The Effect of Decubitus Ulcer on Inpatient Outcomes in Patients with Sepsis: A Nationwide Analysis (2016–2021)

Authors: *Sai Anusha Akella,[1] Samuel Sule-Saa,[1] Yorquiris Acevedo,[1] Aditi Parulkar,[1] Kalpani Panigrahi[1]

1. One Brooklyn Health – Interfaith Medical Centre, Brooklyn, New York, USA

*Correspondence to saianusha.akella@obhny.org

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BACKGROUND AND AIMS

Sepsis is a life-threatening condition associated with significant morbidity and mortality.[1] Decubitus ulcers (pressure injuries) are common in hospitalized patients and may become a source of infection.[2,3] Pressure injuries may become complicated by local infection, osteomyelitis, bacteremia, and sepsis.[4] This study seeks to investigate the association between the presence of decubitus ulcers and inpatient outcomes, including mortality, resource utilization, and complications, among patients hospitalized with sepsis in the United States, as large-scale data on this association are limited.[5]

MATERIALS AND METHODS

This retrospective cohort study utilized the Nationwide Inpatient Sample (NIS) database from 2016–2021. Patients hospitalized with a primary diagnosis of sepsis were identified and stratified based on the presence or absence of a concurrent diagnosis of decubitus ulcer. Multivariable logistic regression was used to assess the odds of in-hospital mortality and specific complications (severe sepsis, septic shock, disseminated intravascular coagulation, acute respiratory distress syndrome, mechanical ventilation, and acute kidney injury). Multivariable linear regression was used to compare total hospital charges, costs, and length of stay (LOS). Models were adjusted for patient demographics (age, gender, race, income quartile, and insurance), the Charlson Comorbidity Index, patient residence location, and hospital characteristics (region, bed size, and teaching status).

RESULTS

Of approximately 13.1 million weighted sepsis admissions, 1,046,110 (8.0%) had comorbid decubitus ulcers (2016–2021; Table 1). Patients with decubitus ulcers were slightly older (mean age: 64.5 versus 69.3 years; p<0.01) and had higher comorbidity burdens. After multivariable adjustment, the presence of a decubitus ulcer was significantly associated with 35% increased odds of in-hospital mortality (1.35; p<0.01). Decubitus ulcers were also associated with significantly higher adjusted total hospital charges (40,776.83 USD; p<0.01), total costs (8,175.51 USD; p<0.01), and longer LOS (3.85 days; p<0.01). Furthermore, decubitus ulcers were associated with significantly higher adjusted odds of developing severe sepsis (adjusted odds ratio [AOR]: 1.35), septic shock (AOR: 1.58), disseminated intravascular coagulation (AOR: 1.18), requiring mechanical ventilation (AOR: 3.99), and acute kidney injury (AOR: 1.05; all p<0.01). No significant association was found with acute respiratory distress syndrome (AOR: 1.04; p=0.068).

CONCLUSION

The study suggests the presence of a decubitus ulcer was independently

associated with significantly increased inpatient mortality, higher resource utilization (cost, LOS), and greater odds of major sepsis-related complications. These findings, with similar results to prior literature[6] highlight decubitus ulcers as an important indicator of adverse outcomes in patients with sepsis, emphasizing the need for targeted prevention and management strategies in this vulnerable population.

Table 1: Adjusted odds ratio of complications comparing teaching versus non-teaching hospitals.

		95% CI		
	AOR	Lower limit	Upper limit	p value
Severe sepsis	1.35	1.20	1.51	<0.01
Septic shock	1.58	1.37	1.82	<0.01
DIC	1.18	1.12	1.24	<0.01
ARDS	1.04	1.00	1.10	0.068
Mechanical ventilation	3.99	3.86	4.13	<0.01
AKI	1.05	1.04	1.06	<0.01

p<0.05 indicates statistical significance. Multivariable regression models were adjusted for age at admission, gender, race, median household income national quartile for patient ZIP Code, Charlson Comorbidity Index, location/teaching status of the hospital, region of the hospital, patient's residence, and insurance.

AKI: acute kidney injury; ARDS: acute respiratory distress syndrome; DIC: disseminated intravascular coagulation.

References

1. Complex Wounds Working Group; Elena Espejo et al. Bacteremia associated with pressure ulcers: a prospective cohort study. Eur J Clin Microbiol Infect Dis. 2018;37(5): 969-75.
2. Zhaoyu Li et al. Global prevalence and incidence of pressure injuries in hospitalised adult patients: a systematic review and meta-analysis. Int J Nurs Stud. 2020;DOI:10.1016/j.ijnurstu.2020.103546.
3. Padula et al. Delarmente. The national cost of hospital-acquired pressure injuries in the United States. Int Wound J. 2019;16(3):634-40.
4. Mervyn Singer et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315(8):801.
5. Akella S et al. The effect of decubitus ulcer on inpatient outcomes in patients with sepsis: a nationwide analysis (2016-2021). Poster B25-16. ATS International Conference, May 15-20, 2026.
6. Christina L Wassel et al. Risk of readmissions, mortality, and hospital-acquired conditions across hospital-acquired pressure injury (HAPI) stages in a us national hospital discharge database. Int Wound J. 2020;17(6):1924-34.