ACUTE KIDNEY INJURY AS A PREDICTOR OF GI BLEEDING AND OUTCOMES IN MULTIPLE MYELOMA: INSIGHTS FROM THE NATIONAL INPATIENT SAMPLE

Iqra Qazi, MD[1]; Sunita Devi, MD[1]; Fnu Versha, MD[1]; Mohammad Waleed, PharmD[2]
[1]Department of Medicine, Baptist Hospitals of Southeast Texas, Beaumont, TX 77701, USA
[2]The University of Texas MD Anderson Cancer Center, Houston, TX 77030 USA

Baptist Hospitals of Southeast Texas
MED ED
Internal Medicine Residency Program

Introduction

Multiple myeloma (MM), the second most common hematologic malignancy, is frequently complicated by acute kidney injury (AKI) and gastrointestinal bleeding (GIB), both of which worsen survival, length of stay, and healthcare costs. AKI in MM arises from light chain nephropathy, hypercalcemia, infections, and nephrotoxic therapies, while GIB often results from thrombocytopenia, coagulopathy, medications, and treatment-related mucosal injury. Although each complication independently increases morbidity and mortality, their combined impact has not been well defined. AKI may predispose to bleeding by impairing platelet function and mucosal integrity, whereas GIB can exacerbate renal dysfunction through hypovolemia and hemodynamic compromise. Using a nationally representative cohort, this study evaluates the interplay of AKI and GIB in MM hospitalizations to clarify their association and identify the subgroup of patients at greatest risk for poor outcomes.

Aim

Primary: Assess whether AKI is an independent risk factor for GIB in MM patients.
Secondary: Compare outcomes (in-hospital mortality, length of stay, hospital charges, elective admissions) across four groups:
Neither AKI nor GIB
AKI only
GIB only
Both AKI + GIB

Objectives

1. Determine if AKI independently increases odds of GIB in MM.
2. Evaluate inpatient outcomes (mortality, LOS, charges) by AKI/GIB status.
3. Identify the highest-risk subgroup for targeted management.

Methods

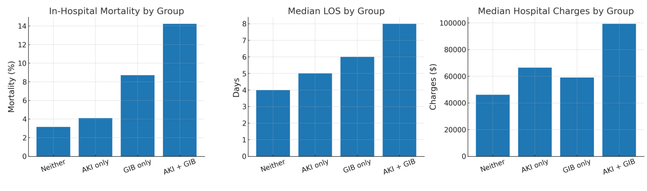
We conducted a retrospective analysis using the 2018–2022 National Inpatient Sample (NIS). Adult hospitalizations with a diagnosis of MM were identified using ICD-10 codes. AKI and GIB were also defined using ICD-10 coding and patients were categorized into four mutually exclusive groups: neither condition, AKI only, GIB only, or both AKI + GIB. Survey weights were applied to account for the complex survey design. Logistic regression was used to evaluate whether AKI was independently associated with GIB. Multivariable logistic regression was then used to assess in-hospital mortality, while Poisson regression was applied to estimate adjusted differences in LOS and hospital charges. All models were adjusted for age, sex, race, and comorbidities, including heart failure, hypertension, diabetes, renal failure, liver disease, and obesity.

Results

A total of 489,210 weighted MM hospitalizations were identified between 2018 and 2022. In survey-weighted logistic regression, AKI was independently associated with increased odds of GIB (adjusted OR 1.23, 95% CI 1.18–1.29, $p < 0.001$). When grouped by complication status, patients with both AKI and GIB experienced the worst outcomes. Compared to patients with neither condition, those with both had the highest adjusted odds of in-hospital mortality (aOR 4.48, 95% CI 4.03–4.98), followed by AKI only (aOR 2.82) and GIB only (aOR 1.23). The AKI + GIB subgroup also had the longest hospital stays, with nearly a 70–100% increase in LOS compared to the reference group, as well as the highest hospital charges, with an 86–137% increase. Mortality was 14% in the AKI + GIB group compared to 3% in those with neither complication.

Table 1. Descriptive Characteristics of MM patients by AKI/GIB Status

	Neither	AKI only	GIB only	AKI + GIB
Median Age (yrs)	70.0	73.0	72.0	73.0
Female (%)	45.05	46.7	41.8	40.79
White (%)	63.99	62.7	60.77	57.81
Hypertension (%)	69.79	74.09	77.54	76.64
Diabetes (%)	28.16	29.48	34.26	33.43
CHF (%)	25.07	27.95	34.99	36.54
Liver Disease (%)	4.34	7.7	6.54	11.29
Obesity (%)	12.25	13.39	13.98	12.51



Discussion

Our analysis demonstrates that AKI is not only common in MM hospitalizations but also an independent predictor of GIB. Moreover, the co-occurrence of AKI and GIB identifies a vulnerable subgroup with markedly elevated in-hospital mortality, prolonged hospitalization, and substantially higher resource utilization. These findings underscore the need for early identification of at-risk patients, aggressive prevention and management strategies, and multidisciplinary care to mitigate the excess burden.