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SAFETY AND EFFICACY OF THERAPEUTIC EARLY-ONSET GRANULOCYTE TRANSFUSIONS IN PEDIATRIC PATIENTS WITH NEUTROPENIA AND SEVERE INFECTIONS

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Background: Bacterial and fungal infections in profound neutropenia after chemotherapy are associated with high mortality despite appropriate antibacterial and antifungal treatment. Granulocyte transfusions are used as a therapeutic addendum, but concern regarding pulmonary reactions often results in delayed use in clinical practice. Accordingly, many patients are already at advanced stages of their infectious disease once granulocytes are transfused. Thus, we conducted a prospective phase II trial to test the safety and efficacy of therapeutic early-onset granulocyte transfusions in immunocompromised children with neutropenia and severe infections.

Study design and Methods: Twenty-seven children with hematological disorder or malignancy and severe neutropenia with clinically and/or microbiologically documented severe infection unresponsive to standard treatment were included. They received G-CSF-elicited, cross-matched granulocyte concentrates every other day until complete recovery from infection was documented.

Results: A median of two granulocyte transfusions with a median of 8×10^8 granulocytes per kilogram body weight was administered. All transfusions were well tolerated, and no pulmonary symptoms were observed. 92.6% of our patients were able to clear their initial infection, and 81.5% were alive and without signs or symptoms of their infection one month later. All six children with aspergillosis cleared their infection.

Conclusions: G-CSF elicited, cross-matched granulocyte concentrates are a safe and efficient therapeutic addendum in immunocompromised children with neutropenia and severe infections. Early transfusion of cross-matched granulocyte concentrates can lead to an overall response rate of 92.6% without adverse events. Randomized clinical trials with an early-onset design are required to determine appropriate clinical applications