Research letters

Efficacy and safety of apremilast in patients with moderate-to-severe plaque psoriasis of the scalp: results up to 32 weeks from a randomized, phase III study

DOI: 10.1111/bjd.20083

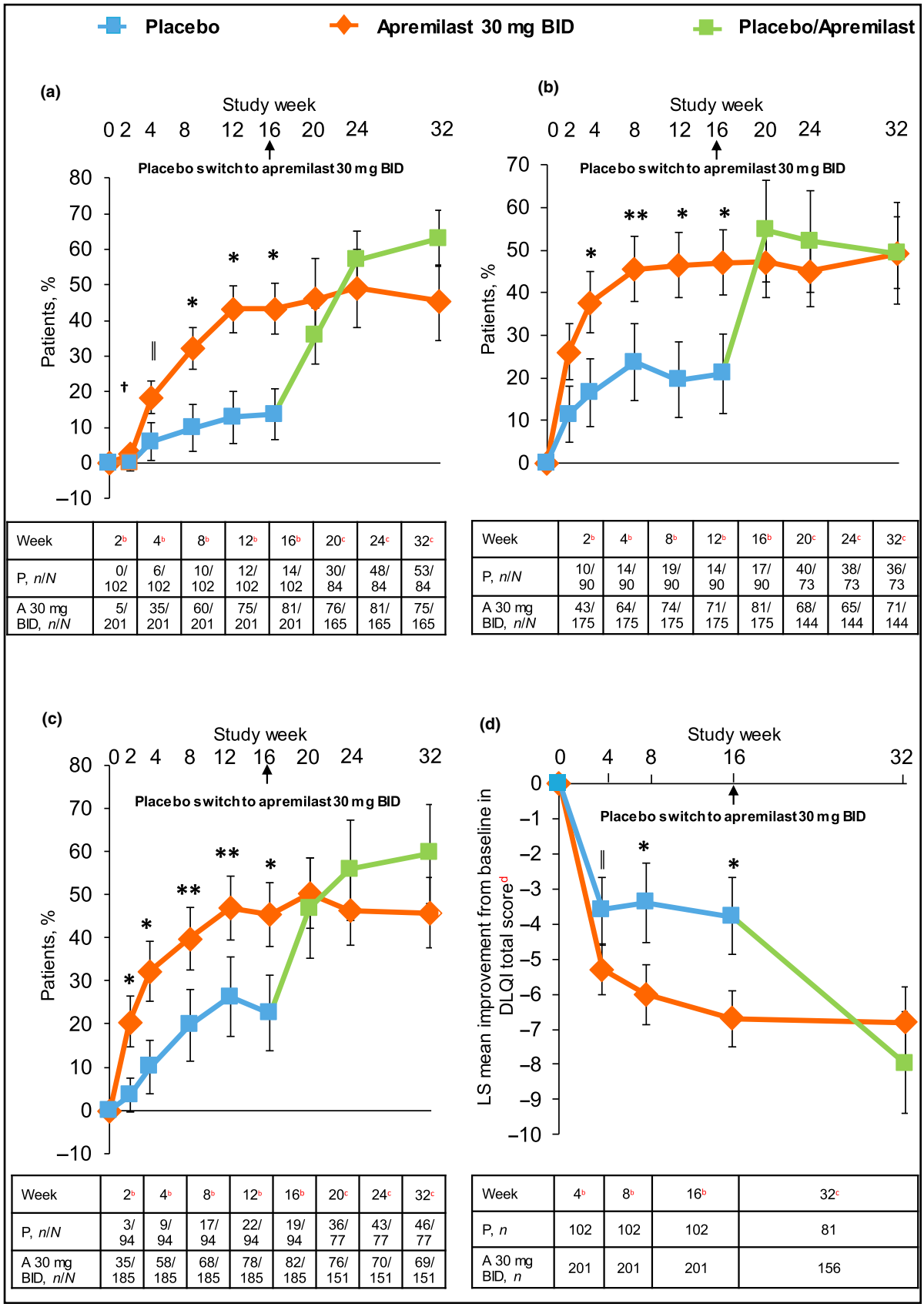
Dear Editor, Scalp psoriasis is common and often severe enough to negatively impact quality of life (QoL).[1,2] In STYLE (clinicaltrials.gov: NCT03123471), oral apremilast 30 mg twice daily demonstrated significantly greater improvements in moderate-to-severe plaque psoriasis of the scalp, scalp itch, whole body itch and QoL vs. placebo[3] during the 16-week, placebo-controlled phase; safety and tolerability were consistent with the known safety profile of apremilast.[3,4] We report the efficacy and safety of apremilast during the apremilast extension phase of STYLE (weeks 16–32). During the extension phase, patients initially randomized to placebo were switched to apremilast [placebo/apremilast (P/A) group; with titration during week 16] and patients initially randomized to apremilast continued active treatment [apremilast/apremilast (A/A) group; with dummy titration during week 16] through week 32. We also present apremilast efficacy at week 16 in subgroups based on baseline demographics and treatment characteristics (Figure 1).

Of 303 patients randomized (placebo, n = 102; apremilast, n = 201), 252 completed the placebo-controlled phase (weeks 0–16) and 249 entered the apremilast extension phase. There were 216 patients who completed the extension phase through week 32, including 76 of 84 (90·5%) initially randomized to placebo (P/A) and 140 of 165 (84·8%) continuing with apremilast (A/A). At week 16, the proportion of patients achieving the primary endpoint of Scalp Physician's Global Assessment (ScPGA) response [score of 0 (clear) or 1 (almost clear) with ≥ 2-point reduction from baseline] was significantly greater with apremilast vs. placebo [43·3% vs. 13·7%, $P < 0·0001$; multiple imputation (MI) analysis].[3] Sensitivity analyses using last observation carried forward and nonresponder imputation were consistent with the MI analysis.[3] At week 32, ScPGA response was sustained in the A/A group (45·5%) and occurred in the P/A group (63·1%) (Figure 1a). Achievement of Numeric Rating Scale (NRS)-Scalp Itch and NRS-Whole Body Itch response was maintained at week 32 in patients continuing with apremilast and observed in patients initially randomized to placebo after switching to apremilast. At week 32, 49·3% of patients in both groups (A/A and P/A), achieved NRS-Scalp Itch response, and 45·7% (A/A) and 59·7% (P/A) achieved NRS-Whole Body Itch response (Figure 1b, c).

At week 32, Dermatology Life Quality Index (DLQI) total score improvements were maintained in the A/A group and occurred in the P/A group after switching to apremilast. The mean change (improvement) in DLQI total score was −6·8 in the A/A group and −8·0 in the P/A group at week 32, exceeding the minimal clinically important difference of four-point improvement from baseline (Figure 1d).[5] Subgroup analyses evaluating ScPGA response, NRS-Scalp Itch response and NRS-Whole Body Itch response at week 16 demonstrated treatment effects mostly in favour of apremilast vs. placebo in subgroups based on sex, baseline body mass index category, number of prior conventional systemic treatments and number of failed prior topical scalp psoriasis or shampoo treatments.

During the apremilast-exposure period (0–32 weeks), 284 patients received at least one dose of apremilast; total apremilast exposure was 126·2 person-years. Most adverse events (AEs) during the apremilast-exposure period were mild or moderate in severity and consistent with the placebo-controlled period[3] and known safety profile of apremilast. The most common AEs (≥ 5% during the apremilast-exposure

Figure 1 Proportion of patients achieving (a) ScPGA score 0 or 1 with ≥ 2-point reduction from baseline; (b) ≥ 4-point improvement from baseline in NRS-Scalp Itch;[a] (c) ≥ 4-point improvement from baseline in NRS-Whole Body Itch;[a] and (d) LS mean improvement from baseline in DLQI total score (the MCID is ≥ 4-point improvement from baseline). Bars represent two-sided 95% confidence intervals. *$P < 0·0001$, **$P < 0·001$, ‖$P < 0·01$, †$P < 0·05$; all vs. placebo. [a]Patient-rated scalp or whole-body itch on a scale of 0 (no itch) to 10 (worst imaginable itch); intention-to-treat population with baseline NRS (Scalp or Whole Body) Itch score ≥ 4. [b]Multiple imputation. [c]Based on the last observation in the apremilast extension phase; nonresponder imputation for ScPGA and NRS responses. [d]ANCOVA model with treatment arm and stratification factor [baseline ScPGA score 3 (moderate) or 4 (severe)] as independent variables and baseline value as a covariate variable. A, apremilast; BID, twice daily; DLQI, Dermatology Life Quality Index; LS, least squares; MCID, minimal clinically important difference; NRS, numeric rating scale; P, placebo; ScPGA, Scalp Physician Global Assessment.



Week	2[b]	4[b]	8[b]	12[b]	16[b]	20[c]	24[c]	32[c]
P, *n*/*N*	0/102	6/102	10/102	12/102	14/102	30/84	48/84	53/84
A 30 mg BID, *n*/*N*	5/201	35/201	60/201	75/201	81/201	76/165	81/165	75/165

Week	2[b]	4[b]	8[b]	12[b]	16[b]	20[c]	24[c]	32[c]
P, *n*/*N*	10/90	14/90	19/90	14/90	17/90	40/73	38/73	36/73
A 30 mg BID, *n*/*N*	43/175	64/175	74/175	71/175	81/175	68/144	65/144	71/144

Week	2[b]	4[b]	8[b]	12[b]	16[b]	20[c]	24[c]	32[c]
P, *n*/*N*	3/94	9/94	17/94	22/94	19/94	36/77	43/77	46/77
A 30 mg BID, *n*/*N*	35/185	58/185	68/185	78/185	82/185	76/151	70/151	69/151

Week	4[b]	8[b]	16[b]	32[c]
P, *n*	102	102	102	81
A 30 mg BID, *n*	201	201	201	156

period) were diarrhoea (76 of 284, 26·8%), nausea (55 of 284, 19·4%), headache (28 of 284, 9·9%) and vomiting (15 of 284, 5·3%).

Scalp involvement must be considered when selecting the optimal therapy for patients with psoriasis.[6] STYLE demonstrated the efficacy of apremilast in treating psoriasis of the scalp,[3] a common and highly visible location for plaque psoriasis.[1,2] Clinically and statistically significant improvements in scalp psoriasis, scalp and whole body itch, and QoL were sustained for up to 32 weeks in patients continuing apremilast treatment and in patients initially randomized to placebo who switched to apremilast. The efficacy of apremilast was also demonstrated across multiple clinically relevant patient subgroups. Although the discontinuation rate over the extension phase was low, this may limit the generalizability of the overall findings. The safety profile in STYLE was consistent with prior apremilast studies.[3,4] Some systemic, injectable treatments have reported efficacy in scalp psoriasis,[7,8] but comparisons are difficult as these studies used different definitions of scalp psoriasis and improvement measures. In summary, the STYLE phase III study supports apremilast as an effective treatment for scalp psoriasis in different types of patients, including those with scalp psoriasis inadequately controlled by other therapies.

Acknowledgments: Writing support was funded by Amgen Inc. and provided by Amy Shaberman PhD, of Peloton Advantage LLC, an OPEN Health Company, Parsippany, NJ, USA.

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Funding sources: This study was funded by Celgene. Amgen acquired the worldwide rights to Otezla® (apremilast) on 21 November 2019.

Conflicts of interest: Please see the online Supporting Information for details.

Data availability statement: Qualified researchers may request data from Amgen clinical studies. Complete details are available at http://www.amgen.com/datasharing.

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Conflicts of Interest statement.

Methicillin-resistant *Staphylococcus aureus* (MRSA) nasal colonization predicts MRSA infection in inpatient paediatric cellulitis

DOI: 10.1111/bjd.20439

Dear Editor, Cellulitis is an infection of the skin and skin-associated structures that sometimes presents with purulence, defined by the generation of pus.[1] Purulent infections can further be complicated by cutaneous abscess, a walled collection of pus in the subcutaneous space. Research on paediatric cellulitis is limited, and antimicrobial treatment varies widely, even among paediatric infectious disease providers, with some studies suggesting overuse of broad antibiotic coverage.[2–4] Methicillin-resistant *Staphylococcus aureus* (MRSA) infection in paediatric cellulitis can be challenging to diagnose and treat with appropriate antibiotic coverage. Nasal swabs undergo polymerase chain reaction assay screening for the presence of MRSA, with results typically available within 24 h, which is must faster than traditional microbial sensitivity cultures.[5]

This study assessed the performance of nasal swabs in predicting MRSA infections at our institution.

A single-centre, retrospective chart review of 893 paediatric inpatients treated for cellulitis from 2007 to 2019 was