

## WEIGHT GAIN DURING THE FIRST 10 DAYS POST TRANSPLANTATION IS A RISK FACTOR FOR MORTALITY IN BOTH AUTOLOGOUS AND ALLOGENEIC STEM CELL TRANSPLANTATION

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**Introduction:** Body weight (BW) gain due to fluid overload is commonly observed in the first days after hematopoietic stem cell transplantation (HSCT). There are few studies evaluating whether an increase in BW in HSCT is associated with transplant outcomes. We sought to determine if an increase in BW during the first 10 days post HSCT is a risk factor for decreased survival post-HSCT.

**Methods:** We reviewed the medical records of adult (18+ years old) patients who underwent HSCT at a single center from 2007 until 2014. Information on patients' body weight (BW) was measured daily, starting at admission. The highest BW recorded until the first 10 days post-HSCT (D+10) was used to calculate the BW increase in relation to the baseline BW. We used a cutoff of 7% gain in BW to identify a group of patients with increased risk of death, based on prior analysis of the data. The primary endpoint was overall survival (OS), estimated from the time of HSCT until death, with surviving patients censored at last follow-up. A Cox model was fit to determine variables that predicted OS. Analysis for autologous and allogeneic HSCT was done separately, to better determine the outcomes. Statistical analysis was performed with STATA (v14.0) and alpha error was defined as 5%.

**Results:** A total of 306 consecutive patients were identified, and 14 patients were excluded either because of lack of recorded information on baseline weight or due to death prior to day+10, for a final total of 292 patients, including 154 patients who underwent autologous HSCT (53%) and 138 patients who underwent allogeneic HSCT (47%). In the autologous cohort, 24 (15.5%) patients had a BW gain  $\geq 7\%$  during the first 10 days. These patients had a significantly decreased OS (2 years OS 87.4% vs. 55.7%,  $p < 0.0001$ ). The percentage of patients who needed mechanical ventilation (25% vs. 4%,  $p = 0.002$ ) and intensive care unit (ICU) admission (38% vs. 6%,  $p < 0.0001$ ) was also higher in patients who gained more than 7% BW during the first 10 days. In a multivariate Cox analysis, BW gain after autologous HSCT was a risk factor for decreased OS (Hazard Ratio [HR] 3.45,  $p = 0.01$ ). In the allogeneic cohort, 18 patients (13%) had a  $\geq 7\%$  BW gain by day +10. Similarly, these patients had decreased OS (2 years OS 55.3% vs. 10.3%,  $p < 0.00001$ ), increased need for mechanical ventilation (56% vs. 11%,  $p < 0.0001$ ), hemodialysis (28% vs. 6%,  $p < 0.0001$ ) and ICU care (61% vs. 14%,  $p < 0.0001$ ). In a multivariate analysis,  $\geq 7\%$  BW gain by day+10 was a risk factor for decreased OS in allogeneic HSCT (HR 3.94,  $p < 0.0001$ ).

**Conclusions:** We report here that an increase in BW in the first 10 days post-HSCT is associated with increased mortality and risk of developing complications. Prospective studies to better understand the mechanisms behind increase in BW post-HSCT, including analysis of markers of endothelial damage and inflammatory cytokines are needed.