'Anticipated ICU admission' for hematology patients – a plea for planning and informing

Diagnosis of hematologic malignancy frequently leads to critical illness and have high associated mortality. However, a new study found that baseline characteristics at diagnosis may help identify patients at higher risk of critical illness, thus informing treatment recommendations and policy planning to prepare critical care services to receive and treat these patients appropriately.

According to this first large population-based cohort study ever carried out on hematologic patients by a group of researchers at the University of Toronto and recently published in Intensive Care Medicine (ICM), admissions in the intensive care unit (ICU) after a new diagnosis of hematologic malignancy range from 7 to 22%.

The Canadian researchers analyzed 87,965 adult patients with a newly diagnosed hematologic malignancy between 2006 and 2017. The objective was to characterize the epidemiology of critical illness after a new diagnosis of hematologic malignancy, describing the cumulative incidence and predictors of ICU admission. The primary outcome was admission to the ICU during the first year after a new diagnosis and one-year mortality for the overall cohort. Secondary outcomes restricted to those admitted to the ICU included receiving mechanical ventilation, dialysis, and ICU and hospital mortality. Furthermore, the investigators described the cumulative incidence of invasive mechanical ventilation and ICU and hospital mortality for each study year.

Several patient-related and treatment factors increased the risk of ICU admission, including **sex, baseline comorbidities, and hematopoietic cell transplant**. Overall hospital mortality for patients admitted to an ICU was 31.0%, although this incidence decreased over time.

"These findings suggest that disease subtypes that are more aggressive – or which require more intensive treatment regimens – are likely to impact on the risk of critical illness", comments Bruno Ferreyro, one of the investigators. "The knowledge that a patient has a high risk of requiring ICU admission during treatment can provide important context in the consent process for treatment. For example, advance care planning would benefit patients who are anticipated to be poor candidates for ICU admission based upon disease characteristics, comorbidities or frailty status. Our results are important for policymakers and health planners, as they demonstrate the high likelihood of expensive ICU treatments after diagnosis," concludes Ferreyro.

"Although they need to be confirmed in other countries and settings, these findings should invite every hospital decision-maker to anticipate the number of ICU beds to dedicate to patients with haematological malignancies", adds Elie Azoulay, of the Saint-Louis Hospital in Paris, in an editorial accompanying the paper[i]. "Moreover, as half these admissions are needed within 30 days of the diagnosis, it is likely that most of the patients with aggressive lymphoma or hyperleukocytic leukaemia, as well as those presenting with acute respiratory failure, acute kidney injury, neurological, liver or heart involvement from disease infiltration and the tumoral burden, will have to be admitted directly to the ICU".

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[i] https://www.esicm.org/wp-content/uploads/2021/09/Unedited-Embargoed-manuscript-Anticipated-ICU-admission.pdf

Notes to Editors:

The paper will be published in "Intensive Care Medicine" on 14 September, 2021 (embargoed until 00:00hrs CEST, Tuesday 14 September):

Pre-embargo link: https://www.esicm.org/wp-content/uploads/2021/09/Unedited-Embargoed-manuscript-Anticipated-ICU-admission.pdf

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