

## **Risk factors associated with early mortality in patients with multiple myeloma in the novel-agents era**

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Although the introduction of novel agents improved the survival outcomes in patients with multiple myeloma (MM), some patients died within less than one year (early mortality, EM) following the diagnosis. In this study, we evaluated the EM rate, and investigated the risk factors associated with EM in MM patients. Retrospective data from 542 patients who were initially treated with a novel agent-containing regimen were analyzed. The median overall survival (OS) for the entire cohort was 56.5 months. The median OS in the 2010-2014 group was longer than in the 2002-2009 group (59.2 months vs. 49.1 months,  $P = 0.054$ ). The rate of EM was 13.8%, and the most common cause of EM was infection and comorbidity. In multivariate analysis, the age-adjusted Charlson comorbidity index ( $ACCI \geq 4$ ), low body mass index ( $BMI < 20 \text{ kg/m}^2$ ), thrombocytopenia, and renal failure were significantly associated with EM. The presence of none, 1, or  $\geq 2$  factors was associated with a 4.1%, 14.3%, or 27.4% risk of EM ( $P < 0.001$ ), respectively. The median OS times were significantly different depending on the presence of factors associated with EM ( $P < 0.001$ ). In conclusion, the  $ACCI (\geq 4)$ , low BMI, thrombocytopenia and renal failure were strong predictors for EM in the novel agent era. These data may help manage MM patients and improve survival.