



The Psoriasis Mortality Paradox in Acute Myocardial Infarction: A Nationwide Inpatient Sample Analysis

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Introduction

- Psoriasis is a chronic inflammatory cytokine-mediated skin disease that affects multiple body systems and is associated with increased cardiovascular risk.
- There is conflicting data about overall mortality and outcomes in AMI (acute myocardial infarction) patients with and without psoriasis.
- The objective of our study was to compare the various health and hospitalization outcomes including in-hospital mortality between the two groups.

Methods

- The National Inpatient Sample (NIS) 2016-2019 was used to identify psoriasis patients presenting with AMI using appropriate ICD-10 codes.
- For AMI, we used the ICD-10 diagnostic series of codes I 21.9. Of the patients who had AMI, the L 40 series of ICD-10 codes was used to identify the subset of psoriasis patients.
- Statistical analysis using STATA software was done to compare the baseline and outcome measures.
- Baseline characteristics and outcomes were assessed using logistic regression.

Results

- Out of 2.55 million in-hospital AMI patients, a subset of 15,520 psoriasis patients was identified.
- Psoriasis patients had significantly higher rates of smoking (31% vs 25%), alcohol use (1.3% vs 1%), diabetes (43% vs 41%), hypertension (47% vs 44%), hyperlipidemia (71% vs 66%), prior coronary artery disease (83% vs 80%), COPD (25% vs 22%) and thyroid disease (14% vs 13%).
- Also, psoriasis patients had significantly lower age (64.9 vs 66.9 years), congestive heart failure (38% vs 42%), and chronic kidney disease (19% vs 22%). The p-values for all the above-mentioned baseline metrics were between 0.00 and 0.02.

AMI (n= 2,549,879)	Psoriasis (n= 15,520)	No Psoriasis (n=2,394,679)	p-value
Age, mean (± SD)	64.9 (± 0.4)	66.9 (± 0.1)	0.00
Male	10,034 (65%)	1,586,460 (63%)	0.02
White	12,390 (80%)	1,799,170 (71%)	0.00
Comorbidities			
Smoking	4,790 (31%)	637,215 (25%)	0.00
Alcohol abuse	215 (1.3%)	24430 (1%)	0.02
History of CAD	12,890 (83%)	2,017,185 (80%)	0.00
CHF	5,960 (38%)	1,061,875 (42%)	0.00
Cardiac dysrhythmia	3,850 (25%)	662,630 (26%)	0.09
Cerebrovascular disease	1,005 (6%)	157,400 (6%)	0.55
Peripheral vascular disease	1,995 (13%)	308,515 (12%)	0.24
COPD	3,900 (25%)	550,575 (22%)	0.00
CKD 3 and higher	2,980 (19%)	568,440 (22%)	0.00
Thyroid disease	2,165 (14%)	317,095 (13%)	0.02
Diabetes Mellitus	6,650 (43%)	1,030,500 (41%)	0.02
Hyperlipidemia	11,075 (71%)	1,679,500 (66%)	0.00
Hypertension	7,340 (47%)	1,116,880 (44%)	0.00
Malignancy	545 (4%)	82,445 (3%)	0.41
Charlson category >3	8,070 (52%)	1,304,225 (51%)	0.55
Outcomes			
Stent	4425 (29%)	697,620 (28%)	0.23
CABG	1630 (11%)	187,765 (7%)	0.00
In-hospital mortality	425 (3%)	118,175 (5%)	0.00
LOS (Days)	4.5	4.4	0.00
Hospital cost	103,247 \$	99,094 \$	0.00

AMI = Acute myocardial infarction, CAD = Coronary artery disease, CHF = Congestive heart failure, COPD = Chronic obstructive pulmonary disease, CKD = Chronic kidney disease, CABG = Coronary artery bypass graft

- Comparing clinical outcomes, psoriasis patients had similar rates of stent placement (29%) but significantly higher rates of coronary artery bypass surgery (11% vs 7%), length of stay (4.5 versus 4.4 days), and hospital costs (\$ 103,247 vs \$ 99,094).
- Notably, psoriasis patients had significantly lower in-hospital mortality (3% vs 5%) (p-value 0.00).



Discussion

- Despite significantly higher baseline prevalence of several known cardiovascular risk factors in psoriasis patients, these patients had a significantly lower in-hospital mortality despite undergoing more coronary artery bypass surgeries.
- Similar findings were found in other studies, most recently in a German inpatient sample analysis published in 2020.
- In our sample, the age difference was only 2 years (64.9 vs 66.9 years). Although lower age could be a factor, we postulate that a lower incidence of underlying heart failure and chronic kidney disease could contribute to lower mortality.
- An unknown variable was the impact of ongoing psoriasis treatments on mortality- as this data point was not available in the NIS. In the last decade, several treatments have become available for psoriasis, and they have been shown not only to improve psoriasis but also to decrease cardiovascular mortality in these patients.

Conclusion

- Our retrospective study showed paradoxically lower overall mortality despite the higher prevalence of several comorbidities in AMI patients with psoriasis.
- In the last decade, several treatments have become available for psoriasis, and they have been shown not only to improve psoriasis but also to decrease cardiovascular mortality in these patients.
- Prospective studies designed to analyze the impact of newly available therapies for psoriasis may help shed light on this paradoxically lower cardiovascular mortality. This may also potentially help patients with other multisystem chronic inflammatory disorders.

References

1. Karbach S, Hobohm L, et al. Impact of Psoriasis on Mortality Rate and Outcome in Myocardial Infarction. J Am Heart Assoc. 2020 Sep 15;9(18):e016956. doi: 10.1161/JAHA.120.016956. Epub 2020 Sep 11. PMID: 32914667; PMCID: PMC7726965.