

Enumeration of HPC in mobilized peripheral blood with the Sysmex SE9500 predicts final CD34+ cell yield in the apheresis collection.

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Enumeration of CD34+ cells in the peripheral blood before apheresis predicts the quantity of those cells collected, although the cytometric techniques used are complex and expensive. We found that a subpopulation of lysis-resistant cells in the peripheral blood, identified by the Sysmex SE9500 and designated as HPC, can serve as a surrogate marker predictive of the yield of CD34+ cells. Spearman's rank statistics were used to examine the correlation between WBC, MNC, HPC and CD34+ cells in the peripheral blood and final CD34+ cell yield for 112 samples of peripheral blood and matching apheresis collections from 66 patients and donors. The results indicate that WBC and MNC in the peripheral blood were poor predictors of CD34 content, while HPC gave a correlation coefficient of 0.62. The positive predictive values of different cutoff levels of HPC in the peripheral blood ranging from 5 to 50 x 10⁶/l increased from 0.80 to 0.93 when the target collection was 1 x 10⁶ cells/kg. However, for patients with HPC levels below various cutoff levels, the proportion of the collections not reaching that target goal ranged between 0.36 and 0.43, indicating that most collections will still exceed the target goal of CD34+ cells. When the target collection was 2.5 x 10⁶ CD34+ cells/kg, the positive predictive value was lower and negative predictive value was higher.

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