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Influence of Heart Failure upon Incidence Rates of Pneumonia, Acute Respiratory Failure, Sepsis and Septic Shock in Patients with Polycythemia Vera

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INTRODUCTION

- Polycythemia vera (PV) has been shown to increase pneumonia (PNA) and acute respiratory failure (ARF) risk.[1]
- A recent study showed that heart failure (HF) accentuated inpatient mortality and duration of hospitalization in PV patients.[2]
- The effects of systolic and diastolic heart failure (SHF and DHF) on the risk of infections and ARF in PV are not well known.

AIM

- We investigated whether chronic SHF or DHF and acute SHF or DHF, in conjunction with PV, influenced the incidence of PNA, ARF, sepsis and septic shock.

METHOD

- A retrospective study was conducted by identifying PV patients using the specific ICD 10 code (D45) from the National Inpatient Sample 2019-2021.
- Acute and chronic SHF or DHF patients were obtained using particular ICD 10 codes (I50.2 - I50.4).
- PNA, ARF, sepsis, and septic shock were compared between PV patients with each of these types of HFs versus those without any HF using multivariate analysis adjusting for patient demographics, hospital-related characteristics and common comorbidities.

RESULTS

- 65780 patients were identified with PV. Patients with PV and acute SHF (n=3425) had higher rates of PNA (OR: 1.3; p=0.017) and ARF (OR: 2; p<0.001), but no difference in rates of sepsis (p=0.427) or septic shock (p=0.454) compared to those without HF.
- PV patients who had chronic SHF (n=2750) showed no difference in the incidence of PNA (p=0.901), sepsis (p=0.201) or septic shock (p=0.473) versus those without HF.
- Acute DHF (n=4315) led to a higher incidence of PNA (OR: 1.9; p<0.001) and ARF (OR: 2.4; p<0.001), but no difference in the incidence of sepsis (p=0.793) or septic shock (p=0.476).
- Patients with PV and chronic DHF (n=3895) had no significant difference in rates of PNA (p=0.07), sepsis (p=0.685) or septic shock (p=0.056).

Odds Ratio	Acute SHF	Chronic SHF	Acute DHF	Chronic DHF
PNA	1.3 (p=0.017)	1.0 (p=0.901)	1.9 (p<0.001)	0.8 (p=0.07)
Sepsis	1.2 (p=0.427)	0.7 (p=0.201)	0.9 (p=0.793)	0.9 (p=0.685)
Septic Shock	1.2 (p=0.454)	0.8 (p=0.473)	0.9 (p=0.476)	1.4 (p=0.056)
ARF	2.0 (p<0.001)	0.7 (p=0.007)	2.4 (p<0.001)	0.7 (p=0.004)

CONCLUSIONS

- Acute SHF and DHF led to higher rates of PNA and ARF in PV patients. Chronic SHF and DHF did not significantly influence the incidence of PNA, sepsis or septic shock.
- Early collaboration between hematology and cardio-oncology and effective preventive and management strategies, particularly targeted toward acute HF may be imperative in managing PV patients to enhance clinical outcomes.

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