Hospital Outcomes Associated with Congestive Heart Failure Among Patients with Bladder Cancer in the U.S.

Yu D[1], Park J[1], Katta A[1], Gao T[1], Park SK[1], Park C[1]
[1]Northeastern University Bouvé College of Health Sciences

Northeastern University
Bouvé College of Health Sciences
School of Pharmacy

Background & Objectives

- Congestive heart failure (CHF) and bladder cancer greatly impact Americans and the U.S. healthcare system.
- Current trends show an increasing ratio of cardiovascular disease (CVD) related deaths to cancer related deaths among bladder cancer patients.[1]
- This may be attributed to the shared risk factors of CVD and cancer such as smoking, obesity and increased age.[2]
- Another proposed mechanism of CVD mortality is related to improved survival time for cancer patients, leading to increased longevity of cancer patients and increase in mortality from non-cancer causes and secondary cancer-related deaths.[3,4]
- Existing research has outlined the increasing mortality risk of CVD related deaths among bladder cancer patients but little is known about the association of CHF with in-hospital outcomes among bladder cancer patients.[1]
- **Objective:** To estimate in-hospital outcomes associated with CHF in patients with bladder cancer in the U.S.

Methods

- **Study Design and Data Source**: A cross-sectional analysis of inpatient bladder cancer hospitalizations was conducted using the Healthcare Cost and Utilization Project Nationwide Inpatient Sample (HCUP-NIS), an inpatient focused healthcare database of state and federal government, hospital and private data.
- **Population:** Our target population included hospitalizations involving patients 18 years or older coded with bladder cancer (International Classification of Disease, Tenth Edition [ICD-10] code) and admitted between October 1, 2015 to December 31, 2018.
- **Outcomes:** The primary independent variable was CHF. The dependent variables were in-hospital mortality, length of stay (LOS), and hospital costs per hospitalization. Other covariates captured included socioeconomic and clinical characteristics.
- **Statistical Analysis:** Logistic regression, negative binomial regression, and generalized linear regression with log link and gamma distribution were used to compare in-hospital mortality, LOS, and hospital costs per hospitalization between bladder cancer patients with and without CHF, controlling for covariates, respectively.
- **Subgroup Analysis:** A subgroup analysis by age was conducted to estimate the effect of CHF on hospital outcomes in bladder cancer patients 18-64, 65-79, and 80+ years old.

References

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Results

Table 1: Baseline Demographics

Characteristics	CHF (n=1,727)		non-CHF (n=14,158)		p-value
	n	%	n	%	
Age group in years					<0.001
18-64	185	10.71	3,747	26.47	
65-79	718	41.57	6,601	46.62	
≥80	824	47.71	3,810	26.91	
Gender					0.023
Male	1,338	77.48	10,614	74.97	
Female	389	22.52	3,544	25.03	
Race/ethnicity					0.002
White	1,425	82.51	11,376	80.35	
Black	155	8.98	1,155	8.16	
Hispanic	80	4.63	831	5.87	
Others	67	3.88	796	5.62	
Household income					0.668
Lowest quartile	449	26	3,505	24.76	
2nd quartile	437	25.3	3,629	25.63	
3rd quartile	427	24.72	3,635	25.67	
Highest quartile	414	23.97	3,389	23.94	
Primary payer					<0.001
Government (Medicare/Medicaid)	1,506	87.2	10,522	74.32	
Private including HMO	162	9.38	2,974	21.01	
Other (self-pay, charity) and unknown	59	3.42	662	4.68	

There was a significant difference in age, gender, race/ethnicity, and primary payer between hospital visits involving CHF and hospital visits not involving CHF among hospital visits involving bladder cancer.

Figure 1.1: In-hospital Mortality (%)

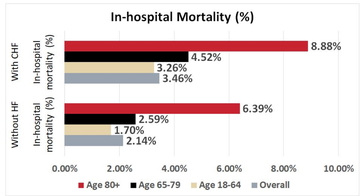

Figure 1.2: Cost per Hospitalization ($)

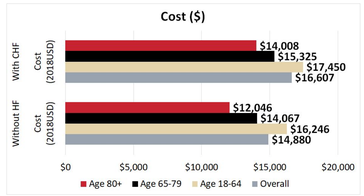

Figure 1.3: Length of Stay (days)

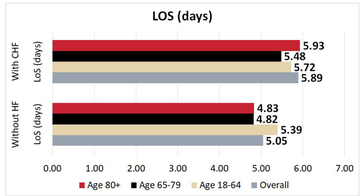

Figure 1

- **In-hospital mortality in patients with CHF was 1.32% higher than in those without CHF**
- **Overall costs per hospitalization in patients with CHF were $1,727 more costly than in those without CHF.**
- **Overall length of stay in patients with CHF was 0.84 days longer than in those without CHF.**

Results (cont.)

Figure 2.1: In-hospital Mortality Rate (OR)

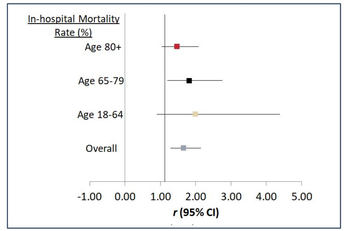

Figure 2.2: Cost Ratio

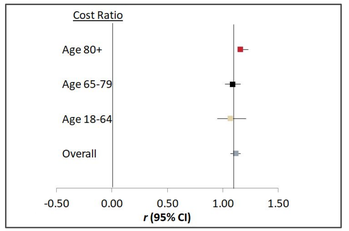

Figure 2.3: Length of Stay (IRR)

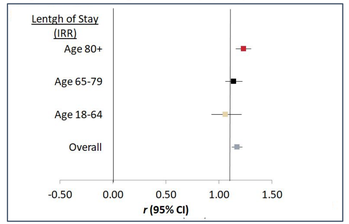

Figure 2

- **Bladder cancer patients with CHF were 1.66 (P<0.001) times more likely to die in-hospital compared to bladder cancer patients without CHF.**
- **Bladder cancer patients with CHF were 1.12 (P<0.001) times more costly compared to bladder cancer patients without CHF.**
- **Bladder cancer patients with CHF had stays 1.17 (P<0.001) times longer compared to bladder cancer patients without CHF.**

Conclusion

- Inpatient hospital stays for bladder cancer patients with CHF were associated with higher in-hospital mortality, longer length of stay and higher hospital costs in comparison to inpatient hospital stays for bladder cancer patients without CHF. Therefore, CHF may be implicated as a predictor of negative prognosis of bladder cancer.
- **Limitations:** The NIS database limits the clinical background of patients by de-identifying patient specific clinical and demographic characteristics. The database only includes inpatient hospital visits, so data from outpatient visits and at home complications and treatment are not captured. Discharge costs were based on national averages due to lack of reimbursed claims so may be less accurate. Finally, this study relies on ICD-10 diagnosis codes which may limit the type of information available and is subject to coding error at the clinic and when analyzing data.

Disclosure: Author(s) of this presentation nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.