# Letter

## Research letter

### Drug survival of guselkumab in patients with plaque psoriasis: A 2 year retrospective, multicenter study

*To the Editor:* Guselkumab is the first interleukin 23 inhibitor that has been approved for patients with moderate-to-severe plaque psoriasis on the basis of its safety and efficacy reported in phase III trials.[1-3] Patients in the real-world practice may have a more recalcitrant disease compared with those in the clinical trials, where medically challenging patients are often excluded.[4] Accordingly, the aim of this retrospective study was to investigate the drug survival of guselkumab in bio-naive compared with bio-experienced patients with plaque psoriasis in a real-world setting at 2 Canadian academic centers.

Upon receiving approval by the research ethics board at the Sunnybrook Health Sciences Centre (205-2018) and Women's College Hospital (2018-0079-E), the charts were reviewed for patients with plaque psoriasis treated with subcutaneous injections of guselkumab (100 mg at weeks 0 and 4 and then 100 mg every 8 weeks as maintenance). Retention data and reasons for the discontinuation of guselkumab treatment were collected. Guselkumab survival was calculated using unadjusted Kaplan–Meier analysis, where the discontinuation was conservatively defined as the interruption of guselkumab treatment due to any cause (nonresponder imputation). Mantel–Cox test was used for the comparison of survival curves among patient groups with different number of previously failed biologic agents.

Of the 264 included patients (mean age, 50.3 ± 14.3 years; 155 males [58.7%]; 109 females [41.3%]; baseline physician global assessment, 2.6 ± 0.9), 67 (25.4%) were bio-naive, 114 (43.2%) had previously failed 1 biologic agent, and 83 (31.4%) had previously failed 2 or more biologic agents (Table I). The most commonly failed biologics were interleukin 12/23 inhibitor (ustekinumab, 56.1%), tumor necrosis factor-$\alpha$ inhibitors (adalimumab, 21.6%; etanercept, 16.3%; and infliximab, 9.5%), and interleukin 17A inhibitors (secukinumab, 13.3%; and ixekizumab, 11.4%). During the first 104 weeks of treatment, the main reason for discontinuation of guselkumab was the lack of efficacy (11.4%, n = 30/264) and incomplete lesion clearance or residual arthralgia (3.8%, n = 10/264). The overall guselkumab survival rate decreased from 0.989 to 0.907 to 0.804 to 0.674 from week 12 to 26 to 52 to 104, respectively. Over 104 weeks, guselkumab survival was the lowest for patients who had previously failed 2 or more biologic agents and the highest for patients who were bio-naive ($P = .0274$; Fig 1). Guselkumab was well tolerated; of the 264 patients, injection site reaction was reported in 4 patients (1.5%) and arthralgia, lethargy, headache, or gastrointestinal upset in 2 patients each (0.8%).

Our observation of lower guselkumab survival in bio-experienced patients supports the findings from real-world studies with other biologic therapies, such as secukinumab and ixekizumab.[4] This highlights the importance of the real-world studies that often include a lower proportion of bio-naive patients (25.4% in our cohort) compared with phase III trials with guselkumb (79.9%).[1] Given that lack of efficacy was the most common reason for the discontinuation of guselkumab treatment, shortening of the dosing frequency to 100 mg every 6 weeks or 100 mg every 4 weeks was suggested to improve the clinical outcomes in those patients.[5] Larger trials are needed to confirm the safety of such dosing strategy. There have been no major safety concerns reported for guselkumab to date. Our results are limited by the heterogeneous patient data, modest sample size, and follow-up times.

Overall, although the drug survival was highest in the bio-naive patients, a large proportion of the bio-experienced patients maintained treatment after 52 weeks. Larger cohorts with a longer duration of follow-up are needed for enhanced understanding of the clinical implications of our findings.

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**Table I.** Characteristics of the study population treated with guselkumab

| Characteristics | All patients (n = 264) | No previous biologics (n = 67) | 1 previous biologic (n = 114) | 2 or more previous biologics (n = 83) |
|---|---|---|---|---|
| Male, n (%) | 155/264 (58.7%) | 40/67 (59.7%) | 71/114 (62.3%) | 44/83 (53.0%) |
| Female, n (%) | 109/264 (41.3%) | 27/67 (40.3%) | 43/114 (37.7%) | 39/83 (47.0%) |
| Mean age, y ± SD | 50.3 ± 14.3 | 47.6 ± 15.1 | 49.3 ± 14.9 | 53.7 ± 12.3 |
| Mean PASI, score ± SD | 10.9 ± 8.5 (n = 128) | 16.7 ± 8.4 (n = 39) | 7.5 ± 7.4 (n = 55)* | 10.3 ± 7.1 (n = 34) |
| Mean PGA, score ± SD | 2.6 ± 0.9 | 3.1 ± 0.7 | 2.4 ± 1.0* | 2.6 ± 0.8* |
| Psoriatic arthritis, n (%) | 67/264 (25.4%) | 7/67 (10.4%) | 22/114 (19.3%) | 38/83 (45.8%) |
| Mean duration of psoriasis, y ± SD | 17.3 ± 11.7 | 11.2 ± 7.9 | 21.3 ± 12.1* | 21.5 ± 12.0* |
| Mean age at the first biologic, y ± SD | 45.2 ± 14.5 | 47.6 ± 15.1 | 44.6 ± 14.6 | 44.3 ± 12.6 |
| Number of previously failed biologic therapies, mean ± SD | 1.3 ± 1.2 | 0.0 ± 0.0 | 1.0 ± 1.0 | 2.9 ± 1.0 |

*n*, Number; *PASI*, psoriasis area severity index; *PGA*, physician global assessment; *SD*, standard deviation.
*$P < .05$ versus no previous biologic.

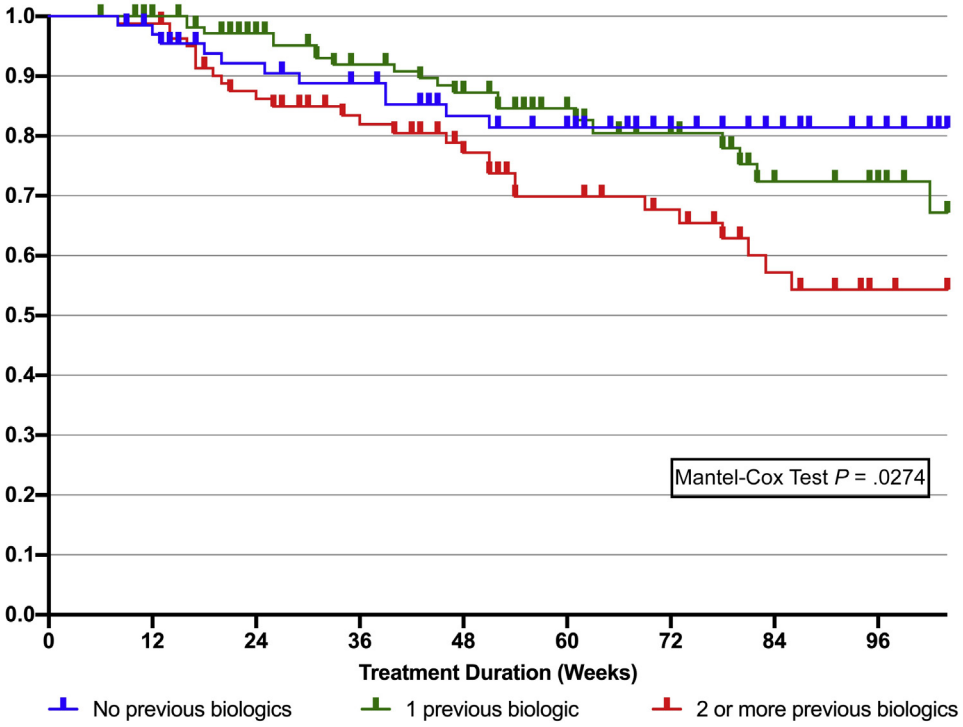


**Fig 1.** Kaplan–Meier plot of drug survival for guselkumab over 104 weeks in patients with plaque psoriasis who had previously not used biologic agents (*blue*), previously failed 1 biologic agent (*green*), and previously failed 2 or more biologic agents (*red*).

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**Conflicts of interest**

Dr Yeung 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. Drs Lytvyn, Zaaroura, Mufti, and AlAbdulrazzaq have no conflicts of interest to declare.

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