Dermatology Practical & Conceptual

Supplementary material

Table S1. Overview of real-world studies on the efficacy and safety of biologic agents in elderly psoriasis patients.

Study Year/ Country	Population	Biologic agents administered	Efficacy	Adverse events and discontinuations
Esposito 2012/Italy	89 elderly patients (≥65 y) with psoriasis and psoriatic arthritis	Etanercept and adalimumab	Mean PASI score reduction was significant (P<0.001) at every time point compared to baseline for both drugs	15 patients on etanercept (24.6%) discontinued: 2 patients due to AEs: tachycardia episodes (N=1) and gastric cancer (N=1) 11 patients on adalimumab (39.3%) discontinued: 3 patients due to AEs: severe dyspnea (N=1), atrial fibrillation (N=1), worsening of glaucoma (N=1)
Garcia-Doval 2012/Spain	1042 patients registered in Spanish BIOBADADERM registry treated with systemic treatments including 31 elderly (≥70 y) patients treated with biologics	Not specified	N/A	Age ≥70 years showed significant associations with serious AEs (HR: 3.4 [95% CI: 1.6-7.1])
Piaserico 2014/Italy	187 elderly patients (≥65 y) treated with systemic drugs	Etanercept, adalimumab, infliximab, efalizumab, and ustekinumab	PASI75 at week 12 was achieved in 64%, 65%, 93%, 57%, and 100% of patients who received etanercept, adalimumab, infliximab, efalizumab, and ustekinumab, respectively	Total rate of AE: 0.11, 0.35, 0.19, 0.3, and 0.26 per patient-year in the etanercept, adalimumab, infliximab, efalizumab, and ustekinumab groups, respectively. Pneumonia (N=2), myocardial infarction (N=1), herpes zoster (N=1), atrial fibrillation (N=1), myasthenia gravis (N=1), pericarditis (N=1), thromboembolism (N=1), breast carcinoma (N=1), anaplastic cutaneous lymphoma (N=1)

Study Year/ Country	Population	Biologic agents administered	Efficacy	Adverse events and discontinuations
Medina 2014/Spain	Patients registered in BIOBADADERM registry; 63 elderly patients (≥65 y) treated with biologics compared to 883 patients aged <65y	Etanercept, infliximab, adalimumab, efalizumab, and ustekinumab	N/A	Elderly patients did not have an increased risk of overall AEs (HR: 1.09 [95% CI: 0.9-1.3]) Serious AEs were more common in elderly patients (HR: 3.2 [95% CI: 2.0-5.1]) Discontinuation due to AEs more frequent in elderly (18.2% in elderly vs 12% in younger patients)
Hayashi 2014/Japan	24 elderly patients (≥65 y)	Ustekinumab	PASI 75 responses were 56.5% at week 16, 59.1% at week 28, and 60.0% at week 52	None of the patients developed any serious infection during 1-year treatment period. Two patients developed arthritis under ustekinumab and discontinued treatment.
Garber 2015/USA	48 elderly patients (≥65 y) and 146 patients <65 y	Infliximab, adalimumab, etanercept, ustekinumab, golimumab, and certolizumab	No statistically significant difference in percent improvement in S-MAPA at week 12 between elderly and younger patients (48.77% vs 42.92%, *P*=0.448)	No age-based difference in rate of AEs (*P*=0.322) or infections (*P*=0.581) Infliximab had the highest infection rate across cohorts (80%). Etanercept had the lowest infection rate in both age groups (19.6%) One case of pancreatic adenocarcinoma in an elderly patient on ustekinumab
Chiricozzi 2016/Italy	27 elderly patients (≥65 y)	Infliximab	Significant reduction in mean PASI (*P*<0.001) PASI75 was achieved by 80% of the cases at week 12	15 patients discontinued treatment: 3 due to AEs: tuberculosis reactivation (N=1), surgical operation (N=1), spondylodiscitis (N=1)
Chiricozzi 2017/Italy	16 elderly patients (≥65 y) (13.7%) among 117 patients with psoriasis 25 elderly patients (12.6%) among 199 patients with psoriatic arthritis	Adalimumab	Elderly and younger patients were not compared in terms of efficacy	Similar AE rate in elderly patients compared to younger ones. In total, 5 patients (12.2%) experienced AEs: Hemorrhagic cystitis (N=1), EBV infection/glycemic disorder/ fatigue/dyspnea (N=1), Bell's palsy/weight gain (N=1), atrial fibrillation (N=1), weight loss associated with reduced appetite (N=1) No significant impact of age on treatment discontinuation (OR: 1.17 [95% CI: 0.58-2.32], *P* = 0.661)

Table S1 continues

Study Year/ Country	Population	Biologic agents administered	Efficacy	Adverse events and discontinuations
Momose 2017/Japan	27 elderly patients (≥75 y)	Ustekinumab and adalimumab	PASI75 was achieved by 76.9% at week 16, 88.0% at week 24, and 90.5% at week 52.	7 patients discontinued treatment: bone fracture (N=1), breast cancer (N=1), gastric cancer (N=1), interstitial pneumonia (N=1), cerebral hemorrhage (N=1), decrepitude and hepatopathy from prophylactic tuberculosis treatment (N=1)
Ricceri 2018/Italy	266 elderly patients (≥65 y)	Adalimumab, ustekinumab, etanercept, secukinumab, infliximab, golimumab, and certolizumab	Mean PASI score at baseline (16.5 ± 7.1) changed to 3.7 ± 8 at week 16, 1.6 ± 2.1 at week 28, 1.2 ± 2.1 at week 52	Twenty-five (9.4%) AEs were reported. The most frequent AEs were infections with 12 (48%) reports, followed by malignancies with 4 (16%) reports.
Bakirtzi 2020/Greece	154 elderly patients (≥65 y)	Adalimumab, etanercept, apremilast, ustekinumab, secukinumab, brodalumab, and infliximab	Mean PASI score at baseline (13.03 ± 5.02) changed to 5.02 ± 3.15 at week 12, 2.94 ± 2.81 at week 24, 1.6 ± 1.6 at week 52, and 2.76 ± 4.9 at three years.	Thirty out of 154 (19.5%) patients reported AEs, while treatment was discontinued in 16 cases (10.4%) due to severe reactions.
Phan 2020/France	114 elderly patients (≥65 y) registered in the Resopso registry	Secukinumab, ixekizumab, and brodalumab	Mean PGA score at initiation was 3.5, decreasing to 0.9 after 3 months of treatment.	Treatment was discontinued in 28.9% of patients, with relapses being the leading cause (41.2% of patients), followed by primary failures (32.4%) and AEs (20.6%). Fifteen patients reported AEs, including injection site reactions (N=4), oral candidiasis (N=3) and influenza-like illness (N=3). Two patients reported SAEs: intracerebral haematoma (N=1) and palmoplantar pustulosis (N=1)
Ter Haar 2022/ Netherlands	Patients registered in the BioCAPTURE registry; 102 elderly patients (≥65 y) treated with biologics compared to 788 patients aged <65 y	Adalimumab, etanercept, ustekinumab, risankizumab, brodalumab, ixekizumab, secukinumab, and guselkumab	The median baseline PASI scores were 11.0 (0.0–36.2) in older patients and 11.8 (0.0–45.2) in younger patients. After one year of treatment scores in older and younger patients were 2.8 (0.0–11.5) and 2.6 (0.0–21.7), respectively.	Treatment was discontinued in 115 (12.9%) patients. Twelve (11.8%) elderly patients discontinued biologic treatment due to AEs compared to 103 (13.1%) younger patients. Sixteen AEs were reported as serious, all occurred in younger patients.

Table S1 continues

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Ruggiero 2022/Italy	34 elderly patients (≥65 y)	Guselkumab, risankizumab, and tildrakizumab	At week 4, PASI90 and PASI100 were achieved by 29.4% and 8.8%, respectively. At week 28, PASI90 and PASI100 were achieved by 58.8% and 29.4%, respectively.	Four patients (11.7%) discontinued treatment during a follow-up period up to 44 weeks: secondary failure (N=3), bladder cancer (N=1) AEs were reported in 29.4% of the patients
Orsini 2024/Italy	98 elderly patients (≥65 y)	Bimekizumab	The mean PASI score at baseline (16.6 ± 9.4) changed to 4.3 ± 5.2 at 4 weeks and to 1.1 ± 1.7 at 16 weeks. This level of improvement was maintained at 36 weeks.	Five patients (5.1%) reported AEs which did not lead to treatment interruptions over 36 weeks follow-up period: Eczema (N=2), oral candidiasis (N=3)
Present study 2025/Turkey	43 elderly patients (≥65 y)	Guselkumab, risankizumab, ixekizumab, ustekinumab, secukinumab adalimumab, etanercept, and infliximab	Mean PASI score at baseline (14.5 ± 8.8) changed to 1.5 ± 1.5 at week 12-16, and 0.83 ± 1.2 at week 52.	AEs were recorded in 39.5% of the patients: Infections and infestations (27.9%) and malignancies (7.0%) were the most common. Treatment was discontinued in 16.3% of the patients: AEs (42.9%), secondary failure (28.6%), loss to follow-up (14.3%) and death (14.3%)

AE: adverse event; SAE: serious adverse event; PASI: Psoriasis Area and Severity Index; S-MAPA: Simple-Measure for Assessing Psoriasis Activity