Prediction of short- and long-term survival for advanced cancer patients after ICU admission

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Abstract:

Background Intensive care unit (ICU) admission of advanced cancer patients is controversial because it is associated with poor short-term prognosis. However, ICU admission of these patients might also result in administration of specific anticancer treatments and evaluation of tumor characteristics, which could influence long-term outcomes. Herein, we investigate whether there is a relationship between ICU admission and long-term outcomes for advanced cancer patients.

Methods We analyzed 116 advanced cancer patients who were admitted to the ICU at Severance Hospital, Yonsei University, between January 2010 and December 2012. We excluded palliative care-only patients. We analyzed demographic, clinical, and survival data of patients admitted to the ICU, and we identified patient characteristics that were measured upon presentation to ICU to determine whether any of these are prognostic or predictive factors of short- or longterm survival.

Results: The median age of our study sample was 64 years. Sixty-nine (59.5 %) patients were male. Lung, breast, and stomach were the most common primary tumor sites. Eighty-seven (75 %) patients had received active anticancer treatment within the past 30 days. The main cause of ICU admission was acute respiratory failure (73 %); thus, 102 (87.9 %) patients were managed with conventional mechanical ventilation, 99 (85.3 %) patients in vasopressor and 31 (26.7 %) patients received continuous renal replacement therapy (CRRT). Twenty-four (20.7 %) patients were in postresuscitation status before ICU admission. The ICU, hospital, and 6-month survival rates were 51.7, 31.0, and 15.5 %, respectively. APACHE II score (HR 2.86, 95% CI 1.00–8.15, P<0.050) and need for CRRT (HR 2.14, 95 % CI 1.24–3.70, P<0.007) were associated with ICU mortality in a Coxregression model. Eastern Cooperative Oncology Group (ECOG) performance status (HR 1.64, 95 % CI 1.03–2.62, P<0.010) was associated with poor prognosis, and controlled disease status (HR 0.372, 95 % CI 0.21–0.67, P<0.001) was found to be a good prognostic factor for 6-month survival after ICU admission.

Conclusions: Clinical factors associated with acute, critical status upon ICU admission, such as APACHE II score and need of CRRT, were associated with a higher risk of ICU mortality and short-term mortality than factors directly associated with the patient's cancer. To understand the relationship between ICU admission and long-term survival, however, we have to apply more comprehensive approach that also considers tumor characteristics and disease control status.

Comments:

Strengths/ uniqueness: The poor prognostic markers of survival in ICU include renal dysfunction and deranged parameters on the APACHE II scoring system. This means that the acute critical illness in these predominantly oligometastatic cancer patients affects the survival outcome. It is notable that all those patients who received resuscitation prior to admission to ICU did not survive beyond 6 months.

Weaknesses: Patient selection was mainly oligometastatic patients on active oncological treatments and relatively higher ECOG status. This may not be relevant to many of the late palliative patients who are referred to the Edmonton Palliative care program and may be a lot sicker.

Relevance to Palliative Care: This is an important topic in palliative care, especially in the acute hospital setting when patients are struggling to make decisions regarding resuscitation and ICU care.