Potentiation of Neutrophil Functions With Administration of Granulocyte Colony-Stimulating Factor to Donors for Granulocyte Transfusions

To the Editor:

In a recent report on effective stimulation of donors for granulocyte transfusions with granulocyte colony-stimulating factor (G-CSF), Caspar et al reported that, in the final product, phagocytosis and chemotaxis toward zymosan-activated serum (ZAS) and random migration of neutrophils from donors after the administration of G-CSF were enhanced to 107%, 111%, and 221% (our calculation according to table), respectively, as compared with those from normal controls. We also investigated the transitional changes in the functions of neutrophils from healthy donors before and after G-CSF administration, collected by venipuncture and leukapheresis (LA). Random migration and chemotaxis toward ZAS and filtrate of Escherichia coli (BCF) were unchanged before LA at 16 hours after the administration of G-CSF, despite significantly increased phagocytosis. In contrast, with phagocytosis being unchanged, chemotaxis toward ZAS, BCF, and random migration of neutrophils collected by LA after G-CSF administration were enhanced by 116%, 146%, and 166%, respectively. These results indicate that stimulated and unstimulated migration were unchanged after the administration of G-CSF and that, during the LA procedure, random migration and chemotactic responses to BCF and ZAS enhanced in this order. Because the LA procedure showed that there is no signifi-
cant difference in the function of neutrophils harvested by continuous
flow centrifugation, the fact that random migration and chemotaxis
of neutrophils enhanced after LA suggests that, during the continuous
flow centrifugation process, secondary cytokines may be released
into circulation in response to G-CSF, which leads to the enhance-
ment in neutrophil migration. Although hyperstimulated neutrophils
with G-CSF may in some circumstances induce tissue disorder like
respiratory distress syndrome,55 transfusion of G-CSF–activated
neutrophils is effective and not harmful for neutropenic patients with
acute myelogenous leukemia complicated with severe infection.

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