SAGE Open Medical Case Reports

SAGE Open Medical Case Reports
JCMS Case Reports
Volume 8: 1–3

DOI: 10.1177/2050313X20905672
journals.sagepub.com/home/sco
SAGE

Dose optimization of brodalumab in moderate-to-severe plaque psoriasis: A case report

Jensen Yeung[1,2,3,4], Matthew Ladda[5] and Vincent Piguet[1,2]

Abstract

Brodalumab, a monoclonal antibody that targets the interleukin-17 receptor, is a new treatment option for moderate-to-severe plaque psoriasis with a unique mechanism of action. The current recommended dosing regimen is a 210-mg subcutaneous injection at weeks 0, 1, and 2, and every 2 weeks thereafter. We present a case of a patient with recalcitrant moderate-to-severe plaque psoriasis who required a higher maintenance dose frequency of 210 mg of brodalumab subcutaneously every week to achieve disease clearance. To our knowledge, this is the first report of a patient receiving a maintenance dose of 210 mg of brodalumab weekly. In patients with refractory plaque psoriasis only partially responsive to the recommended maintenance dose, an increase in frequency to every week may be worth consideration. Further research is required to elucidate the effectiveness and long-term safety of this regimen.

Keywords

Brodalumab, dose optimization, psoriasis

Introduction

Brodalumab is the first anti-interleukin-17 receptor A monoclonal antibody marketed for the treatment of moderate-to-severe plaque psoriasis.[1] Currently, the recommended dosing regimen is a 210-mg subcutaneous injection at weeks 0, 1, and 2, and then every 2 weeks thereafter.[2] Here, we present a case of a patient who required an increase in maintenance dose frequency to 210 mg every week in order to achieve disease clearance.

Case report

Our patient is a 39-year-old male diagnosed with plaque psoriasis at the age of 19, who has trialled multiple topical, oral, and injectable therapies. Phototherapy was not accessible. In his early 20s, he trialled cyclosporine and methotrexate which were moderately effective (around 50%–60% improvement in his own words), but both were discontinued due to uncontrolled hypertension from cyclosporine and severe gastrointestinal upset from methotrexate.

At the age of 32, he presented to our clinic with a baseline body surface area (BSA) of 46% and a Psoriasis Area and Severity Index (PASI) score of 26.3. He was treated with ustekinumab 90 mg at weeks 0, 4, and 16, but had no improvement. A switch to adalimumab at the recommended dosing regimen for 3 months resulted in some improvement (BSA 31%, PASI 19.5).

At the age of 34, infliximab was started at a dosing regimen of 5 mg/kg at weeks 0, 2, and 6. After three loading doses at week 12, his psoriasis had not significantly improved (BSA 27%, PASI 14.5). Infliximab was then increased to 7.5 mg/kg every 8 weeks, and after three additional higher doses his psoriasis improved (BSA 5%, PASI 4.2).

The following year, his psoriasis worsened (BSA 13%, PASI 10.2). Apremilast 30 mg orally twice daily was added,

[1]Division of Dermatology, Department of Medicine, University of Toronto, Toronto, ON, Canada
[2]Division of Dermatology, Department of Medicine, Women's College Hospital, Toronto, ON, Canada
[3]Division of Dermatology, Department of Medicine, Sunnybrook Health Sciences Centre, Toronto, ON, Canada
[4]Probity Medical Research, Waterloo, ON, Canada
[5]Faculty of Medicine, University of Toronto, Toronto, ON, Canada

Corresponding Author:
Jensen Yeung, Division of Dermatology, Department of Medicine, Women's College Hospital, 76 Grenville Street, 5th Floor, Toronto, ON M5S 1B2, Canada.
Email: jensen.yeung@utoronto.ca

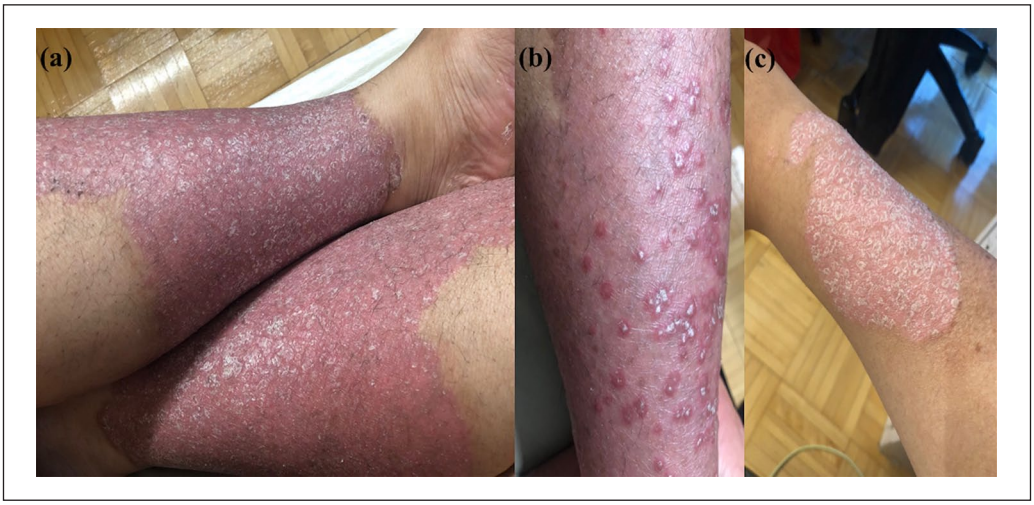

Figure 1. Residual psoriasis after 20 weeks of treatment with guselkumab: (a) lower legs, (b) lower leg, and (c) forearm.

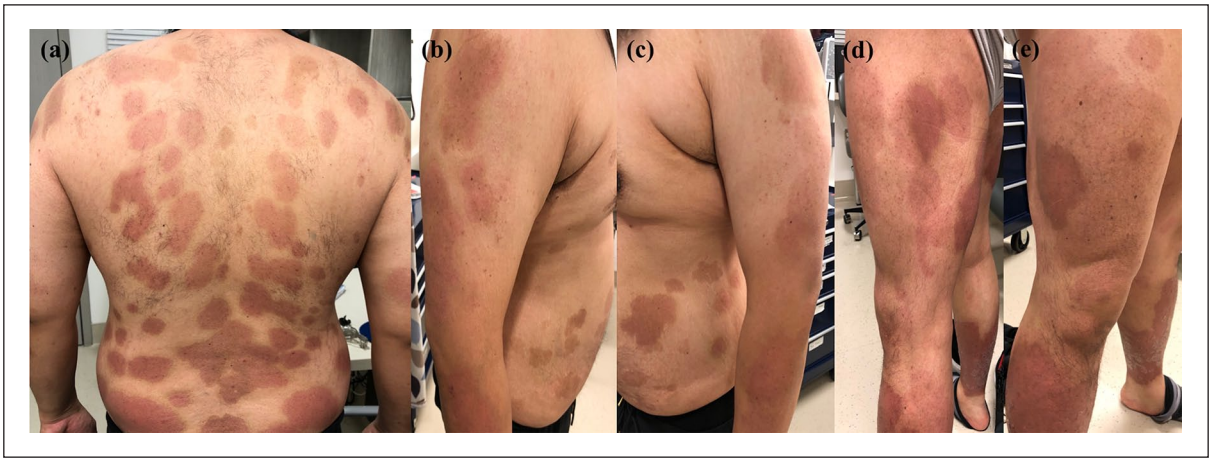

Figure 2. Residual post-inflammatory hyperpigmentation after 5 weeks of treatment with brodalumab: (a) back, (b) right arm, (c) left arm, (d) left leg, and (e) right leg.

but was discontinued after 3 months due to lack of efficacy and poor tolerance. Infliximab was further increased to 7.5 mg/kg every 6 weeks, but was stopped after 6 months when his psoriasis flared (BSA 38%, PASI 14.8).

Secukinumab was then started at the recommended dosing regimen, and after 3 months his psoriasis improved (BSA 10%, PASI 4.0). This effect was short lived, as 3 months later his psoriasis had worsened (BSA 20%, PASI 13.5). He then switched to ixekizumab at the recommended dosing regimen. After 3 months, his psoriasis moderately improved (BSA 11%, PASI 12.4). His psoriasis continued to improve by his 6-month follow-up (BSA 6%, PASI 6.2).

At the age of 37, his psoriasis flared (BSA 14%, PASI 13.0). He was switched to guselkumab at the standard dosing regimen. There was minimal improvement with guselkumab, and his residual psoriasis after 20 weeks of guselkumab is shown in Figure 1 (BSA 10%, PASI 11.2). A skin biopsy was performed at this time which was consistent with psoriasis.

At the age of 38, brodalumab was initiated at the recommended dosing regimen of 210 mg at weeks 0, 1, 2, and 4, and every 2 weeks thereafter. A week after his week-4 dose, almost all of his active psoriasis was clear, as shown in Figure 2 (BSA 2%, PASI 2.4). He reported that his psoriasis was completely clear after the three weekly loading doses and started to return during the maintenance phase of treatment. He requested to receive brodalumab 210 mg every week. The dosing frequency was increased to weekly as the drug was well tolerated. After two weekly doses of 210 mg, his psoriasis cleared and only post-inflammatory hyperpigmentation remained. His psoriasis has since remained clear 9 months later.

Discussion

This report describes the case of a patient with refractory plaque psoriasis who achieved disease clearance with an increased maintenance dose frequency of brodalumab.

Research is required to elucidate the effectiveness and long-term safety of this increased maintenance dose frequency of brodalumab in patients only partially responsive to the standard dosing regimen.

Declaration of conflicting interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: J.Y. has been a speaker, consultant, and investigator for AbbVie, Allergan, Amgen, Astellas, Boehringer Ingelheim, Celgene, Centocor, Coherus, Dermira, Eli Lilly, Forward, Galderma, GSK, Janssen, Leo, Medimmune, Merck, Novartis, Pfizer, Regeneron, Roche, Sanofi Genzyme, Takeda, UCB, Valeant, and Xenon. V.P. has received honoraria or fees for consulting and/or speaking for AbbVie, Almirall, Celgene, Janssen, Novartis, and Pfizer and has received departmental support for Cardiff University from AbbVie, Almirall, Alliance, Beiersdorf UK Ltd, Biotest, Celgene, Dermal, Eli Lilly, Galderma, Genus Pharma, GlobeMicro, Janssen-Celag, La Roche-Posay, L'Oreal, LEO Pharma, Meda, MSD, Novartis, Pfizer, Sinclair Pharma, Spirit, Stiefel, Samumed, Thornton Ross, TyPham, and UCB and for University of Toronto from Sanofi.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Informed consent

Informed consent for patient information and images published was provided.

References

1. Lebwohl M, Strober B, Menter A, et al. Phase 3 studies comparing brodalumab with ustekinumab in psoriasis. *N Engl J Med* 2015; 373(14): 1318–1328.
2. Menter A, Strober BE, Kaplan DH, et al. Joint AAD-NPF guidelines of care for the management and treatment of psoriasis with biologics. *J Am Acad Dermatol* 2019; 180(4): 1029–1072.