HIGH-DOSE MELPHALAN ON MULTIPLE MYELOMA-RELATED MUTATIONS, RISK-LEVEL, AND SECONDARY DISEASE BURDEN

Sweeney, Nathan; Ballard, Emily Watabe; Ahlstrom, Jennifer M.

HealthTree Foundation

Background: High-dose melphalan (HDM) with autologous stem cell transplantation (ASCT) has demonstrated significant efficacy for patients with multiple myeloma (MM). Researchers have recently shown that alkylating agents, like melphalan, can lead to an increase in point mutations. In this study, we investigated whether these mutations resulted in an increase in MM-related mutations, risk level, and secondary disease burden.

Methods: Real-world data was collected through HealthTree Cure Hub for Multiple Myeloma (healthtree.org) and sorted into two groups. Group 1: patients that received HDM and aSCT and Group 2: patients that received only chemotherapy. For both groups, we assessed the total number of mutations and risk level (mSMART) before and after treatment and calculated the incidence of secondary disease burden. We utilize a chi-square test to analyze the change in total mutations before and after treatment.

Results: Group 1 (n = 663) had 26% of patients decrease in the total number of mutations after treatment, 63% with no change, and 11% with an increase. Group 2 (n = 146) had 39% of patients decrease in the total number of mutations after treatment, 53% with no change, and 10% with an increase. We found that there was no significant difference in the increase in the total number of mutations after treatments (chi-square 1.648, 1, p-value = 0.19). Furthermore, we observed a similar increase in risk level in both Groups 1 and 2 (65% and 62%, respectively) as well as, incidents of secondary disease burden (ie. amyloidosis, solitary plasmacytoma, secondary plasma cell leukemia).

Conclusions: Data has yet to answer whether increased point-mutational load generated by HDM is bad for patients. However, our results suggest that HDM with ASCT did not increase MM-related mutations, risk level, or secondary disease burden compared to chemotherapy only and indicated that these HDM-related mutations may not be as bad as originally thought.