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Health Technology Briefing
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Guselkumab for treating chronic plaque psoriasis in children aged 6 to 17 years

Company/Developer	Janssen-Cilag Ltd

☐ New Active Substance ☒ Significant Licence Extension (SLE)

NIHRIO ID: 24049	NICE ID: Not available	UKPS ID: 666882

Licensing and Market Availability Plans

Currently in phase III clinical trial.

Summary

Guselkumab is in clinical development for the treatment of chronic plaque psoriasis in children aged 6 to 17 years. Psoriasis is a skin condition that causes flaky patches of skin which form scales. Chronic plaque psoriasis is the most common form of psoriasis. The 'plaques' are formed due to the build-up of skin cells and can be very red, itchy, and sore. Psoriasis can have a significant impact on the quality of life of those more severely affected. Patients with psoriasis have a significantly increased risk of cardiovascular disease, with the risk greatest for young patients with severe disease. Children with chronic plaque psoriasis who do not respond well to topical treatment or phototherapy (exposure to certain types of ultraviolet light) require more effective treatment options.

Guselkumab is a monoclonal antibody (a type of protein) which is designed to attach to interleukin 23 and block its activity. Interleukin 23 is a messenger substance that controls the growth and maturation of some types of T cells. These T cells, which are part of the body's immune system (the body's natural defences), are involved in causing inflammation that is linked to plaque psoriasis. By blocking the action of interleukin 23, guselkumab reduces inflammation and other symptoms of the disease. Guselkumab will be administered by subcutaneous injection and offers a biological treatment option for children with chronic plaque psoriasis.

Proposed Indication

Treatment of children aged 6 to less than 18 years with chronic plaque psoriasis.[1]

Technology

Description

Guselkumab (TREMFYA, CNTO1959) is a human IgG1λ monoclonal antibody (mAb) that binds selectively to the interleukin 23 (IL-23) protein with high specificity and affinity. IL-23, a regulatory cytokine, affects the differentiation, expansion and survival of T cell subsets and innate immune cell subsets, which represent sources of effector cytokines, including IL-17A, IL-17F and IL-22 that drive inflammatory disease. Levels of IL-23 are elevated in the skin of patients with plaque psoriasis. In in-vitro models, guselkumab was shown to inhibit the bioactivity of IL-23 by blocking its interaction with cell surface IL-23 receptor, disrupting IL-23-mediated signalling, activation and cytokine cascades. Guselkumab exerts clinical effects in plaque psoriasis through blockade of the IL-23 cytokine pathway.[2]

Guselkumab is in clinical development for the treatment of chronic plaque psoriasis in children aged 6 to less than 18 years. In the phase III clinical trial (PROTOSTAR, NCT03451851), a weight-based dose of guselkumab will be subcutaneously (SC) administered at weeks 0, 4, and 12 in Part 1, and participants will receive a weight-based dose of open-label guselkumab SC at weeks 0, 4 and every 8 weeks (q8w) thereafter through week 52 in Part 2.[1]

Key Innovation

Guselkumab has been shown to be effective in treating moderate to severe plaque psoriasis in patients who do not respond well to topical treatments.[3] Biologics (such as guselkumab) are able to target specific components of the autoimmune response that are involved in psoriasis, unlike general immunosuppressants that suppress the entire immune system.[4] Guselkumab is proposed as an alternative to other biological therapies already recommended for treating severe plaque psoriasis in adults. Evidence from clinical trials and indirect comparisons show that guselkumab is more effective than tumour necrosis factor (TNF)-alpha inhibitors. Guselkumab is also considered as an alternative to other biological therapies when non-biological systemic treatment or phototherapy is inadequately effective, not tolerated or contraindicated.[5]

If licensed, guselkumab will offer an additional treatment option for children and adolescents with chronic plaque psoriasis who do not respond well to other forms of treatment.

Regulatory & Development Status

Guselkumab currently has Marketing Authorisation in the EU/UK for the following indications:[6]

- treatment of moderate to severe plaque psoriasis in adults who are candidates for systemic therapy
- as monotherapy or in combination with methotrexate, for the treatment of active psoriatic arthritis in adult patients who have had an inadequate response or who have been intolerant to a prior disease-modifying antirheumatic drug (DMARD)

Guselkumab is currently in phase II and phase III clinical development for several indications, some of which include:[7]

- Pityriasis Rubra Pilaris
- Low body surface area moderate Plaque Psoriasis
- Active Psoriatic Arthritis
- Fistulising Perianal Crohn's Disease
- Moderately to severely active Crohn's Disease

- Moderately to severely active Ulcerative Colitis
- Active Juvenile Psoriatic Arthritis

Patient Group

Disease Area and Clinical Need

Psoriasis is a systemic, immune-mediated, inflammatory skin disease with a typically chronic relapsing-remitting course. Chronic plaque psoriasis is the most common form, affecting 80–90% of people with psoriasis.[8] It is a multifactorial disease caused by the interaction between multiple inherited alleles and environmental risk factors, with heritability estimated to exceed 60%.[9] Plaques are dry skin patches which form scales, they can be itchy and/or sore, and the skin around the joints may crack and bleed in severe cases; chronic plaque psoriasis can have a significant impact on quality of life for those more severely affected.[8,10] Some of the factors associated with the onset or exacerbation of psoriasis include drugs (most notably corticosteroid withdrawal), ultraviolet light exposure, hormonal changes, stress and alcohol.[8] Also, there are a number of conditions associated with psoriasis such as psoriatic arthritis, metabolic syndrome, inflammatory bowel disease, anxiety and depression.[8] The pathology of psoriasis is not fully understood, it is thought to be an issue in which the immune system mistakenly attacks healthy skin cells; skin cells are made and replaced every 3 to 7 days in psoriasis rather than the normal 3 to 4 weeks.[10]

Psoriasis is common, with about 1.3–2.8% of the UK population affected.[8] In England, 2022-23, there were 1,105 finished consultant episodes (FCE) and 1,105 admissions for psoriasis vulgaris (plaque psoriasis) (ICD-10 code L400) in adults and children which resulted in 1,624 FCE bed days and 846 day cases. There were 47 FCEs for children aged 5 to 17 years.[11]

Recommended Treatment Options

There is no cure for psoriasis, however there are a number of treatments that can control symptoms and the appearance of skin patches.[10]

NICE recommends the following treatment options for psoriasis in children:[12]

- first-line topical treatments which include emollients, topical corticosteroids, coal tar preparations, and topical vitamin D or vitamin D analogues
- narrowband ultraviolet B (UVB) phototherapy when topical treatment has failed to achieve control
- systemic non-biological treatment with methotrexate [unlicensed] or ciclosporin when the psoriasis cannot be controlled with topical treatment and if the psoriasis has a significant impact on physical, psychological or social well-being; or acitretin in exceptional cases, where methotrexate [unlicensed] and ciclosporin are not appropriate, or have failed, or in children with pustular forms of psoriasis
- biological drugs such as interleukin inhibitors and tumour necrosis factor alpha (TNF-a) inhibitors

Clinical Trial Information

Trial	**PROTOSTAR**; **NCT03451851**, EudraCT-2017-003053-42; A phase 3, multicentre, randomized, placebo- and active comparator-controlled study evaluating the efficacy, safety, and pharmacokinetics of subcutaneously

	administered guselkumab for the treatment of chronic plaque psoriasis in paediatric subjects (>=6 To <18 years of age). **Phase III:** Recruiting **Locations:** Six EU countries, USA, Canada and Australia **Primary completion date:** July 2023
Trial Design	Multicentre, randomised, placebo- and active comparator-controlled, quadruple masking, parallel assignment
Population	N = 125 (estimated); subjects with a diagnosis of chronic plaque-type psoriasis for at least 6 months; all sexes; aged 6 to 17 years.
Intervention(s)	• Part 1: weight-based dose of guselkumab (SC) at weeks 0, 4, and 12 + placebo for guselkumab (SC) • Part 2: weight-based dose of open-label guselkumab (SC) at weeks 0, 4 and q8w (every 8 weeks) thereafter through week 52 See trial record for full dosage
Comparator(s)	• Placebo for guselkumab (SC) at weeks 0, 4, and 12 + weight-based dose of guselkumab (SC) • Weight-based etanercept dose up to 50 milligram (SC) weekly through week 15 + weight-based dose of guselkumab (SC) See trial record for full dosage
Outcome(s)	Primary outcome measures: • Percentage of Participants who Achieve an Investigator's Global Assessment (IGA) Score of Cleared (0) or Minimal (1) [Time Frame: Week 16] • Percentage of Participants who Achieve Psoriasis Area and Severity Index (PASI) 75 Response [Time Frame: Week 16] See trial record for full list of other outcomes
Results (efficacy)	-
Results (safety)	-

Estimated Cost

Guselkumab is already marketed in the UK for the treatment of moderate-to-severe plaque psoriasis and psoriatic arthritis in adults; a 100mg/1ml pre-filled disposable injection costs £2,250.00.[13]

Relevant Guidance

NICE Guidance

- NICE technology appraisal guidance. Secukinumab for treating moderate to severe plaque psoriasis in children and young people (TA734). October 2021.
- NICE technology appraisal guidance. Adalimumab, etanercept and ustekinumab for treating plaque psoriasis in children and young people (TA455). July 2017.
- NICE clinical guideline. Psoriasis: assessment and management (CG153). October 2012.
- NICE quality standard. Psoriasis (QS40). August 2013.
- NICE interventional procedure. Grenz rays therapy for inflammatory skin conditions (IPG236). November 2007.

NHS England (Policy/Commissioning) Guidance

NHS England. 2013/14 NHS Standard Contract for Specialised Dermatology Services (All Ages). A12/S/a.

Other Guidance

Joint American Academy of Dermatology. National Psoriasis Foundation guidelines of care for the management and treatment of psoriasis in paediatric patients. 2020.[14]

Additional Information

References

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