept (Enbrel), or ustekinumab as a first-line biologic formed the study population for this analysis. Using statistical modelling, the study investigated the association between

achieving a good outcome to biologic therapy and several demographic factors (including age, gender, ethnicity), social factors (including work status, weight, smoking status), disease characteristics (such as disease duration, locations of psoriasis on the body) and comorbidities (including hypertension, diabetes and depression). A 'good outcome' was primarily defined as a reduction in the Psoriasis Area Severity Index (PASI) by 90% or more (PASI 90) – which equates to clearing most of the skin of psoriasis - within 6 months following treatment initiation. It was also investigated whether any characteristics were associated with a better/worse response to a specific biologic therapy.

Eight factors associated with a reduced chance of achieving PASI 90 at 6 months were identified: female gender, unemployment due to ill health, unemployment due to other reasons, ex- and current smoking, a high weight, psoriasis located on the palms and/or soles and the presence of small plaques only. The effect of each characteristic was relatively small such that at this stage they would not necessarily help a clinician choose which biologic therapy to prescribe. Importantly, some of these factors are modifiable and confirm the important role a dermatologist plays in educating patients about behaviour change and lifestyle management which will in general lead to better outcomes. To ultimately achieve a reliable tool to aid the choice of which biologic therapy to prescribe, it is highly likely that other components of the Psoriasis Stratification to Optimise Relevant Therapy (PSORT) analysis (such as genetic data) will need to be integrated to the clinical data presented here.

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