Chapter 81

Management of Clients with Leukemia and Lymphoma
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Leukemia
- Malignant disease of blood-forming organs
- Most common malignant disease in children and young adults
- Acute (50%)
  - Rapid onset
  - Progression of disease
  - 100% Mortality in days to months without appropriate therapy
- Chronic
  - Children 80% are lymphocytic and 20% are nonlymphocytic
  - Adults %’s are reversed
Etiology and Risk Factors

- Cause of leukemia is unknown
- Risk Factors include:
  - Genetic factors
  - Exposure to ionizing radiation & chemicals
  - Congenital abnormalities
  - Presence of primary immunodeficiency and infection with the human T-cell leukemia virus type 1 (HTLV-1)

Pathophysiology

- Leukemia is an uncontrolled proliferation of leukocytes.
- Normal bone marrow is replaced with immature and undifferentiated leukocytes or blast cells
- Immature leukocytes circulate and invade the blood-forming organs such as the liver, spleen and lymph nodes.
- Universally accepted system for identification of leukemia is French-American-British Cooperative Group (FAB System)

Acute Lymphocytic Leukemia (ALL)

- L1 - most frequently occurring form of ALL (85%) in children and adults.
- L2 - occurs more frequently in adults.
- L3 - Burkitt's lymphoma is more often observed in children and young adults than older persons but overall is an infrequently occurring form of ALL.
Acute Myelocytic Leukemia (AML)

- **M1** - acute myeloblastic leukemia - represents 10% of acute myelocytic leukemia - common in adults - prognosis is poor with survival 6 months to 2 years.
- **M2** - myeloblastic leukemia with maturation - is a subclassification with more maturation observed in granulocytes.
- **M3** - acute promyelocytic leukemia - approximately 10% of acute myelocytic leukemia. DIC is frequent complication. Patient who survive DIC have a similar prognosis to M1.
- **M4** - acute myelomonocytic leukemia - constitutes 20% of acute myelocyte leukemia. Prognosis is longer than M1, M2, or M3.
- **M5** - acute monocytic leukemia. This is a subclassification and represents 10% of all acute myelocytic leukemia. It has a very poor prognosis, 6-12 months.
- **M6** - erythroleukemia - This leukemia represents less than 10% of all acute myelocytic leukemia. It has a prognosis similar to M1.

Chronic Myelocytic Leukemia (CML)

- This leukemia is most frequently seen in patients between 25 and 50 years of age. It can progress to acute myelogenous leukemia or acute myelofibrosis.
- The whole spectrum of the granulocytic series is seen.

This page contains information about acute and chronic myelocytic leukemia, detailing the subtypes and their characteristics.
Chronic Lymphocytic Leukemia (CLL)

- This leukemia is most frequently seen in the elderly.
- The median onset age is 65 years. The predominate cell is the mature lymphocyte. This leukemia can also transform to the acute form, thus making the prognosis poor.

Clinical Manifestations

- Figure 81-2, p. 2405
- Anemia: fatigue/weakness
- Thrombocytopenia relates to bleeding
- Leukopenia
- Fever caused from infection
- Chronic Infection
- Anorexia/Weight Loss
- Headaches/CNS changes
- Papilledema
- Enlarged organs
- SOB/Cough/Chest Pain
- Joint and Bone Pain

Diagnostic Findings

- CBC
- Bone Marrow Aspiration (BMA)
- Lumbar Puncture (LP)
- CT Scan
- Biopsy (Needle)
- Chromosome Analysis
Medical Management
Acute Leukemia

- Chemotherapy (3 Phases)
  - Induction Phase
  - Consolidation Phase
  - Maintenance Phase (usually only with ALL)
- Radiation
- Complications
- Goal: Complete remission with restoration of normal bone marrow function.

Medical Management
Chronic Myelogenous Leukemia

- Stem cell transplantation
- Interferon alpha therapy
- Single agent chemotherapy
- Use of specific tyrosine kinase inhibitors
- Goal: to control leukocytosis and thrombocytosis
- Treatment Choices

Medical Management of Chronic Lymphocytic Leukemia

- Antibiotics
- Transfusions of RBC’s
- Injections of gamma-globulin
- Leukapheresis
- Chemotherapy
- Goal: Palliation or control of undesired manifestations
Nursing Care of the Client with Leukemia

- Assess risk for infection
- Assess risk for hemorrhage
- Fatigue
- Imbalanced Nutrition
- Disturbed Body Image

Lymphomas

- Tumors of primary lymphoid tissue (thymus and bone marrow)
- Or
- Secondary tissue (lymph nodes, spleen, tonsils and intestinal lymphoid tissue)
- Most are neoplasms of secondary lymphoid tissue and involve the lymph nodes, spleen or both
- Hodgkin’s Disease (HD)
- Non-Hodgkin’s Disease (NHL)
Hodgkin's Disease

Etiology

- Reed-Sternberg cells (giant cells)
- Exact cause is unknown; although indirect evidence indicates a viral cause
- Epstein-Barr virus is believed to be a causative agent
- Genetic predisposition
- Occurs frequently in Jewish Population

Clinical Manifestations of HD

- Page 2412; Figure 81-5
- Often asymptomatic
- Local manifestations are caused by pressure or obstruction
- Non-productive cough (mediastinal mass present in about 50% of cases)
- Pericardial involvement
- Spinal cord involvement
- Drenching night sweats
- Fever above 38°C
- Pruritus

Diagnostic Procedures

- Lymph node and bone marrow biopsy
- Chest x-ray
- CT Scan (thoracic, abdominal, pelvic)
- Gallium Scan or mediastinal or hilar lymph nodes
- Lymphangiography of lower extremities
- Staging laparotomy
Staging of HD

- Cotswold Staging Classification for Hodgkin’s Disease
- P. 2413; Table 81-2
- Accurate staging is important for determining treatment options

Medical Management of HD

- Adult HD is one of the most curable malignancies
- Combination chemotherapy
  - MOPP; ABDV
- Radiation therapy alone or combined with chemotherapy

Complications of HD

- Table 81-3, page 2414
- Thyroid dysfunction
- Sexual dysfunction
- Herpes zoster or Varicella
- Pulmonary dysfunction
- Cardiac dysfunction
- Dental caries
- Myelodysplastic syndrome
- Non-Hodgkin’s lymphoma
- Solid tumors
Non-Hodgkin’s Lymphom (NHL) Etiology

- Common origin lymphoid cells
- No hereditary, ethnic or dietary risk factors have been associated with NHL.
- Increased risk associated with:
  - Immunodeficiency states
  - Autoimmune disorders
  - Infectious chemical and physical agents
  - Viral or bacterial cause has been implicated
    - EBV, human herpes virus, H pylori, HTLV-1

NHL Staging Classification

- P. 2415; Table 81-4
- Nodular pattern involves nodal and extranodal sites
- Diffuse pattern does not show the cell aggregates that are evident in the nodular pattern.
- REAL

NHL Clinical Manifestations

- Localized or generalized lymphadenopathy
- Extranodal sites involved
- Night sweats
- Fever
- Weight loss
- 1/3 of cases have hepatomegaly and splenomegaly
Diagnostic Procedures NHL

- Bloodwork: CBC, ESR, peripheral smear,
  - LDH, HIV, renal and liver function
  - Blood cultures and other serologic studies
    for viral and autoimmune diseases
- Lymph node biopsy
- CT
- MRI
- Bilateral bone marrow biopsies

Medical Management of NHL

- Treatment varies based on stage and histology
  of tumor.
- Combination Chemotherapy
  - CHOP
- Radiation therapy
- Prophylactic CNS therapy
- Monoclonal antibodies for relapse
- Vaccines
- Stem-cell Transplant

Bone Marrow Transplantation

- May be considered for the treatment of:
  - Aplastic anemia
  - Malignant disorders
  - Non-malignant hematologic disorders
  - Immunodeficiency disorders
Major Types of Bone Marrow Transplantation

- Allogenic: obtained from a donor having close HLA (histocompatibility) type (carries highest rate of morbidity and mortality. Obtained from a relative or unrelated donor.
- Autologous: removed from intended recipient during remission phase of the disease; relapse is a frequent occurrence. Eliminates GVHD and graft rejection.
- Syngenic Bone Marrow: marrow donated by an identical twin. High incidence of leukemic relapse.

HLA Types

- Cell surface proteins
- Siblings have a 1 in 4 chance of identical match
- Unrelated donors have a 1 in 5000 chance of identical match

Graft-versus-host Disease

- Acute: usually affects gut, skin, lungs or liver (Stage 1 GVHD)
- Chronic: long term form of the disease with less acute manifestation. May affect the liver, GI, oral mucosa, lungs or skin.
(Oh, I sure don’t get along well with my nursing instructor, Dr. Smith."

"This time I’m going to get in ahead with my instructor right away!"

"Congratulations! When is your baby due?""

Happy, baby!"

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