SOHO ANNUAL MEETING 2024

Effect of Heart Failure on Incidence Rates of Pneumonia, Sepsis and Septic Shock in Patients with Multiple Myeloma

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INTRODUCTION

- Multiple myeloma (MM) is associated with an enhanced risk of pneumonia (PNA) and sepsis.[1]
- A study showed that heart failure (HF) increased the need for ICU and mechanical ventilation in MM patients.[2]
- The influence of systolic heart failure (SHF) or diastolic heart failure (DHF) on the risk of infection in MM patients is unclear.

AIM

- We evaluated whether chronic SHF or DHF, as well as acute SHF or DHF in concomitance with MM, affected the rates of PNA, sepsis, and septic shock.

METHOD

- A retrospective study was performed by identifying MM patients using specific ICD 10 codes (C90.00 and C90.02) from the National Inpatient Sample 2019–2021.
- Patients with acute and chronic SHF or DHF were obtained using ICD 10 codes (I50.2 - I50.4).
- PNA, sepsis, and septic shock were compared between MM patients with each of these types of HFs versus those without any HF using multivariate analysis adjusting for demographic characteristics, hospital-related factors, and common comorbidities.

RESULTS

- A total of 319,075 patients were identified with MM. MM patients who had chronic SHF (n=13,775) showed higher rates of septic shock (OR: 1.4, *P*<0.001), but no difference in the incidence of PNA (*P*=0.565) or sepsis (*P*=0.08) compared to those without HF.
- Patients with MM and acute SHF (n=13,565) had accentuated rates of PNA (OR: 1.5, *P*<0.001), sepsis (OR: 1.3, *P*=0.005), and septic shock (OR: 1.5, *P*<0.001) versus those without HF.
- Acute DHF (n=15,580) led to a higher incidence of PNA (OR: 1.5, *P*<0.001), but no difference in the incidence of sepsis (*P*=0.398) or septic shock (*P*=0.469).
- Patients with MM and chronic DHF (n=19,465) had no difference in rates of PNA (*P*=0.21), sepsis (*P*=0.693), or septic shock (*P*=0.203).

Odds ratio	Acute SHF	Chronic SHF	Acute DHF	Chronic DHF
PNA	1.5 (p<0.001)	1.0 (p=0.565)	1.5 (p<0.001)	0.9 (p=0.210)
Sepsis	1.3 (p=0.005)	1.2 (p=0.080)	1.1 (p=0.398)	1.0 (p=0.693)
Septic Shock	1.5 (p<0.001)	1.4 (p<0.001)	1.1 (p=0.469)	1.1 (p=0.203)

CONCLUSIONS

- Acute SHF is associated with significantly enhanced rates of PNA, sepsis, and septic shock in MM patients.
- Chronic SHF showed higher rates of septic shock, whereas acute DHF led to a higher incidence of PNA.
- Early collaboration between hematology and cardio-oncology and timely preventive and therapeutic strategies for HF may be essential in managing patients with concurrent MM and HF to improve clinical outcomes.

REFERENCES

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ACKNOWLEDGEMENTS

We have no acknowledgments to report.

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