Hematopoietic stem cell transplantation (HSCT) is being used increasingly in the treatment of malignant and nonmalignant diseases. The treatment modality has been proven effective but is not without risks. Studies consistently have identified the need for advanced supportive care (e.g., multiple organ dysfunction, vasopressor use, mechanical ventilation) as a negative prognostic indicator in patients who have received HSCT. Among patients who have received HSCT, 15%–40% require critical care monitoring or advanced support. Nurses on intensive care units can positively impact outcomes for transplant recipients when they possess the specialized skills to recognize and promptly intervene when transplant-related complications arise. This article will provide a basic overview of the HSCT process and outline the complications that may necessitate transfer to a higher level of care for specialized skills and equipment in the intensive care setting.

At a Glance

✦ Critical care monitoring or advanced support may be unavoidable for some patients receiving hematopoietic stem cell transplantation (HSCT).

✦ Care of critically ill patients undergoing HSCT presents a unique challenge to healthcare professionals.

✦ Early recognition and prompt intervention for HSCT-related complications can positively impact outcomes of care.

Overview

The term HSCT is used increasingly by medical professionals to refer to the procedure previously known as bone marrow transplantation to be inclusive of the multiple sources of donor stem cells available for transplantation: bone marrow, peripheral blood, and cord blood. The traditional classification of HSCT is based on the relationship of the donor to the patient. Stem cells used in an autologous transplant are harvested from a patient’s own marrow or peripheral blood, a syngeneic transplant uses stem cells from an identical twin, and an allogeneic transplant uses stem cells from a human leukocyte antigen– (HLA–) identical or closely matched sibling or an unrelated donor.

The list of indications for HSCT has been expanding gradually. The goal of HSCT for patients with malignancy is to rescue their marrow from the toxic effects of chemotherapy, with or without total body irradiation (TBI), permitting the administration of higher and potentially more curative doses of chemotherapy. In contrast, the goal of HSCT in patients with nonmalignant diseases is to replace nonfunctional or failed marrow (Kotloff, Ahya, & Crawford, 2004; Resnick, Shapira, & Slavin, 2005; Shaffer & Crawford, 2004; Resnick, Shapira, & Slavin, 2005; Shaffer & Crawford, 2004).

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