Bridging the Gap: Exploring Cardiovascular Risk with Modern Biotherapies in Psoriasis

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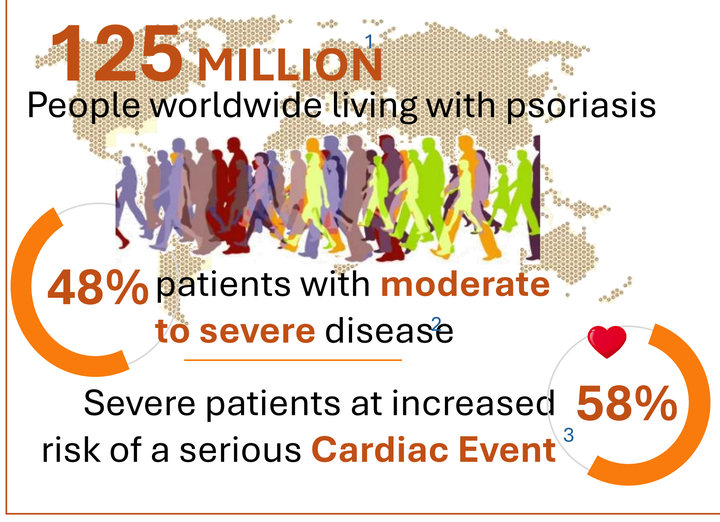
INTRODUCTION



- The treatment for psoriasis has undergone a paradigm shift with the advent of modern biotherapies. These **targeted agents have revolutionized the management of moderate to severe psoriasis**. However, concerns have also emerged regarding their potential impact on cardiovascular health.
- This scoping review aims to **synthesize** the current evidence, **fill research gaps**, and **provide valuable insights** into the evolving role of biological agents in managing psoriasis.

METHODS

- **Study design:** Follow PRISMA guideline
- **Databases:** PubMed, ScienceDirect, Cochrane Library, Wiley Online Library.
- **Keywords:** psoriasis, psoriasis arthritis, TNF-α, cardiovascular events
- **Eligible criteria:** Publications between 2013 and 2023, English only. Articles focused on psoriasis adult patients undergoing biotherapies and cardiovascular events.

RESULTS

Association of Biological therapies and Cardiac risks in Psoriatic Patients

	26-52 weeks	Authors, years	1-5 years	Authors, years	≥5 years	Authors, years
Composed Biological agents						
Cardiac Events (CEs)			Compared to topical agents No elevated risks[5] (HR= 1.0, 0.4–2.7)	Carretero et al., 2015	Compared to biologic-naive Reduced risks[10] (HR= 0.8, 0.70-0.95)**	Lee et al., 2018
Major CEs	Compared to baseline Decreased coronary inflammation (p<0.001)***, suggesting reduced risks[4]	Elnabawi et al., 2019	Compared to mild disease No elevated risks[6] (HR= 0.9, 0.55-1.36)	Hong et al., 2021		
			Compared to topical agents No elevated risks[7] (IR/100 PY= 0.8, 0.41-1.31)	Reich et al., 2015	Compared to placebo No elevated risks[11] (OR=1.5, 0.34-6.24)	Rungapiromnan et al., 2017
			Compared to other therapies No elevated risks[8] (HR= 0.6, 0.30–1.10)	Ahlehoff et al., 2015		
			Compared to topical agents Decreased risks[6] (HR=0.5, 0.29-0.74)**	Hong et al., 2021		
			Compared to other therapies Reduced risks[9] (HR= 0.5, 0.17–1.38)*	Ahlehoff et al., 2013		
CE deaths			Compared to other therapies Reduced risks[8] (HR=0.5, 0.25–0.88)***	Ahlehoff et al., 2015		
Tumor necrosis factor-α inhibitors (TNF-α)						
Cardiac Events (CEs)	Compared to baseline A significant increase CFR***, suggest a decreased risk[12].	Piaserico et al., 2016			Compared to biologic-naive Reduced risks[9] (HR= 0.9, 0.76-0.95)**	Lee et al., 2018
	Compared to non-PsO patients A significant improvement in TAPSE and right ventricular free wall peak systolic velocity, suggest a decreased risk[13] ***	Herédi et al., 2016				
Major CEs	Compared to topical/photo therapies Having a 5%** reduction in non-calcified plaque burden, suggests a reduced risk[7].	Elnabawi et al., 2019	Compared to methotrexate Reduced risks[14] (HR= 0.6, 0.45-0.67)***	Wu et al., 2017	Compared to placebo No protected risk[10] (OR= 0.7, 0.10-4.63)	Rungapiromnan et al., 2017
			Compared to other therapies Reduced risks[8] (HR= 0.5, 0.22–0.98)*	Ahlehoff et al., 2015	Compared to photo therapy Reduced risks[16] (H=0.8, 0.60-0.99)*	Wu et al., 2018
Myocardial infarction			Compared to methotrexate Reduced risks[14] (HR= 0.5, 0.34-0.71)***	Wu et al., 2017		
			Compared to topical agents Significantly lower[15]: IR: 4.9 vs 12.3**	Shaaban et al., 2018		
Stroke			Compared to methotrexate Reduced risks[14] (HR= 0.6, 0.42-0.71)***	Wu et al., 2017		
Angina			Compared to methotrexate Reduced risks[14] (HR=0.6, 0.41-0.82)**	Wu et al., 2017		

In the review, 1,380,483 psoriasis patients were studied across 155 publications. ***Psoriasis can be effectively treated with biologic medicines with a reduction in cardiovascular hazard risks***, particularly:

- TNF-α show reduced cardiac-related risk biomarkers and lower hazard risks for major cardiac events (CEs), myocardial infarction (MI), stroke, and angina, when compared to non-biologic anti-psoriatic medications and even without systemic anti-psoriatic therapy.
- Anti-IL-17 and Anti-IL-12/23 medications exhibit potential cardioprotective effects against coronary artery disease. However, alternative studies suggest conflicting evidence regarding a potential association between these therapies and an elevated risk of major cardiovascular events.
- Anti-IL-23 therapies show no discernible effect on major cardiovascular events or heart failure in short-term studies.
- Further research is needed for comprehensive understanding.

	≤ 26 weeks	Authors, years	26-52 weeks	Authors, years	1-5 years	Authors, years
Anti-Interleukin-17 inhibitor (Anti-IL-17)						
Major CEs	Compared to placebo No protected risk[10] (OR= 1.0, 0.09-11.09)	Rungapiromnan et al., 2017	Compared to topical/photo therapies Having a 12%** reduction in non-calcified plaque burden; suggests a reduced risk[7].	Elnabawi et al., 2019	Compared to TNFα Increased risks[18] (weighted HR= 1.9, 1.2-3.0)***	Vegas et al., 2022
Anti-Interleukin-12/23 inhibitor (Anti-IL-12/23)						
Major CEs	Compared to control Increased risks[17] (OR=4.2, 1.07- 16.75)**	Tzellos et al., 2013	Compared to other therapies[8] No elevated effect (HR=1.5, 0.47–4.94)	Ahlehoff et al., 2015		
			Compared to topical/photo therapies Having a 2%** reduction in non-calcified plaque burden, suggests reduced risks[7].	Elnabawi et al., 2019		
			Compared to TNF-α Increased risks[18] (weighted HR=2.0, 1.3-3.0)***	Vegas et al., 2022		
Anti-Interleukin-23 inhibitor (Anti-IL-23)						
Major CEs	Compared to placebo No effect[19]	Champs et al., 2019				
Heart failure	Compared to placebo No effect[19]	Champs et al., 2019				

CONCLUSIONS

- TNF-α inhibitors demonstrate ***consistent cardiovascular benefits***, including reduced incidence rates of major CEs.
- IL 12/23 inhibitors, IL-17 inhibitors, and IL-23 inhibitors exhibit conflicting findings underscore the complexity of these treatments' effects, necessitating further research to comprehensively elucidate their long-term cardiovascular impact
- These findings emphasize the importance of individualized treatment approaches in optimizing psoriasis management strategies, weighing both efficacy and cardiovascular safety considerations.

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