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Nursing Care of Adolescents Undergoing HSCT

Abstract

Autologous bone marrow transplant (ABMT), also known as autologous hematopoietic stem cell transplant (HSCT), is a medical procedure where a patient's own stem cells are collected and later infused back into the patient after high-dose chemotherapy or radiation. This procedure is often used in the treatment of certain cancers, such as neuroblastoma or leukemia, as well as certain non-malignant conditions. Nursing care for a child undergoing autologous bone marrow transplant involves various aspects of physical, emotional and psychosocial support. Here are some key nursing considerations Pre-transplant care education provides age-appropriate education about the transplant process, including what to expect before, during and after the procedure. Educate the child and family about potential side effects, complications and the importance of strict infection control measures. Children undergoing HSCT face lot of challenges and pediatric nurses play a vital role in providing safe and quality care.

Editorial

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Abbreviations

Autologous bone marrow transplant • Chemotherapy • Stemcells • Hematopoietic stem

Introduction

Autologous bone marrow transplant (ABMT), also known as autologous hematopoietic stem cell transplant (HSCT), is a medical procedure where a patient's own stem cells are collected and later infused back into the patient after high-dose chemotherapy or radiation. This procedure is often used in the treatment of certain cancers, such as neuroblastoma or leukemia, as well as certain non-malignant conditions.

Background: Adolescents and young adults (AYAs) with acute lymphoblastic leukemia (ALL) are a unique group of patients at the interface between childhood and adulthood [1]. There is no consensus on the definition of AYAs: the World Health Organization defines adolescents as individuals of 10–19 years old, while the National Cancer Institute defines the AYA population as 15–39 years old [2,3]. In Europe, patients are considered an AYA if they are aged 15–29 years [2]. These differences in age definition affect access to different types of care structures, clinical trials and treatment protocols [2].

Although the survival rate now approaches 90% for childhood ALL, the prognosis remains poorer in AYAs [2,3].

Survival of ALL is triphasic during adulthood, with survival rates of 75% when treated at 17 years, 48% at 20 years and 15% at 70 years—also known as the "survival cliff" [4,5]. The inferior prognosis of ALL in AYAs compared to in children can be explained in part by the age-related variations in the molecular subtypes of all [6]. The frequency of ALL with a T-cell phenotype is about twice higher in AYA compared to younger children (<15 years old) [7].

Hematopoietic Stem Cell Transplantation (HSCT), also known as bone marrow transplant, is a medical procedure used to treat various conditions, including certain cancers, genetic disorders and immune system disorders. The procedure involves the transplantation of hematopoietic stem cells, which can develop into blood cells, to replace or repair damaged bone marrow.

Conditions treated with HSCT in children

Cancer: Leukemias (e.g., acute lymphoblastic leukemia, acute myeloid leukemia), Lymphomas (e.g., Hodgkin lymphoma, non-Hodgkin lymphoma), Neuroblastoma, Sarcomas.

Genetic disorders: Severe combined immunodeficiency (SCID), Wiskott-Aldrich syndrome, Fanconi anemia, Thalassemia, Sickle cell anemia.

Autoimmune Disorders: Juvenile idiopathic arthritis (JIA), Systemic lupus erythematosus (SLE), autoimmune cytopenias.

Stages of Pediatric HSCT

Pre-transplant evaluation: Comprehensive medical and psychological assessment and Compatibility testing for donor selection (autologous, related, or unrelated donor).

Conditioning regimen: Administration of high-dose chemotherapy and/or radiation to destroy diseased cells and suppress the immune system.

Stem cell collection: Stem cells can be collected from the patient (autologous), a matched sibling, or an unrelated donor. Collection methods may include bone marrow harvest or peripheral blood stem cell apheresis.

Transplantation: Infusion of the harvested stem cells into the patient's bloodstream. Engraftment is the process by which the transplanted stem cells begin to produce new blood cells.

Post-Transplant Recovery: Monitoring for complications, such as graft-versus-host disease (GVHD), infections and organ toxicities. Supportive care, including blood product transfusions and medications to manage side effects. [8,9].

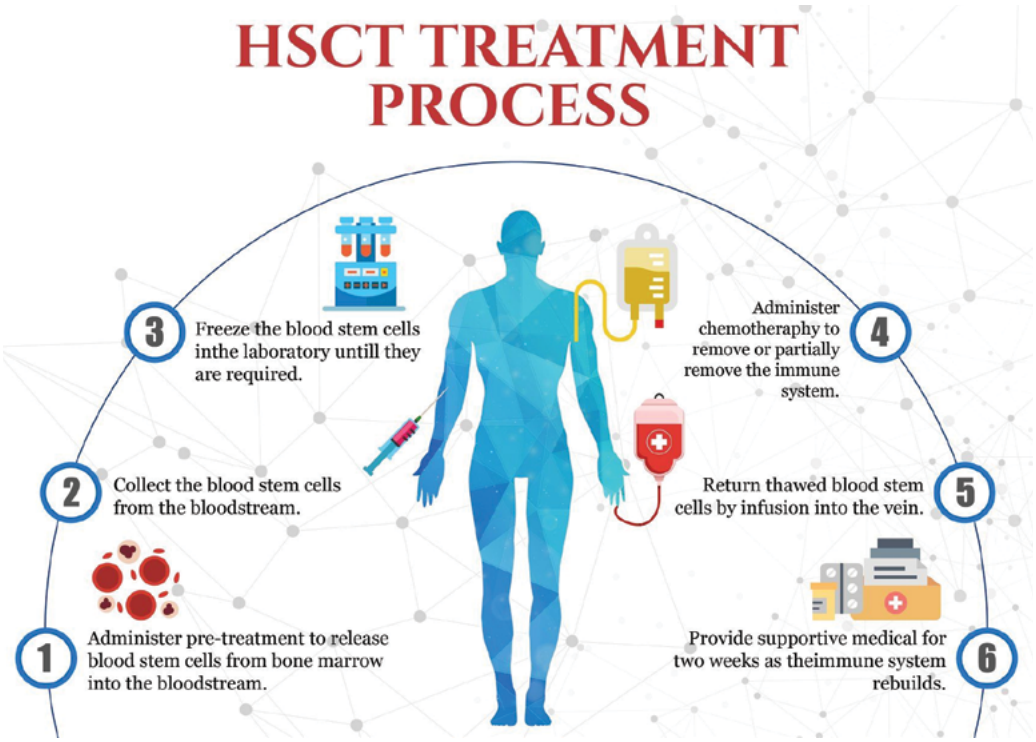

Figure 1.

Nursing care of an adolescent undergoing HSCT

Nursing care for a child undergoing an autologous bone marrow transplant involves various aspects of physical, emotional and psychosocial support. Here are some key nursing considerations:

Pre-transplant care: Education provides age-appropriate education about the transplant process, including what to expect before, during and after the procedure. Educate the child and family about potential side effects, complications and the importance of strict infection control measures. Children undergoing HSCT face a lot of challenges and pediatric nurses play a vital role in providing safe and quality care.

Psychosocial support: Assess and address the child's emotional and psychological needs. Consider involving child life specialists, psychologists, or social workers as needed. Encourage open communication with the child and family members to address fears and concerns.

Infection prevention: Emphasize the importance of infection prevention practices, such as hand hygiene, wearing masks and avoiding sick individuals. Educate the family on the signs and symptoms of infection and when to seek medical attention. Strict adherence to infection control measures due to immunosuppression is very crucial. Prophylactic antibiotics and antifungal medications need to be covered with medical recommendations.

Graft-Versus-Host Disease (GVHD): Monitoring for signs of GVHD, such as skin rash, gastrointestinal symptoms and liver dysfunction. Administration of immunosuppressive medications.

Monitoring: Monitor vital signs regularly and closely observe for signs of complications, such as infection, bleeding, or graft-versus-host disease (GVHD).Perform frequent assessments of the child's skin, mucous membranes and neurologic status.

Pain management: Implement pain management strategies to address any discomfort or pain associated with the procedure and potential side effects. Use age-appropriate pain assessment tools to evaluate and manage pain levels. Regular pain assessment and appropriate pain management strategies are mandatory.

Nutritional support: Collaborate with a nutritionist to ensure the child receives adequate nutrition before, during and after the transplant. Monitor for signs of malnutrition and provide nutritional interventions as needed.

Post-transplant care: Immunosuppression Management: Administer immunosuppressive medications as prescribed to prevent graft-versus-host disease and rejection of the transplanted cells. Monitor for signs of infection and intervene promptly.

Psychosocial care: Continue to provide emotional support and assess for signs of anxiety or depression. Encourage social interactions while maintaining infection control measures. Addressing the emotional and psychological needs of the child and family and encouraging age-appropriate activities and socialization is very crucial.

Hydration and Nutrition: Monitor fluid and nutritional status closely. Collaborate with the healthcare team to manage any complications related to nutrition, such as mucositis or gastrointestinal issues. Assessment of nutritional status and provision of nutritional support. Management of mucositis-related feeding difficulties.

Follow-Up: Schedule regular follow-up appointments to monitor the child's progress and address any emerging issues. Provide ongoing education to the child and family about long-term care and potential late effects of the transplant. Monitoring for late effects and complications. Providing ongoing support for the transition to normal life post-transplant.

Conclusion

Throughout the entire process, effective communication and collaboration with the healthcare team, including physicians, pharmacists and other specialists, are essential to ensure comprehensive care for the child undergoing autologous bone marrow transplant. Regular assessments and adjustments to the care plan based on the child's individual needs and responses to treatment are also crucial.

Conflict of Interest

None.

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