NURSING CARE IN A HEMATOPOIETIC STEM CELLS TRANSPLANTATION UNIT

COORDINATOR NURSE OF B.M.T. 3 CLINIC: Filiz KIZILKAYA
ERCİYES UNIVERSITY SAHİNUR DEDEMAN BONE MARROW TRANSPLANTATION HOSPITAL

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When the person get ill, he/she experience shock, anxiety, stress, sadness

Treatment begins with many test and applications
This period has many challenges for the patient and the family.

- Body image changes
- Solitude
- Pain
- Fear of unknowns
While the transplant process is as well as being the hope light to reach the health for the patient and his family, it is the source of fear and anxiety. It is like a newly opened window to the front.
HEMATOPOIETIC STEM CELL TRANSPLANTATION

Hematopoietic stem cell transplantation is a new treatment period for patients following many of the difficulties experienced in the previous treatment process.
HEMATOPOIETIC STEM CELL TRANSPLANTATION

• The HSCT process is very aggressive and involves the use of chemotherapeutic drugs, radiotherapy sessions, blood transfusions and other treatments, entailing countless risks for the patients' health.

• Thus, in the course of the process, the patient needs specific care to overcome the problems deriving from this treatment.
HEMATOPOIETIC STEM CELL TRANSPLANTATION

• The established hospitalization time for the transplantation is about one month.
• The actual recovery of the bone marrow, however, happens slowly in the course of six to twelve months, when the patient still needs continuous health care and is at risk of development complications, often needing new hospitalizations.
• Consequently, the emotional suffering the transplantation process causes is very significant.
Psychologically, patients, donors, and family also go through phases of coping and adaptation during the process of bone marrow transplantation.
THE ROLE OF THE NURSE IN HSCT

Nurses play a vital role in the care of the patient undergoing bone marrow transplantation, melding state-of-the-art science with clinical care.
The process of bone marrow transplantation can be separated into three phases:

- Pre-transplant period,
- Transplant period,
- Post-transplant period.

The focus of each phase is distinct, yet each clearly overlaps with one another.
NURSING CARE PLAN

Creating the necessary nursing care plans in all periods, the plan should be done careful steps

• Assessment
• Diagnosis
• Outcomes / Planning
• Implementation
• Evaluation
The pre-transplant period is characterized by the

- Identification of an appropriate donor,
- Entry of the patient into the transplant unit,
- Administration of the preparative therapy,
- Management of early toxicities,
- Pre-transplant supportive therapy.
The HSCT process can be physically, mentally, emotionally and spiritually challenging.

Patients, family members, caregivers and health care providers may all feel the increased stress associated with the transplant experience and survivorship.
EDUCATION

• Providing patients and their families with timely, detailed, culturally relevant education is critical to achieving the best outcomes, higher patient and family satisfaction, and high levels of adherence.

• For this reason, the most important responsibility of the nurse in this process is;

---Patient and family education about treatment steps, prevention of infections and complications,

---to communicate well
EDUCATION

- Risks associated with pancytopenia,
- Graft-versus-host disease,
- Electrolyte and blood product deficiencies
- Replacement regimens,
- Follow-up appointments,
- Post discharge care, are all crucial aspects of patient education
Nurses must assess health literacy and verify that patients and caregivers understand these complex concepts using the teach back method to promote optimal outcomes.
Hematopoietic stem cell transplantation patients need many protective isolation methods in the treatment with the cause of immunosuppression. This practice can cause some negative emotions in patients.

- Patient room; Hepa filter, positive pressure, should be single room
- Room door must be kept closed

**ISOLATION**
ISOLATION

Stressors of protective isolation include:

- Loss of control,
- Lack of physical contact,
- Sleep deprivation,
- Regimented care,
- Restricted activity
ISOLATION

Resulting psychological effects of these stressors may include:

• Regressive behavior,
• Anxiety over minor procedures,
• Depression,
• Sleep disturbances,
• Excessive demands on staff and family,
• Noncompliance.

Understanding the emotional responses to isolation is an essential component of the nursing care.
ISOLATION

- Patients adapt better to the isolation when educated as to the rationale for its use and the importance to its adherence.
- Many studies in this area have shown that nurses have an important role in overcoming the negative feelings of isolation.
CENTRAL VENOUS CATHETER

Hematopoietic stem cell transplantation therapy;

• Implementation of chemotherapy,
• Stem cell collection,
• For applications such as stem cell infusion
• Blood collection for daily blood tests
• Nutritional support,
• Blood transfusion,
• Other treatments need to be inserted central venous catheter to patients
CENTRAL VENOUS CATHETER

- This application adversely affects the patient's body image
- The reasons for catheterization to the patient and the family should be well explained and training on catheter care should be provided.
- Although widely used, the central catheter exposes the patient to complications, such as bloodstream and other infections.
CENTRAL VENOUS CATHETER

Therefore, care for its maintenance is fundamental, such as

• Cleaning,
• Inspection and palpation of the insertion site and exit ostium,
• Application of a sterile occlusive dressing,
• Disinfection and control of the expiry date of connections,
• As well as strict control of the solutions infused

Nurses should be well trained in this area and should follow and manage the complications that may arise.
• The findings of infection of the donor and the blood parameters are evaluated by the apheresis unit,
• It is informed about growth factor application and cell collection process,
• During growth factor application, side effects should be taken into account
• Psychological support should be given to resolve the worries
• Patient - donor blood groups are determined and blood groups to be transfused are determined during the transplantation period.
The transplant process begins after the treatment protocol has been established;

- In this process the nurses should be informed about the treatment process and side effects of the patient and the family,
- Premedication therapy should be performed
- Should be familiar with the interactions of the drugs in the protocol with the other treatments
- Of the patient with close monitoring of the patient during infusion, take the necessary precautions for side effects.
THE DAY OF TRANSPLANTATION

Patient education:

• When will the product be given
• Applications to be made during infusion
• The patient is informed about the complications that may develop
Prior to administering the product, the nurse should ensure that the proper equipment, supplies and medications are immediately available for use in a hypersensitivity or anaphylactic reaction.
Typically, the nurse pre-medicates the patient with intravenous steroids and antihistamine to prevent an adverse reaction to the product or to the preservative used (if the cells are frozen).
TRANSFER OF THE STEM CELL FROM THE APHERESIS UNIT
THE DAY OF TRANSPLANTATION

The product information is checked and stem cell receive by the doctor and two nurses.
THE DAY OF TRANSPLANTATION

- During administration of the cells, the nurse must vigilantly monitor the patient's condition, including taking frequent vital signs.
- Stem cell infusion is provided in accordance with infusion rules.
THE DAY OF TRANSPLANTATION

• Some patients may experience nausea, fever, rigors, flank pain, hematuria, metallic taste, hypertension, chest pain, dyspnea or fluid overload during the transplant.

• Throughout the procedure, the nurse monitors the patient, assesses his/her general condition, periodically controls the vital signs and observes possible secondary reactions.

• Psychological support is provided to the patient
THE DAY OF TRANSPLANTATION

All steps and complications after the procedure are recorded
THE POST-TRANSPLANT PERIOD

The post-transplant period includes the;

• Transplant itself,
• Acute complications related to the transplant and/or the chemotherapy/irradiation regime,
• Post-transplant support during profound pancytopenia and immunosuppression.

The length of time from transplant to engraftment is influenced by a number of variables, including the cell source and the patient's physiologic status.
POST-TRANSPLANT NURSING CARE

• During the immediate post-transplant period prior to engraftment, patients may experience:
  --- nausea,
  --- vomiting,
  --- diarrhea,
  --- xerostomia,
  --- oral mucositis,
  --- esophagitis and pancytopenia.

• Nursing actions may include administration of:
  antiemetics, anti-diarrhea, immunosuppressants, growth factors, analgesics and blood products.
POST-TRANSPLANT NURSING CARE

• Patient education during this time is crucial to reducing anxiety and engaging patients in their care.

• Nurse-led education for patients should include the daily plan of care, which encompasses obtaining laboratory values, replacement of electrolytes, nutrition, symptom control, blood component administration, pain management, activity, and prevention of falls, infection and bleeding.
POST-TRANSPLANT NURSING CARE

Daily examination, symptom management and follow-up of vital findings

During general care, the nurses observe, listen and communicate their impression so as to put order in the situation momentarily, temporarily or definitively.
In the context of HSCT, the nurses deliver care to patients with severe health problems and are apt to attend to specific complications of transplantation and to deliver specialized care involving catheter maintenance, care for mucositis, skin, medication infusion and isolation methods.
POST-TRANSPLANT NURSING CARE

ORAL CARE

• The findings are recorded by performing daily intraoral examination
• Mucositis and pain are assessed
• Maintenance for signs and symptoms
• Nutritional level is determined and enteral-parenteral nutrition is provided if necessary
POST-TRANSPLANT NURSING CARE

**CATHETER CARE**

- Daily findings should be recorded and assessed
- Culture should be taken if infection is detected
- Irrigation with serum salin after every use
- Use a silicone cap at the catheter entry site
- Catheter caps must be disinfected with 70% alcohol before use
- Necessary protection must be provided during shower
POST-TRANSPLANT NURSING CARE

- Daily bath according to blood parameters
- Daily change of clothes
- Hygiene rules must be applied.

personal hygiene
POST-TRANSPLANT NURSING CARE

FOLLOW-UP OF DAILY LABORATORY TESTS

• Determination of blood transfusion need
• Provision of electrolyte support
• Monitoring liver function values for GVHD
POST-TRANSPLANT NURSING CARE

Nutrition and fluid intake should be assessed

- Oral intake should be assessed
- Weight follow-up
- Necessary hydration must be provided
- Complications should be assessed on a daily basis and necessary applications should be made
- Enteral and paranteral nutrition needs are determined
RISK OF BLEEDING

• Nursing responsibilities include assessment of the patient to determine the need for transfusions, cross checking for appropriate blood products, safe administration of the product, and monitoring patient responses.

• After HSCT, patients are susceptible to hemorrhage and may exhibit symptoms of altered mental status, hemoptysis, hematuria, hematemesis, melena or icteric hemorrhage.
RISK OF BLEEDING

• Altered mental status or neurological deficits may indicate an intracranial bleed.
• Highly attentive nursing care can identify subtle changes in patient status, prompting physician notification and orders for state imaging.
• Nurses involved in HSCT must be vigilant with infection prevention because this patient population is vulnerable to opportunistic infections that may result in sepsis.

• Thorough head-to-toe nursing assessment can identify early infection and timely nursing intervention may prevent sepsis and save lives.
GVHD

• The potentially life-threatening allogeneic HSCT complication of acute GVHD occurs when the donor's T-lymphocytes damage the host's tissues.

• Skilled nursing assessment is crucial to the early diagnosis and treatment of GVHD and may lead to improved outcomes.

• Patients diagnosed with GVHD may experience high-level anxiety, which nurses may alleviate by providing emotional support and thoroughly explaining the prescribed diagnostic testing, treatments and side effects.
POST-TRANSPLANT NURSING CARE

• Nursing implications include thorough head-to-toe assessment, laboratory value monitoring and evaluation of vital sign trends to identify the early signs of organ dysfunction.

• Nursing care may include frequent transfusions of blood and platelets and administration of growth factors, immunosuppressants, antibiotics, antivirals and antifungals.
THE LATE POST-TRANSPLANT PERIOD

The late post-transplant period is characterized by preparation for discharge, late complications related to the preparative therapy and/or transplant process, and management of prolonged immunosuppression.
Nurses are challenged to use their clinical judgment to its highest capacity and to provide psychosocial support for patients and their families during their transplant journey.

Patients and families are sometimes faced with making end-of-life decisions that transition patients from complex, curative-focused treatment to palliative or hospice care.

Nurses offer support during these difficult situations and serve as patient advocates to ensure that a patient's wishes are fulfilled.
THE LATE POST-TRANSPLANT PERIOD, NURSING CARE

• Complications of HSCT are associated with a high morbidity and mortality and require highly skilled, specialized nursing care.
• HSCT nursing stimulates nurses to use high-level critical thinking and clinical judgment because complications may affect any organ system.
• Moreover, nurses provide holistic care to patients and families who may endure prolonged, complicated treatment courses accompanied by substantial uncertainty about the future.
DISCHARGE PERIOD

• Routine discharge planning and patient education should begin on admission.
• In the post-transplant period, discharge criteria are usually met when the patient has engrafted, when nausea, vomiting, diarrhea and pain are controlled, and when no active infection has been detected.
DISCHARGE PERIOD

- Patients are discharged without major complications at an average of 21 to 30 days after admission.
- Follow-up clinic appointments are scheduled to review laboratory values and replace fluids, electrolytes or blood products.
- Initially, patients may be seen frequency in the clinic.
- The frequency of visits decreases as the need for blood and electrolyte replacement declines.
DISCHARGE PERIOD

- Acute complications may appear post-transplant during the initial admission, or patients may be re-admitted from the clinic or through the emergency department after discharge.
- The first 100 days post-allogeneic transplant pose the highest risk for acute complications because of prolonged pancytopenia, chemotoxicity, graft-versus-host-disease (GVHD) and immunosuppressive medications.
Life-threatening complications include opportunistic infection-induced sepsis, respiratory failure, renal failure, acute GVHD, liver failure, neurotoxicity from tacrolimus, hemorrhagic emergencies, and cardiac toxicity.
DISCHARGE PLANNING

The applications during discharge are a very important step in reducing the complications in the later period of treatment.
IMPLEMENTATION OF DISCHARGE PLANNING

• The management of the discharge of the patient is the most important step of the nursing
• This process is an important step in patient care
• Patient’s and patient's family play an important role in contributing to care outside the hospital.
• Caregivers may also experience fatigue, insomnia, stress, anxiety and depression
DISCHARGE PLANNING

• Ensure sharing of the patient's personal responsibilities and roles

• Evaluate personal living environment and inform the family to arrange inappropriate situations for the patient and take necessary measures
DISCHARGE PLANNING

• The possibility of financial difficulties due to the patient's inability to continue working life should be assessed and informed about social support units

• The patient and the family should be informed in the process close to the discharge and time for the necessary preparations at home

• This process is a process in which stress and anxiety for the patient and the family are high
PATIENT EDUCATION DURING DISCHARGE

Discharge education covers the following subjects;

• Social life
• Personal hygiene and infection precautions
• Nutrition and fluid intake
• Properties of the living area
• Usage of medicines
• Central venous catheter care
• Post-discharge control periods
• Follow-up complications that may develop
• Emergencies that may develop
• Communication steps in emergency situation
• Sexual life
• Sports activities that can be applied
• Smoking and alcohol use
PARTICIPATE IN RESEARCHES

Another important role for nurses in this area is to participate in studies on hematopoietic transplantation to ensure that the data obtained during the treatment process are assessed so that patients can receive strong and specific care.
• The role of the HSCT nurse may be fulfilling, yet nurses may also experience compassion fatigue or moral distress when they perceive that patients with poor prognoses are receiving futile care.
• Nurses must engage in self-care activities and develop their self-awareness to prevent burnout and to promote longevity in their profession.
• The nurses' contribution to successful transplantations is undeniable
THANK YOU