Caring for the Client with Disorders of the Hematopoietic System

Terms you’ll need to understand:
✓ Dyspnea
✓ Fatigue
✓ Hemarthrosis
✓ Pallor
✓ Otitis media
✓ Tachypnea
✓ Upper respiratory infections
✓ Hemolysis
✓ Jaundice
✓ Paresthesia
✓ Leukopenia
✓ Thrombocytopenia
✓ Pruritis
✓ Tinnitus

Nursing skills you’ll need to master:
✓ Performing a blood transfusion
✓ Administering platelets
✓ Performing Z track IM technique
Anemia

When anemia occurs, people have a decrease in the number of red blood cells or a decrease in the ability of these red blood cells to carry oxygen. The causes and symptoms of anemia are listed here:

➤ Increased red blood cell destruction
➤ Blood loss
➤ Poor dietary iron intake
➤ Poor absorption
➤ Parasites

Symptoms of anemia:
➤ Fatigue
➤ Pallor
➤ Tachypnea
➤ Cardiac changes
➤ Dyspnea

Children with persistent anemia may experience frequent bouts of otitis media and upper respiratory infections.

Pernicious Anemia

In pernicious anemia the intrinsic factor is missing, resulting in an inability to absorb vitamin B12. Pernicious anemia is common in the elderly and clients who have had a gastric resection. Symptoms of pernicious anemia include

➤ Pallor
➤ Jaundice
➤ Smooth, beefy red tongue
➤ Fatigue
➤ Weight loss
➤ Paresthesia

The treatment for this is the administration of injections of vitamin B12.

For the exam, you should know the names for the various B vitamins:
➤ B1 (thiamine)
➤ B2 (riboflavin)
➤ B3 (niacin)
➤ B6 (pyridoxine)
➤ B9 (folic acid)
➤ B12 (cyanocobalamin)

Aplastic Anemia
This type of anemia occurs when there is depression of the blood-forming elements of the bone marrow. The symptoms of aplastic anemia are as follows:
➤ Decreased erythrocytes
➤ Leukopenia
➤ Thrombocytopenia

The causes of aplastic anemia are
➤ Drug toxicity
➤ Radiation exposure

Treatments of aplastic anemia include
➤ Identifying and removing the offending agent
➤ Performing bone marrow transplant

Sickle Cell Anemia
A client with sickle cell anemia has red blood cells that have an abnormal crescent shape, causing an impairment in tissue perfusion. Low oxygen levels can cause the client’s cells to sickle. Due to this, these cells cannot properly circulate through the system. The most common crisis these clients have is vasocclusive crisis, in which the client has a lack of oxygen to a specific area causing hypoxia and necrosis to that area. Because of the mother’s normal blood, these clients are rarely diagnosed prior to age 6 months. The treatment for sickle cell anemia is listed here:
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➤ H—Heat
➤ H—Hydration
➤ O—Oxygen
➤ P—Pain relief

The vasocclusive crisis is the only crisis type that causes the client to have pain.

Morphine is the drug of choice for acute pain in sickle cell anemia. Meperidine is contraindicated due to the possibility of central nervous system stimulation in these clients.

Iron Deficiency Anemia

There is a simple lack of iron in this disorder. The cause may be the result of poor dietary intake of iron sources. The symptoms of iron deficiency anemia are the same as general anemia. There are a few for severe, prolonged anemia that are different (included here):

➤ Brittle nails
➤ Corner of the mouth ulcers
➤ Sore tongue

The treatment for iron deficiency anemia is as follows:

➤ Increasing dietary intake of iron (good sources of iron include egg yolk; green, leafy vegetables; iron-fortified cereals; peanut butter; raisins; and liver)
➤ Administering iron supplements by mouth or intramuscularly

Intramuscular iron (Imferon) is given through the IM Z track method.
Cooley’s Anemia (Thalassemia Major)

This disorder is inherited as an autosomal recessive disorder. This client’s red blood cells are destroyed prematurely. Note that this disease is mainly found by lab results. The treatment for Cooley’s anemia includes frequent blood transfusions.

Hemophilia

In this disorder an abnormal clotting pattern occurs, resulting in an ineffective clot. Hemophilia is inherited as a sex-linked disorder. The mother passes this disorder to her male children. Clients lacking factor VIII have hemophilia A; clients lacking factor IX have hemophilia B. The symptoms of hemophilia include

➤ Bleeding and bruising easily
➤ Hemorrhaging from minor cuts
➤ Joint hemorrhages
➤ Post-operative hemorrhaging

The complications are as follows:

➤ Internal bleeding
➤ Intracranial bleeding
➤ Hemarthrosis

Cryoprecipitates are no longer used because HIV and hepatitis cannot be removed. Treatment of hemophilia includes the following: DDAVP for mild hemophilia and Von Willenbrand disease, purified factor VIII concentrate (monoclonal), and recombinant factor VIII concentrate (which is sold as a drug, not as a drug product). These three products are the only recommended treatments for controlling the bleeding associated with hemophilia.

Polycythemia Vera

This disorder is characterized by thicker than normal blood. With polycythemia vera, there is an increase in the client’s hemoglobin of 18 g/dL, RBC of 6 million/mm, or hematocrit at 55% or greater. The following are some symptoms of polycythemia vera:
➤ Enlarged spleen
➤ Dizziness
➤ Tinnitus
➤ Fatigue
➤ Paresthesia
➤ Dyspnea
➤ Pruritis
➤ Burning sensation in fingers and toes

Treatments of polycythemia vera include
➤ Phlebotomy
➤ Hydration
➤ Anticoagulant therapy

Diagnostic Tests for Review

The diagnostic tests for the client with hematopoietic disorders are the same as any other routine hospitalization of a client (CBC, urinalysis, and chest x-ray). Specific tests, such as the Schilling test for B12 deficiency, are used to evaluate certain disorders. These tests need to be reviewed prior to taking an exam for a better understanding of the disease process:

➤ Schilling test
➤ CBC with differential
➤ Hemoglobin electrophoresis

Pharmacology for Review

The client with a hematopoietic disorder will receive a number of medications to stimulate red blood cell production and replace needed vitamins or nutrients. Analgesics are also a requirement for the pain associated with some
diseases. You’ll need to review certain drug classifications prior to the test for knowledge of their effects, side effects, and adverse reactions:

➤ Antianemics
➤ Analgesics
➤ Vitamins