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Clinical science

Relationship of radiographic progression status to low disease activity in patients with PsA receiving secukinumab treatment for 2 years

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Abstract

Objective: To examine relationships between radiographic progression and achievement of low disease activity (LDA) or remission at week 104 in patients with PsA receiving secukinumab.

Methods: This *post hoc* analysis included data from patients with active PsA enrolled in the phase 3 FUTURE 5 study (NCT02404350). Patients were pooled by treatment received at week 104 (secukinumab 300 mg with loading dose [LD], secukinumab 150 mg with LD or secukinumab 150 mg without LD) and grouped by radiographic progression status. Radiographic progression was defined as change from baseline to week 104 in van der Heijde modified Total Sharp Score >0.5. Efficacy was assessed by achievement of minimal disease activity (MDA), very low disease activity (VLDA) and Disease Activity Index for PsA (DAPSA) LDA or remission. Demographics and clinical characteristics associated with radiographic progression at week 104 were identified by logistic regression analyses.

Results: Of the 541 patients included in this analysis, 457 (84.5%) were radiographic non-progressors and 84 (15.5%) were radiographic progressors. Higher proportions of non-progressors achieved MDA, VLDA and DAPSA LDA and remission at week 104 than progressors. Radiographic progression at week 104 was associated with older age and higher baseline high-sensitivity CRP level, whereas non-progression was associated with 300 mg secukinumab (vs 150 mg secukinumab without LD), no prior exposure to tumour necrosis factor inhibitors and lower BMI.

Conclusion: Patients without radiographic progression through 2 years of secukinumab treatment had greater achievement of LDA states at week 104 than patients with radiographic progression.

Trial registration: ClinicalTrials.gov; NCT02404350.

Keywords: PsA, secukinumab, radiographic progression.

Rheumatology key messages

- Patients with PsA receiving secukinumab who had radiographic progression had lower achievement of LDA states.
- Radiographic progression was associated with older age and higher baseline hsCRP levels.
- Radiographic non-progression was associated with lower BMI and no prior TNFis.

Introduction

PsA is a chronic, progressive inflammatory disease that is associated with a range of symptoms, including dactylitis, enthesitis, axial manifestations, arthritis, psoriasis and nail psoriasis [1, 2]. Inadequately managed joint inflammation in patients with PsA can lead to permanent structural damage such as bone erosion, joint space narrowing and osteoproliferation [3]. Structural joint damage in patients with PsA can irreversibly impair physical function and reduce quality of life (QoL) [3–5].

Because of the negative impacts of joint damage on patient QoL, current treatment recommendations for PsA advise that a primary therapeutic goal should be to prevent structural damage to the greatest extent possible [6, 7]. Conventional DMARDs such as MTX are commonly used to treat PsA, but

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there is currently limited evidence demonstrating that DMARDs inhibit radiographic progression in patients with PsA [8, 9]. However, several biologic treatments for PsA have demonstrated the ability to inhibit radiographic progression in phase 3 clinical trials [3].

Secukinumab is a selective IL-17A inhibitor with established efficacy and safety in patients with PsA [10–14]. In the phase 3 FUTURE 5 study, secukinumab treatment significantly improved clinical symptoms of PsA at week 24 and significantly reduced or completely prevented radiographic progression and provided sustained remission and low disease activity (LDA) through week 104 in patients with active PsA [15–17]. Overall, 10.5–18.9% of patients across secukinumab treatment arms in the FUTURE 5 study demonstrated radiographic progression at week 104; however, an analysis of the relationship between radiographic progression status and disease activity or patient-reported outcomes at week 104 was not performed [15].

The purpose of this *post hoc* analysis of the FUTURE 5 study is to evaluate the relationship between radiographic progression status at week 104 and achievement of LDA or remission and to identify demographics and clinical characteristics that were associated with radiographic progression status at week 104.

Methods

Study design and patients

The FUTURE 5 (NCT02404350) study was a randomized, double-blind, placebo-controlled, 2-year, phase 3 trial [16]. Patients aged ≥18 years who met the ClASsification criteria for Psoriatic ARthritis (CASPAR) at screening, had symptoms of moderate to severe PsA (defined as ≥3 tender joints out of 78 and ≥3 swollen joints out of 76 despite ≥4 weeks of treatment with nonsteroidal anti-inflammatory drugs) for ≥6 months and had active or a documented history of plaque psoriasis or psoriatic nail disease were included in FUTURE 5. Patients were excluded from FUTURE 5 if they had a history of or active ongoing infection, existing inflammatory disease other than PsA, previous treatment with a biologic except for tumour necrosis factor inhibitors (TNFis) or previous use of ≥3 TNFis.

In the FUTURE 5 study, patients were randomized 2:2:2:3 to subcutaneous secukinumab 300 mg with a loading dose, secukinumab 150 mg with a loading dose, secukinumab 150 mg with no loading dose (NL) or placebo. Patients randomized to secukinumab 300 or 150 mg with a loading dose received secukinumab once a week from baseline to week 4, followed by every 4 weeks until week 100. Patients randomized to secukinumab 150 mg NL received secukinumab at baseline and placebo at weeks 1, 2 and 3, followed by secukinumab every 4 weeks starting at week 4 until week 100. For this *post hoc* analysis, patients were pooled based on initial treatment randomization. Only patients randomized to secukinumab were included in this analysis.

The FUTURE 5 study was approved by the central institutional review boards or the ethics review boards at each participating centre. A list of the specific Institutional Review Boards and Independent Ethics Committees can be found in Supplementary Data S1. The study was conducted in accordance with the principles of the Declaration of Helsinki, and written informed consent was obtained from all participants before study-related procedures were performed.

Assessments and outcomes

Radiographic progression at week 104 was measured by change from baseline to week 104 in van der Heijde modified Total Sharp Score (vdH-mTSS; range: 0–528) based on independent assessments of hand, wrist and foot radiographs. Assessments were performed by two readers who were blinded to all patient information, treatment and order of radiographs. For this *post hoc* analysis, patients were grouped by radiographic progression status at week 104 (Fig. 1). Patients who had a change from baseline in vdH-mTSS >0.5 were classified as radiographic progressors, and those with a change from baseline in vdH-mTSS ≤0.5 were classified as radiographic non-progressors. Patients without radiographic data at week 104 were excluded from this analysis.

The efficacy of secukinumab was assessed at week 104 according to achievement of minimal disease activity (MDA) or very low disease activity (VLDA) and their individual

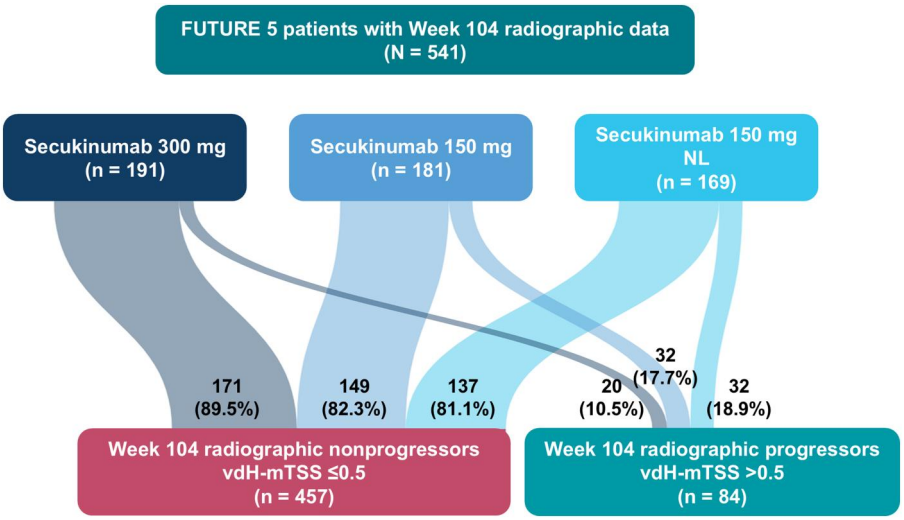

Figure 1. Distribution of patients with or without radiographic progression at week 104 by treatment group. NL, no loading dose; vdH-mTSS, van der Heijde modified Total Sharp Score

components. MDA was defined as achievement of five out of the seven following disease activity criteria: ≤1 tender joint count in 68 joints (TJC68) among patients with a baseline TJC68 of >1; ≤1 swollen joint count in 66 joints (SJC66) among patients with a baseline SJC of >1; Psoriasis Area and Severity Index (PASI) score of ≤1 or ≤3% body surface area (BSA) affected by psoriasis among patients with baseline PASI score of >1 or >3% BSA affected; patient pain (visual analogue scale [VAS] score, 0–100) of ≤15 among patients with a baseline score of >15; Patient's Global Assessment of disease activity (PtGA; VAS score, 0–100) score of ≤20 among patients with a baseline score of >20; Health Assessment Questionnaire Disability Index (HAQ-DI; scale, 0–3) score of ≤0.5 among patients with a baseline score of >0.5 and ≤1 tender entheseal point among patients with a baseline count of >1. VLDA was defined as achievement of all seven disease activity criteria. Disease Activity Index for PsA (DAPSA; range, 0–164) scores were used to assess LDA (defined as DAPSA score ≤14) or remission (defined as DAPSA score ≤4).

Statistical analyses

Efficacy outcomes are summarized descriptively using observed data. Hypothesis testing was not performed. Only patients initially randomized to secukinumab with available radiographic data at week 104 were included in this analysis.

Logistic regression analyses were used to identify demographics (such as age and sex) and baseline and week 16 clinical characteristics (such as HAQ-DI score, PsA pain score and TJC) that were associated with radiographic progression or non-progression at week 104. Demographics and clinical characteristics included in the logistic regression analyses are shown in Supplementary Table S1.

Results

Patient demographics and baseline characteristics

Among the 541 patients with PsA included in this analysis, 457 (84.5%) were classified as radiographic non-progressors (vdH-mTSS ≤0.5) and 84 (15.5%) as radiographic progressors (vdH-mTSS >0.5). Patient demographics and baseline clinical characteristics were generally balanced between radiographic non-progressors and progressors (Table 1). However, patients without radiographic progression had lower mean (S.D.) baseline high-sensitivity CRP (hsCRP) levels than patients with radiographic progression (10.5 [19.5] mg/l vs 22.0 [35.8] mg/l). In addition, higher proportions of radiographic non-progressors were naive to TNFis (76.4%) and had ≤3% of their BSA affected at baseline (56.9%) compared with patients with radiographic progression (60.7% and 40.5%, respectively) (Table 1). Fewer patients with PsA in the 300 mg secukinumab treatment arm (10.5%) were

Table 1. Demographics and baseline clinical characteristics

Characteristic	Non-progressors ($n = 457$)	Progressors ($n = 84$)
Age, mean (S.D.), years	47.7 (12.2)	51.9 (12.6)
Male, *n* (%)	244 (53.4)	45 (53.6)
BMI, mean (S.D.), kg/m^2	28.9 (6.1)	27.8 (5.4)
Race, *n* (%)		
American Indian or Alaska Native	6 (1.3)	0 (0)
Asian	58 (12.7)	19 (22.6)
Black or African American	1 (0.2)	0 (0)
White	368 (80.5)	59 (70.2)
Unknown	1 (0.2)	1 (1.2)
Other	23 (5.0)	5 (6.0)
Ethnicity, *n* (%)		
Hispanic or Latino	62 (13.6)	8 (9.5)
Not Hispanic or Latino	355 (77.7)	68 (81.0)
Not reported	20 (4.4)	6 (7.1)
Unknown	20 (4.4)	2 (2.4)
Smoker at baseline, *n* (%)	88 (19.3)	11 (13.1)
Naive to TNFi, *n* (%)	349 (76.4)	51 (60.7)
Time since first PsA diagnosis, mean (S.D.), years	6.3 (7.0)	7.6 (7.4)
Baseline enthesitis, *n* (%)	274 (60.0)	52 (61.9)
Baseline dactylitis, *n* (%)	176 (38.5)	34 (40.5)
MTX use at randomization, *n* (%)	242 (53.0)	51 (60.7)
TJC68, mean (S.D.)	18.2 (13.0)	23.5 (17.7)
SJC66, mean (S.D.)	9.7 (7.6)	12.5 (10.1)
≤3% BSA affected, *n* (%)	260 (56.9)	34 (40.5)
Patient's Global Assessment score, mean (S.D.), mm	54.8 (22.9)	54.5 (25.2)
Physician's Global Assessment score, mean (S.D), mm	56.7 (19.0)	56.1 (18.9)
PsA pain score, mean (S.D.), mm	55.1 (23.4)	53.6 (26.8)
DAPSA score, mean (S.D.)	40.0 (20.1)	48.9 (29.3)
Baseline hsCRP level, mean (S.D.), mg/l	10.5 (19.5)	22.0 (35.8)
HAQ-DI score, mean (S.D.)	1.2 (0.6)	1.4 (0.7)

BSA, body surface area; DAPSA, Disease Activity Index for PsA; HAQ-DI, Health Assessment Questionnaire Disability Index; hsCRP, high-sensitivity CRP; SJC66, swollen joint count in 66 joints; TJC68, tender joint count in 68 joints; TNFi, tumour necrosis factor inhibitor.

classified as radiographic progressors than patients in the 150 mg secukinumab treatment arms (17.7–18.9%) (Fig. 1).

Achievement of LDA states

Across secukinumab treatment arms, higher proportions of patients without radiographic progression achieved DAPSA LDA (73.6–80.0%) and DAPSA remission (27.9–39.2%) at week 104 than patients with radiographic progression (DAPSA LDA: 50.0–73.3%; DAPSA remission: 16.7–20.7%) (Fig. 2). Furthermore, non-progressors were also more likely to achieve MDA (46.3–57.4%) and VLDA (20.4–26.0%) at week 104 than progressors (MDA: 31.6–38.7%; VLDA: 0–18.8%) (Fig. 2).

Radiographic non-progressors tended to achieve an SJC66 of ≤1, TJC68 of ≤1, HAQ-DI score of ≤0.5 and patient pain VAS score of ≤15 mm in greater proportions than radiographic progressors at week 104 across all secukinumab doses, although differences between progressors and non-progressors generally were greatest for patients receiving secukinumab 300 mg (Figs. 3 and 4). In all treatment arms, smaller differences were seen between radiographic non-progressors and progressors in the achievement of a PtGA VAS score of ≤20 mm, ≤1 tender entheseal point and a PASI score of ≤1 or ≤3% BSA affected (Figs 3 and 4). High proportions of non-progressors and progressors achieved a PASI score of ≤1 or ≤3% BSA affected (non-progressors: 80.5–88.7%; progressors: 90.3–100.0%) (Fig. 4).

Predictors of radiographic progression

Baseline demographics and clinical characteristics that were associated with radiographic progression at week 104 included older age (odds ratio [95% CI], 1.03 [1.01–1.91]) and higher hsCRP level (1.52 [1.21–1.91]) (Fig. 5). Radiographic non-progression at week 104 was associated with the secukinumab 300-mg dose (vs secukinumab 150 mg NL; odds ratio [95% CI], 0.50 [0.27–0.93]), no prior TNFi exposure (vs prior TNFi exposure; 0.59 [0.35–0.99]) and lower BMI (0.94 [0.90–0.99]) (Fig. 5).

Discussion

Structural joint damage in patients with PsA is significantly associated with physical disability, and reduced physical function is a significant predictor of poor QoL in patients with PsA [4, 5]. A previous study showed that ∼47% of patients exhibit structural damage within 2 years of PsA diagnosis [18], and these radiological changes can cause shortened life expectancy [19]. However, more recent clinical trials of biologics have demonstrated lower rates of radiographic progression in patients with PsA over 2 years of treatment [15, 20]. Considering the impact of radiographic progression on physical ability, QoL and life expectancy, it is important to identify clinical characteristics that are associated with radiographic progression in order to understand differences between patients who experience radiographic progression and those who do not and to identify patients at greater risk of developing radiographic progression.

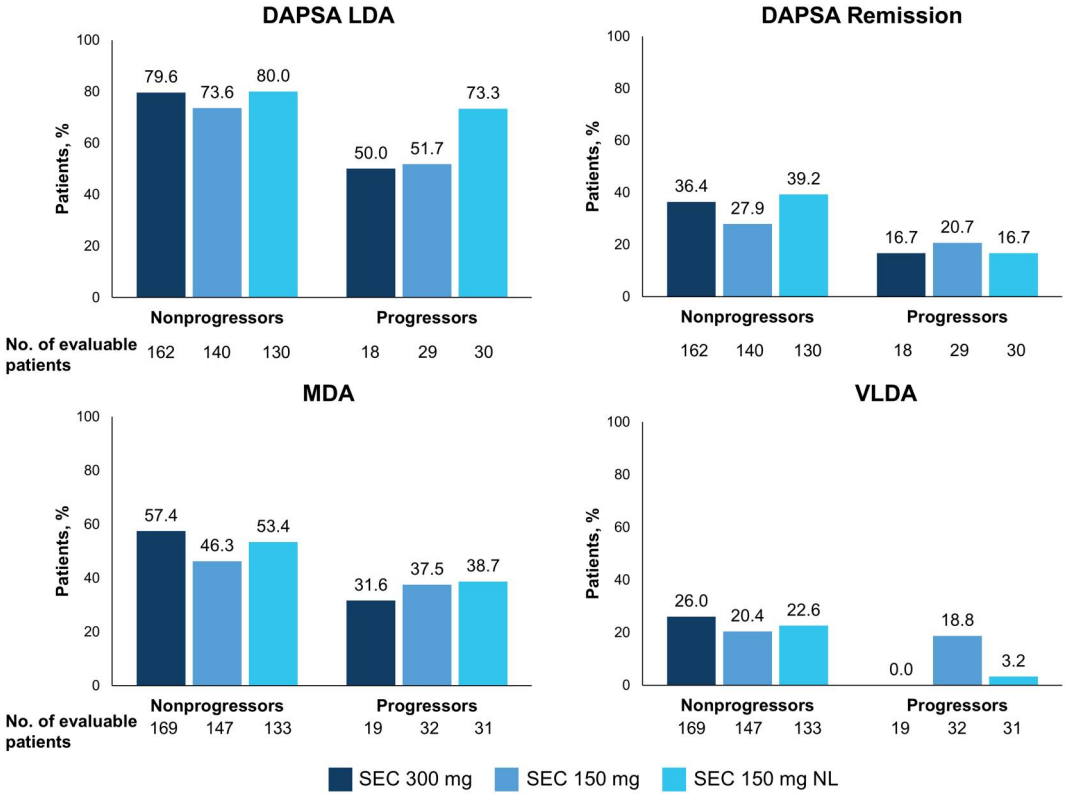

Figure 2. Achievement of LDA states[a] at week 104 grouped by radiographic progression status at week 104. Outcomes are summarized descriptively using observed data. DAPSA, Disease Activity Index for PsA; LDA, low disease activity; MDA, minimal disease activity; NL, no loading dose; SEC, secukinumab; VAS, visual analogue scale; VLDA, very low disease activity. [a]The criteria for DAPSA LDA, DAPSA remission, MDA and VLDA are defined in the Methods section

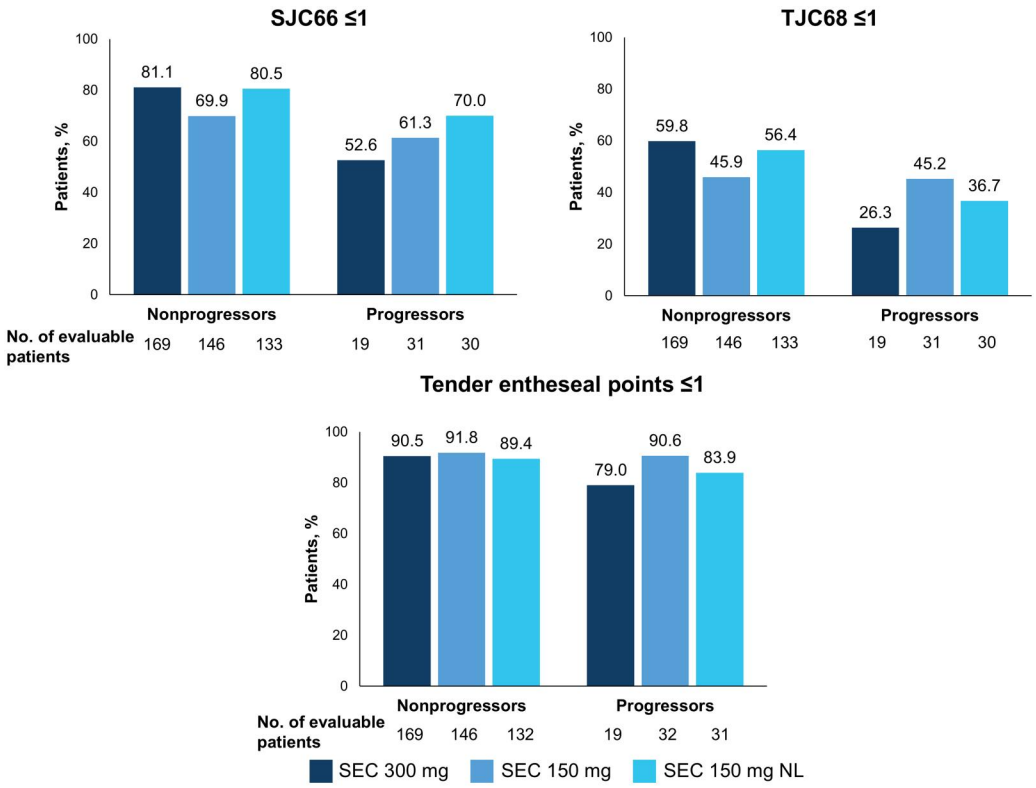

Figure 3. Proportions of patients who achieved SJC66 ≤1, TJC68 ≤1 and ≤1 tender entheseal point at week 104 grouped by radiographic progression status at week 104. Outcomes are summarized descriptively using observed data. NL, no loading dose; SEC, secukinumab; SJC66, swollen joint count in 66 joints; TJC68, tender joint count in 68 joints

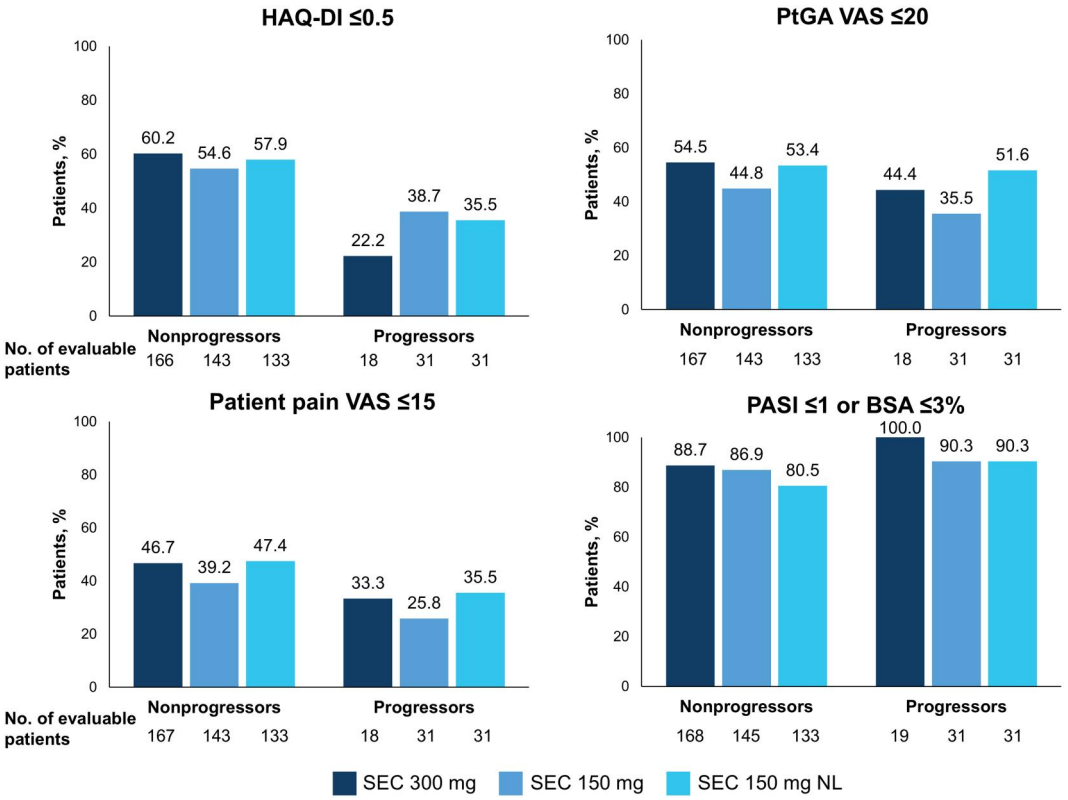

Figure 4. Proportions of patients who achieved HAQ-DI score ≤0.5, PtGA VAS score ≤20, patient pain VAS score ≤15 and PASI score ≤1 or ≤3% BSA affected at week 104 grouped by radiographic progression status at week 104. Outcomes are summarized descriptively using observed data. BSA, body surface area; HAQ-DI, Health Assessment Questionnaire Disability Index; NL, no loading dose; PASI, Psoriasis Area and Severity Index; PtGA, Patient's Global Assessment of disease activity; SEC, secukinumab; VAS, visual analogue scale

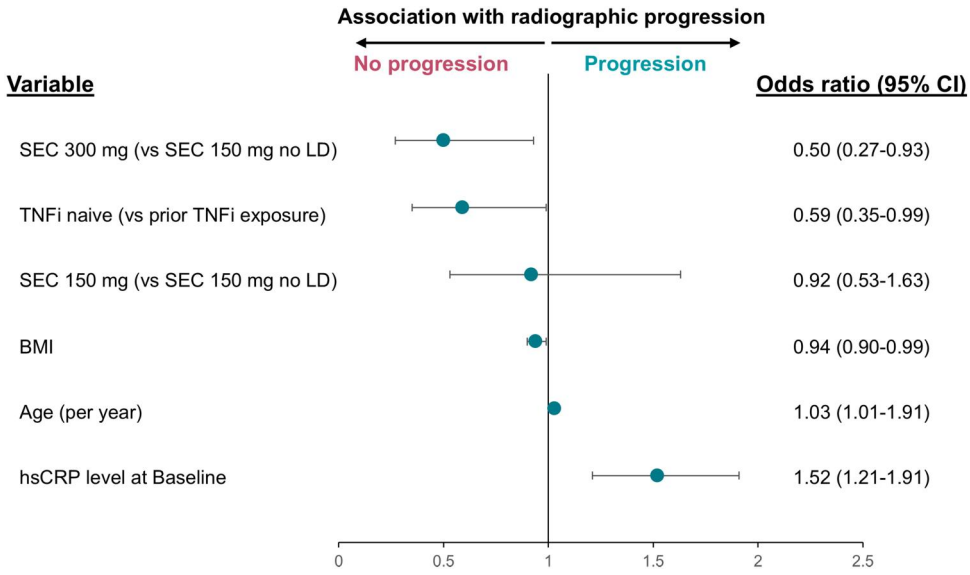

Figure 5. Baseline and week 16 patient characteristics associated with radiographic progression status at week 104.[a] Logistic regression analyses were used to determine demographics and clinical characteristics (at baseline and week 16) associated with radiographic progression status at week 104. hsCRP, high-sensitivity CRP; NL, no loading dose; SEC, secukinumab; TNFi, tumour necrosis factor inhibitor; vdH-mTSS, van der Heijde modified Total Sharp Score. [a]Change from baseline in vdH-mTSS of ≤0.5 (non-progression) vs >0.5 (progression)

Additionally, predicting which patients may develop radiographic progression could be beneficial, given the variability of radiographic progression among patients with PsA.

In the FUTURE 5 study, it was previously shown that most patients (81.1–89.5%) had no radiographic progression (vdH-mTSS ≤0.5) through 2 years of secukinumab treatment [15]. However, differences in achievement of LDA states and remission between patients with radiographic progression and those without radiographic progression at week 104 were not assessed [15]. This *post hoc* analysis of the FUTURE 5 study found that radiographic non-progressors were more likely to achieve DAPSA LDA and remission than patients with radiographic progression, and non-progressors were also more likely to achieve MDA and VLDA. In general, greater differences between MDA, VLDA and their components were observed between progressors and non-progressors in the 300 mg secukinumab treatment arm compared with the 150 mg secukinumab treatment arms. In addition, older age and higher baseline hsCRP levels were associated with radiographic progression, while higher secukinumab dose (300 mg vs 150 mg NL), lower BMI and no prior exposure to TNFis were associated with non-progression at week 104.

In previous clinical trials of biologics for PsA, radiographic non-progression was shown to be associated with lower disease activity compared with radiographic progression [20–22]; this is consistent with the results observed in this *post hoc* analysis. For example, in the GO-REVEAL trial of the TNF inhibitor golimumab for active PsA, higher proportions of patients who had good PsA Disease Activity Score (PASDAS; defined as score of ≤3.2 and improvement of >1.6) and DAPSA (defined as score of ≤18.5 and improvement of >28.4) responses at week 24 had no radiographic progression compared with patients who had poor PASDAS (defined as improvement of <14.2 or score of ≥45.1 and improvement of <28.4 but >14.2) and DAPSA (defined as improvement of <0.8 or score of ≥5.4 and improvement of <1.6 but >0.8) responses [21, 23]. Similar results were seen in the RAPID-PsA trial of the TNFi certolizumab pegol in patients with PsA, which found that achievement of VLDA, DAPSA remission and PASDAS remission was associated with radiographic non-progression [22]. Furthermore, in a *post hoc* analysis of the DISCOVER-2 trial of the IL-23 inhibitor guselkumab, patients with PsA who achieved American College of Rheumatology 20/50/70 responses, DAPSA LDA, MDA, PASDAS LDA and a HAQ-DI score of ≤0.5 at weeks 52 or 100 had less radiographic progression than patients who did not achieve those endpoints [20]. Patients without radiographic progression were also more likely to achieve an SJC of ≤1, TJC of ≤1, PsA pain score of ≤15, PtGA score of ≤20 and HAQ-DI score of ≤0.5 than those with radiographic progression; this is similar to the results observed in this current study [20].

Radiographic progression in patients with PsA has previously been shown to be associated with certain demographics and clinical features of PsA, including greater time since diagnosis, tenderness at the individual joint level, number of tender and swollen joints, and older age [24–27]. Elevated baseline CRP level has also been associated with increased radiographic progression in PsA, suggesting that patients with PsA who have increased systemic inflammation are at greater risk of radiographic progression [28–30]. Higher baseline hsCRP level and older age were associated with radiographic progression at week 104 in this analysis, but time since first PsA diagnosis, TJC68 and SJC66 were not found to be associated with radiographic progression. A recent study that examined determinants of radiographic progression found female sex to be protective against progression, but sex was not found to be associated with radiographic status in this analysis, suggesting that further research is needed [27]. The lack of association between radiographic progression and patient-reported outcomes in this study highlights the complexity of PsA disease activity. Structural damage may occur in the absence of severe symptoms, and conversely, patients

may report substantial disease burden without discernable progression. These findings emphasize the importance of comprehensive disease management across all stages of disease progression.

Several important limitations should be considered when interpreting these results. *Post hoc* analyses of trial data may introduce bias. Ideally, prospective *a priori* studies will be needed to validate these findings in future analyses. In this trial, only a small number of patients (15.5%) assigned to the secukinumab treatment arms demonstrated radiographic progression. The small sample sizes among radiographic progressors restricted the ability to perform statistical comparisons based on radiographic progression status. Additionally, only patients with radiographic data at week 104 were included in this analysis, and patients randomized to placebo were not included. Furthermore, the change in vdH-mTSS used here to define radiographic progression is not specific to bone erosion or joint space narrowing, and it does not account for osteoproliferation. Future studies could examine whether progressors in each of these categories are more or less likely to achieve LDA or remission. The study reports on radiographic progression over a 2-year period, offering valuable insight into the rate and pattern of structural changes in patients with PsA during this time. While it is recognized that radiographic progression is a long-term process and longer follow-up (5–10 years) may provide a more comprehensive overview, the 2-year data presented here represent the longest-term radiographic data currently available from the FUTURE 5 study. Furthermore, despite its greater sensitivity in detecting low-grade inflammation compared with standard CRP, hsCRP is not widely adopted in real-world clinical settings. The results describe the association between hsCRP and radiographic progression—underscoring its potential in discerning individuals at risk of progression. However, until hsCRP becomes widely utilized, future studies should consider measuring standard CRP to reflect real-world practice.

Conclusions

In the FUTURE 5 study, secukinumab reduced radiographic progression in patients with active PsA through 2 years of treatment [15]. Radiographic progression at week 104 was associated with older age and elevated baseline hsCRP level, demonstrating the role of systemic inflammation and prolonged disease duration in structural joint damage. In contrast, radiographic non-progression was associated with lower baseline BMI and no prior TNFi exposure. Patients with no radiographic progression were more likely to achieve greater clinical improvement, including stringent outcomes such as VLDA and remission, and improved physical function and decreased pain at week 104 compared with patients who had radiographic progression. These findings highlight the interconnected nature of radiographic progression, systemic inflammation and clinical outcomes, suggesting that early treatment with secukinumab may prevent progression of structural damage and improve long-term outcomes for patients with PsA.

Supplementary material

Supplementary material is available at *Rheumatology* online.

Data availability

The data used in this *post hoc* analysis were derived from original data generated in the course of the following published studies: *Secukinumab provides sustained improvement in signs and symptoms and low radiographic progression in patients with psoriatic arthritis: 2-year (end-of-study) results from the FUTURE 5 study* (doi: 10.1136/rmdopen-2021-001600) and *Secukinumab improves physical function and quality of life and inhibits structural damage in patients with PsA with sustained remission or low disease activity: results from the 2-year phase 3 FUTURE 5 study* (doi: 10.1136/rmdopen-2022-002939), which reported the 2-year end results of the phase 3 FUTURE 5 study. Novartis is committed to sharing with qualified external researchers access to patient-level data and supporting clinical documents from eligible studies. These requests are reviewed and approved by an independent review panel on the basis of scientific merit. All data provided are anonymized to respect the privacy of patients who have participated in the trial in line with applicable laws and regulations. The data availability of these trials is according to the criteria and process described at www.clinicalstudydatarequest.com.

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References

1. Ritchlin CT, Colbert RA, Gladman DD. Psoriatic arthritis. N Engl J Med 2017;376:2095–6.

2. Blair HA. Secukinumab: a review in psoriatic arthritis. Drugs 2021;81:483–94.
3. van der Heijde D, Gladman DD, Kavanaugh A, Mease PJ. Assessing structural damage progression in psoriatic arthritis and its role as an outcome in research. Arthritis Res Ther 2020;22:18.
4. Kerschbaumer A, Baker D, Smolen JS, Aletaha D. The effects of structural damage on functional disability in psoriatic arthritis. Ann Rheum Dis 2017;76:2038–45.
5. Singh JA, Strand V. Spondyloarthritis is associated with poor function and physical health-related quality of life. J Rheumatol 2009; 36:1012–20.
6. Coates LC, Soriano ER, Corp N *et al.*; GRAPPA Treatment Recommendations domain subcommittees. Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA): updated treatment recommendations for psoriatic arthritis 2021. Nat Rev Rheumatol 2022;18:465–79.
7. Gossec L, Baraliakos X, Kerschbaumer A *et al.* EULAR recommendations for the management of psoriatic arthritis with pharmacological therapies: 2019 update. Ann Rheum Dis 2020;79:700–12.
8. Kang EJ, Kavanaugh A. Psoriatic arthritis: latest treatments and their place in therapy. Ther Adv Chronic Dis 2015;6:194–203.
9. Felten R, Lambert De Cursay G, Lespessailles E. Is there still a place for methotrexate in severe psoriatic arthritis? Ther Adv Musculoskelet Dis 2022;14:1759720X221092376.
10. Mease PJ, McInnes IB, Kirkham B *et al.*; FUTURE 1 Study Group. Secukinumab inhibition of interleukin-17A in patients with psoriatic arthritis. N Engl J Med 2015;373:1329–39.
11. McInnes IB, Mease PJ, Kirkham B *et al.*; FUTURE 2 Study Group. Secukinumab, a human anti-interleukin-17A monoclonal antibody, in patients with psoriatic arthritis (FUTURE 2): a randomised, double-blind, placebo-controlled, phase 3 trial. Lancet 2015;386:1137–46.
12. Nash P, Mease PJ, McInnes IB *et al.*; FUTURE 3 study group. Efficacy and safety of secukinumab administration by autoinjector in patients with psoriatic arthritis: results from a randomized, placebo-controlled trial (FUTURE 3). Arthritis Res Ther 2018;20:47.
13. Kivitz AJ, Nash P, Tahir H *et al.* Efficacy and safety of subcutaneous secukinumab 150 mg with or without loading regimen in psoriatic arthritis: results from the FUTURE 4 study. Rheumatol Ther 2019;6:393–407.
14. Baraliakos X, Gossec L, Pournara E *et al.* Secukinumab in patients with psoriatic arthritis and axial manifestations: results from the double-blind, randomised, phase 3 MAXIMISE trial. Ann Rheum Dis 2021;80:582–90.
15. Mease PJ, Landewé R, Rahman P *et al.* Secukinumab provides sustained improvement in signs and symptoms and low radiographic progression in patients with psoriatic arthritis: 2-year (end-of-study) results from the FUTURE 5 study. RMD Open 2021;7:e001600.
16. Mease P, van der Heijde D, Landewé R *et al.* Secukinumab improves active psoriatic arthritis symptoms and inhibits radiographic progression: primary results from the randomised, double-blind, phase III FUTURE 5 study. Ann Rheum Dis 2018;77:890–7.
17. Coates LC, Mease PJ, Gladman DD *et al.* POS1051 Secukinumab improves physical function and inhibits structural damage in PsA patients with sustained remission or low disease activity: results from a phase 3 study. Ann Rheum Dis 2021;80:803–4.
18. Kane D, Stafford L, Bresnihan B, FitzGerald O. A prospective, clinical and radiological study of early psoriatic arthritis: an early synovitis clinic experience. Rheumatology (Oxford) 2003; 42:1460–8.
19. Gladman DD, Farewell VT, Wong K, Husted J. Mortality studies in psoriatic arthritis: results from a single outpatient center. II. Prognostic indicators for death. Arthritis Rheum 1998; 41:1103–10.
20. Gottlieb AB, McInnes IB, Rahman P *et al.* Low rates of radiographic progression associated with clinical efficacy following up to 2 years of treatment with guselkumab: results from a phase 3, randomised, double-blind, placebo-controlled study of biologic-naive patients with active psoriatic arthritis. RMD Open 2023; 9:e002789.
21. Helliwell PS, Kavanaugh A. Radiographic progression in psoriatic arthritis achieving a good response to treatment: data using newer composite indices of disease activity. Arthritis Care Res (Hoboken) 2018;70:797–800.
22. Coates LC, Merola JF, Kavanaugh A *et al.* FRI0333 achievement of very low disease activity and remission treatment targets is associated with reduced radiographic progression in patients with psoriatic arthritis treated with certolizumab pegol. Ann Rheum Dis 2020;79:758–9.
23. Helliwell PS, FitzGerald O, Fransen J. Composite disease activity and responder indices for psoriatic arthritis: a report from the GRAPPA 2013 meeting on development of cutoffs for both disease activity states and response. J Rheumatol 2014;41:1212–7.
24. Mease P, van der Heijde D, Kirkham B *et al.* Quantification of pre-existing radiographic damage and its relationship with joint activity and long-term clinical outcomes with secukinumab therapy in patients with psoriatic arthritis. Arthritis Res Ther 2022;24:283.
25. Gessl I, Hana CA, Deimel T *et al.* Tenderness and radiographic progression in rheumatoid arthritis and psoriatic arthritis. Ann Rheum Dis 2023;82:344–50.
26. Bond SJ, Farewell VT, Schentag CT, Gladman DD. Predictors for radiological damage in psoriatic arthritis: results from a single centre. Ann Rheum Dis 2007;66:370–6.
27. Koc GH, Kok MR, do Rosario Y *et al.* Determinants of radiographic progression in early psoriatic arthritis: insights from a real-world cohort. RMD Open 2024;10:e004080.
28. Luttringer O, Fox T, Pricop L *et al.* Secukinumab's effect on structural damage progression in psoriatic arthritis: longitudinal mixture modelling of FUTURE-1 and FUTURE-5. Clin Exp Rheumatol 2021;39:931–7.
29. van der Heijde D, Gladman DD, FitzGerald O *et al.* Radiographic progression according to baseline C-reactive protein levels and other risk factors in psoriatic arthritis treated with tofacitinib or adalimumab. J Rheumatol 2019;46:1089–96.
30. Gladman DD, Mease PJ, Choy EH *et al.* Risk factors for radiographic progression in psoriatic arthritis: subanalysis of the randomized controlled trial ADEPT. Arthritis Res Ther 2010; 12:R113.

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