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Long-term Outcomes of Cancer Patients Admitted to the ICU with Septic Shock

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Abstract

Introduction: Several studies evaluated the outcomes of cancer patients treated with septic shock in intensive care units (ICUs), but limited data is available on the long-term outcomes of this patient population. In this report, we aimed to evaluate the one-year mortality in cancer patients who were discharged alive following their intensive care unit (ICU) admission for septic shock.

Patients and Methods: A retrospective study that was conducted at an oncologic ICU of a comprehensive cancer center. The study included all adult cancer patients who were admitted to the ICU with septic shock between 2008 and 2019. Septic shock was defined as the need to start vasopressors within the first 24 hours of ICU admission with sepsis. Patient baseline characteristics and long-term outcomes were evaluated. Descriptive analysis was used to report the data.

Results: Of the 1408 cancer patients who were admitted to the ICU with septic shock, 494 patients (35%) were discharged alive from the hospital. Their mean age was 56.3 ± 16.5 (SD) years, 321 (65%) were males, and 326 (66%) had solid tumors. At 1-year, 258 patients died as follows: 129 (50%) died during the first 3-months, 69 (27%) patients died between 3 and 6-months, and 60 (23%) patients died between 6 and 12-months, resulting in a mortality rate of 74%, 78.9% and 83.2%, at the 3-months, 6-months and 1-year, respectively.

Discussion and conclusion: In this cohort of cancer patients, we described the long-term outcomes of patients treated in the ICU with septic shock. The majority of the included patients died during the first year following their ICU admission. Future studies should identify measures to improve the outcomes of this patient population.

Keywords: sepsis; shock, cancer; neoplasms, mortality, critical illness, long-term

Introduction

Sepsis and septic shock are among the most common admission diagnoses to the intensive care units (ICUs) in cancer patients and are associated with high mortality.^(1, 2) The suppressed immunity in cancer patients along with the underlying malignancy and the various cancer-treatment modalities increase their risk of developing serious complications including sepsis.⁽³⁾

Despite the improvement in the outcomes of critically ill cancer patients over the years, several studies that evaluated the outcomes of cancer patients with septic shock still reporting higher mortality rates in this patient population when compared to non-cancer patients⁽⁴⁻⁷⁾. The recent data emphasized the importance of evaluating long term outcomes in this patient population after being discharged alive from the ICU. However, there is limited data evaluating the long-term outcomes in cancer patients with sepsis⁽⁸⁾.

Therefore, we conducted this study to evaluate the characteristics and long-term outcomes for patients

who were discharged from the hospital, up to one-year following their ICU admission for septic shock.

Patients and Methods

This was a retrospective study conducted at King Hussein Cancer Center, a 370-bed comprehensive cancer teaching hospital located in Amman, Jordan. The center has two oncologic adult critical care units serving patients for both cancer and non-cancer related critical conditions. The study was approved by the institutional review board with a waiver of informed consent due to the retrospective nature of the study.

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The study included all adult patients (≥ 18 years) with solid and hematologic malignancies who were admitted to the ICU with septic shock between January 2008 and December 2019. Septic shock was defined as having an admission diagnosis of sepsis along with the initiation of vasopressors within 24 h of ICU admission. Patients who were started on norepinephrine after 24 h of their ICU admission and those who were prescribed norepinephrine but the infusion was not initiated, based on the medical notes, were excluded.

The electronic patient medical records were used to extract the characteristics of patients discharged alive from the hospital, as well as their mortality at 3-months, 6-months, and 12 months, from their ICU admission. The characteristics included age, gender, type of malignancy, organ support upon admission to the ICU, and the presence of neutropenia or thrombocytopenia.

Descriptive statistics were used to report the findings. Continuous data was reported as mean and standard deviation (SD) while the nominal data was reported as numbers and percentages.

Results

Over the 12-year study period a total of 1408 patients with cancer were admitted to the ICU with septic shock. Among those patients, 494 patients (35%) were discharged alive from the hospital and included in this analysis. The mean age for those patients was 56.3 ± 16.5 (SD) years, 321 (65%) were males and 326 (66%) had solid tumors while the remaining had hematological malignancies. Upon ICU admission patients had a mean Acute Physiology and Chronic Health Evaluation (APACHE) II score of 20.3 ± 7.3 (SD) and neutropenia and thrombocytopenia were reported in 23% and 33% of the patients respectively.

Of the patients discharged from the hospital ($n=494$), 236 patients were alive at 1-year. The characteristics of those patients are outlined in table 1. A total of 129 (50%) died during the first 3-months, 69 (27%) patients died between 3 and 6-months, and 60 (23%) patients died between 6 and 12-months. The total 3-months, 6-months and 1-year mortality rates for the entire cohort since their ICU admission were 74%, 78.9% and 83.2% respectively.

Discussion

In this analysis, we described the long-term outcomes of patients with solid and hematological malignancies treated in the ICU with septic shock. The study is unique in being one of the largest studies evaluating the long-term outcomes in this patient population. Among the patients discharged from the hospital following treatment for septic shock, about half of those patients were alive at 1-year. At 1-year since their ICU admission, we reported a mortality of 83.2% with the majority reported dead within the first 3 months.

Few studies evaluated the long-term mortality of patients with septic shock for both cancer and non-cancer population, with a 1-year mortality ranging from 58%–81.3%.^(9–12) The reported mortality rates in this analysis are higher than what have been reported by other studies in this patient population. The variability may be related to the small sample sizes of some studies, differences in the patient population as well as and the differences in the admission criteria by various institutions.

Le Borngé et al⁽¹²⁾ evaluated mortality in patients admitted to the ICU for septic shock with solid tumors or hematological diseases with a reported 1-year mortality of 58% which is lower than what is reported by our analysis. This difference could be related to the smaller sample size included in their study lower number of

| Characteristic | All population (494 patient) | Alive at 1-year (236 patient), 48% | Dead at 1-year (258 patient), 52% |
|-------------------------------|------------------------------|------------------------------------|-----------------------------------|
| Age in years, mean (SD) | 56.3 (16.5) | 54.2 (16.2) | 57.7 (16.5) |
| Gender, n (%) | | | |
| Male | 321 (65%) | 148 (63%) | 173 (67%) |
| Cancer type, n (%) | | | |
| Solid | 326 (66%) | 142 (60%) | 184 (71%) |
| Hematology | 168 (34%) | 94 (40%) | 74 (29%) |
| Neutropenia, n (%) | 114 (23%) | 61 (26%) | 53 (20%) |
| Mechanical ventilation, n (%) | 138 (28%) | 61 (26%) | 77 (30%) |
| Thrombocytopenia, n (%) | 163 (33%) | 80 (34%) | 83 (32%) |
| Apache score, mean (SD) | 20.3 (7.3) | 18.9 (6.9) | 21.3 (7.4) |

Table 1: Baseline characteristics for included patients

patients required vasopressors during their ICU stay and differences in the characteristics of the included patients.

Studies that evaluated 6–months outcomes reported a mortality rate ranging between 51% and 72% with a sample size range of 121 to 563 cancer patients.^(12–14) For the 3– months mortality it was reported in cancer patients treated with septic shock with a rate ranging between 43% and 58%.^(10, 12, 15) As demonstrated in our study, around half of the patients discharged from the hospital died during the first three months and the reported 3–months mortality was 74%. The higher mortality rates reported by our analysis could be explained by the heterogeneity between the different studies and ICU settings, in terms of severity of the patients' illness upon ICU admission, different treatment goals, variable treatment protocols and different inclusion criteria. Such alarming mortality rates should direct future studies toward identifying measures to improve the outcomes in cancer patients with septic shock.

This analysis has several limitations that we would like to highlight. The main limitation is related to the study being retrospective and single–centered. In addition, we did not evaluate the hospital readmissions, resource utilization and quality of life following hospital discharge which would provide a more in–depth assessment of the long–term outcomes of such a patient population. Nevertheless, this study provides an assessment of the long–term outcomes of a large cohort of cancer patients who were treated with septic shock. Such information is important when evaluating the prognosis of cancer patients and understanding the outcomes of a patient population that is increasingly admitted to ICUs.

Conclusion

In this cohort of cancer patients admitted to the ICU with septic shock, the majority of the included patients died during the first year following their ICU admission. Future studies should identify measures to improve the outcomes of this patient population.

Funding and Conflict of Interest

Funding: None

Competing interests

The authors declare that they have no competing interests.

References

- Hawari FI, Nazer LH, Addassi A, et al. Predictors of ICU admission in patients with cancer and the related characteristics and outcomes: A 5–year registry–based study. *Crit Care Med.* 2016;44(3):548–533.
- Cecconi M, Evans L, Levy M, et al. Sepsis and septic shock. *Lancet.* 2018;392(10141):75–87.
- Williams MD, Braun LA, Cooper LM, et al. Hospitalized cancer patients with severe sepsis: Analysis of incidence, mortality, and associated costs of care. *Crit Care.* 2004;8:291–298.
- Awad WB, Nazer L, Elfarr S, et al. A 12–year study evaluating the outcomes and predictors of mortality in critically ill cancer patients admitted with septic shock. *BMC Cancer.* 2021;21(709).
- Hensley MK, Donnelly JP, Carlton EF, et al. Epidemiology and outcomes of cancer–related versus non–cancer–related sepsis hospitalizations. *Crit Care Med.* 2019;47(10):1310–6.
- Wang YG, Zhou JC, Wu KS. High 28–day mortality in critically ill patients with sepsis and concomitant active cancer. *J Int Med Res.* 2018;46(12):5030–9.
- Nazer L, Lopez–Olivo MA, Cuenca JA, et al. All–cause mortality in cancer patients treated for sepsis in intensive care units: a systematic review and meta–analysis. *Support Care Cancer.* 2022 Dec;30(12):10099–10109.
- Wilcox ME, Ely EW. Challenges in conducting long–term outcomes studies in critical care. *Curr Opin Crit Care.* 2019 Oct;25(5):473–488.
- Sauer CM, Dong J, Celi LA, et al. Improved survival of cancer patients admitted to the intensive care unit between 2002 and 2011 at a U.S. teaching hospital. *Cancer Res Treat.* 2019;51(3):973–981.
- Faucher E, Cour M, Jahandiez V, et al. Short– and long–term outcomes in onco–hematological patients admitted to the intensive care unit with classic factors of poor prognosis. *Oncotarget.* 2016;7(16):22427–22438.
- Kim YJ, Kim MJ, Kim YJ, et al. Short and Long–Term Mortality Trends for Cancer Patients with Septic Shock Stratified by Cancer Type from 2009 to 2017: A Population–Based Cohort Study. *Cancers (Basel).* 2021 Feb 6;13(4):657.
- Le Borgne P, Feuillassier L, Schenck M, et al. Comparison of Short– and Long–Term Mortality in Patients with or without Cancer Admitted to the ICU for Septic Shock: A Retrospective Observational Study. *Cancers.* 2022; 14(13):3196.
- Rosolem MM, Rabello LS, Lisboa T, et al. Critically ill patients with cancer and sepsis: Clinical course and prognostic factors. *J Crit Care.* 2012;27(3):301–307.
- Camou F, Didier M, Leguay T, et al. Long–term prognosis of septic shock in cancer patients. *Support Care Cancer.* 2020 Mar;28(3):1325–1333.
- Azoulay E, Mokart D, Pène F, et al. Outcomes of critically ill patients with hematologic malignancies: Prospective multicenter data from France and Belgium—a Groupe de Recherche Respiratoire en Réanimation Onco–Hématologique (Grrr–OH) study. *J Clin Oncol.* 2013;31(22):2810–2818.