preparation of blood smears or bone marrow aspirates and could be used not only in specialized treatment centers but also in community hospitals faced with caring for Ebola virus-infected patients, an event that we must anticipate will recur in the future. Treatment centers in West Africa without reliable electricity to power ovens for heat inactivation of slides could disinfect slides with methanol fixation and/or bleach treatment of stained slides with coverslips prior to shipment elsewhere for clinical diagnosis or research. Heat inactivation could then be applied to the slides at a central laboratory with more advanced facilities.

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References
However, these reports preceded the definition of NK cells and our understanding of the molecular basis of PNH, prompting reassessment. Mosaicism in PNH\(^1\) allows side-by-side functional comparisons of GPI\(^+\) and GPI\(^{-}\) NK cells within individual patients, enabling the assessment of NK cell activity on a per cell basis (Figure 1; supplemental Figure 1, available on the Blood Web site). Despite reports of impaired activity,\(^3,^4\) the GPI-deficient NK cells were proficient at target cell-induced granule exocytosis (Figure 1A-B; supplemental Figure 1). Thus, early findings associating reduced NK cell activity with reduced LGL numbers rather than intrinsic cellular activity are correct.\(^4\) The absolute number of NK cells (and more variably, other lymphocytes) is indeed reduced in PNH;\(^2\) in our cohort of 39 patients, two thirds had NK cell counts below the reference range (Figure 1C), and NK cell numbers were not significantly correlated with neutrophil, monocyte, or platelet counts (supplemental Figure 2). The basis for reduced NK cell numbers in PNH is unclear, although this might be related to impaired chemotactic or homeostatic mechanisms, as we recently reported.\(^8\) Although the activity of GPI-deficient NK cells is unimpaired, a reduction in absolute numbers of NK cells will reduce NK cell activity in the blood as a whole.

Clearly, PNH should not be classified as a functional NK cell deficiency (NKD). Classical NKD is characterized by \(~1/10\) the normal number of NK cells, and counts in most of our PNH patients exceeded this (Figure 1C). Furthermore, the term NKD is reserved for where “the impact upon NK cells need represent the major immunological abnormality in the patient.”\(^9,^10\) In PNH, all hematopoietic lineages are affected because of the presence of \(PIG\) mutations in hematopoietic stem cells.\(^1\) More compelling is the clinical phenotype; the defining feature of NKD is the heightened susceptibility to viruses,\(^3,^6\) which has not been observed in PNH.\(^7,^9,^10\) Instead, infection in PNH is bacterial in origin\(^10\) and likely to be associated with neutropenia secondary to underlying bone marrow failure or associated with use of eculizumab, which increases the risk of infection with encapsulated bacteria normally eliminated by terminal complement components.\(^1\) In summary, the low numbers of NK cells in PNH affect overall cytotoxicity, but this defect is not severe enough to manifest as heightened susceptibility to viral infection as seen in NKD.

**References**


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**To the editor:**

**Comparison of transplantation with reduced and myeloablative conditioning for children with acute lymphoblastic leukemia**

Allogeneic stem cell transplantation (SCT) for patients with acute lymphoblastic leukemia (ALL) is mostly undergone with myeloablative conditioning (MAC) and it could be the major cause of short- or long-term complications such as endocrinologic disorders including hypogonadism or growth hormone-deficient short stature.\(^1,^2\) In recent years, SCT with reduced-intensity conditioning (RIC)
Natural killer (NK) cell function in paroxysmal nocturnal hemoglobinuria: a deficiency of NK cells, but not an NK cell deficiency

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