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Immature platelet fraction as a predictor of platelet recovery following hematopoietic progenitor cell transplantation

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The immature platelet fraction (IPF) as determined by the Sysmex XE-2100 is a rapid automated measure of the least mature component of the platelet population and is thought to correlate with thrombopoietic activity of the marrow. We investigated the ability of IPF to predict platelet recovery following hematopoietic progenitor cell (HPC) transplantation. IPF was compared to standard parameters of hematopoietic recovery, including the immature reticulocyte fraction (IRF), an early predictor of recovery. Fifty patients undergoing peripheral blood HPC transplantation (38 autologous and 12 allogeneic) were followed daily for 11 to 28 days after transplantation with measurement of IPF, IRF, absolute neutrophil counts (ANC) and platelet counts. Mean days to recovery for IPF was 3.1 days less than for platelet count (P <.0001), 3.8 days less than for ANC (P <.0001), and 0.6 days less than for IRF (P = .0477). IPF recovered at least 1 day prior to platelet count in 79% (38 of 48) of patients, and was followed by platelet count recovery within 1 to 12 days (mean, 4.1 days). When autologous and allogeneic patient groups were analyzed separately, IPF recovered significantly earlier than platelet count and ANC in both groups (P <.0001). Thrombopoietin (TPO) levels in 5 patients receiving transplants correlated with IPF; however, this appeared to be secondary to an inverse correlation of both TPO and IPF with platelet count. IPF is comparable to IRF as one of the earliest predictors of hematopoietic recovery following peripheral blood HPC transplantation. IPF could potentially be useful as a predictor of platelet recovery in other bone marrow failure syndromes.

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