Avery Tubbs

Unit 7: Hematology
Chapter 29 & 30
ONLINE CONTENT (1.5 H)

Complete the worksheet and submit in the Unit 7: Hematology dropbox by March 20, 2023 at 0800. Please be sure to bring a copy to class on March 20, 2023.

Table 1	**Iron Deficiency Anemia**	**Thalassemia**	**Cobalamin (Vitamin B_{12}) Deficiency**	**Folic Acid Deficiency**
Etiology	It can develop due to dietary deficiency of iron, blood loss, hemolysis and malabsorption.	There is an inadequate production of normal hemoglobin, this results in a decrease in RBCs. It is autosomal recessive.	This can be caused as a result of decreased intrinsic factor, which inhibits cobalamin absorption. It can be common in those that have had GI surgery. May be caused by chronic alcohol use as well.	Can be caused by chronic alcoholism dialysis, malabsorption syndromes, and pregnancy. Some medications can also inhibit proper absorption of folic acid. Dietary deficiency can also be the cause.
Clinical Manifestations	If it is early, the patient may not have any symptoms. However, as time goes on the patient may appear to be pallor, have an inflamed tongue and/or lips, headache, paresthesia, and a burning tongue	Thalassemia minor is typically asymptomatic, with the possibility of being pale with bronzed skin. Whereas thalassemia major can result slowed in physical and mental growth. They are often pale or have jaundice with splenomegaly with chronic bone marrow hyperplasia. This can lead to cardiac complications.	The tongue may present as red and shiny and may be sore. Patients may experience nausea/vomiting and abdominal pain. Weakness and paresthesia in the feet is common. Ataxia, and impaired though process may also occur. It can take up to a few month to develop symptoms.	Include very similar symptoms to cobalamin deficiency. Some other GI issues may include diarrhea, dysphagia, stomatitis, gas, and cheilosis. If the patient has concurrent thiamine deficiency, they may also exhibit neurologic issues.
Diagnostic Studies	-Low Hgb/Hct, serum iron, ferritin and MCV -Increased TIBC -Other blood values may appear normal	-Decreased Hgb/Hct, TIBC, transferrin, and folate. -increased reticulocytes, serum iron, and bilirubin -normal or	-low Hgb/HCT and serum B12. -increased MCV, ferritin, and slightly increased transferrin. -normal or decreased reticulocytes	-decreased Hgb/Hct, and folate -increased MCV and ferritin with slightly increased transferrin -normal or increased serum iron and

		decreased MCV -normal or increased ferritin -other values normal	-normal or increased serum iron and bilirubin -other values normal	bilirubin -normal or decreased reticulocytes -other values normal
Drug Therapy	Patients may benefit from taking oral iron supplements 9150-200 mg daily). Typically given PO in some cases it may need to be given parenterally.	There are no drugs that are sufficient to treat thalassemia. Many times, it can be managed with blood transfusions and chelation therapy. Ascorbic acids can help increase the absorption of iron if taken in conjunction with chelation therapy.	May get parenteral B12 therapy if patients lack intrinsic factor. Many times, cobalamin is given IM 1,000 mcg/day for about 2 weeks and then weekly after that. They may take cobalamin orally or sublingually as well.	It is treated with a replacement therapy, typically 1mg/day PO.
Nursing Management	This would include teaching patients to intake foods that are high in iron. They may also need to educate patients on iron supplements or infusions. Should give iron supplements about an hour before meals and also can be taken with vitamin C. If liquid, may need to dilute. Should encourage pt to remain upright for 30 mins after taking iron.	Really want to monitor for iron deficiencies as well as zinc deficiencies. Monitor hemoglobin levels to keep them above 10 g/dL.	Ensure to assess for neurological issues that may not have gone away after treatment. Maintain safety precautions as they may not be able to feel very hot or cold temperatures.	Patients should be educated to eat foods that are high in folic acid such as beans, dark leafy greens, and peanuts.

Table 2	**Anemia of Chronic Disease**	**Aplastic Anemia**	**Acute Anemia due to blood loss**	**Chronic Anemia due to blood loss**
	Typically caused	This is often times	This is caused by a	This is typically

Etiology	by cancer, autoimmune diseases and infections as well as heart failure. Chronic inflammation can also cause this. Overall, there is are not enough red blood cells being produced. These RBCs are also experiencing a shorter lifespan.	caused by autoimmune activities from T lymphocytes. The T cells destroy the pts hematopoietic cells. This can result from drugs, chemicals, injury, etc.	sudden hemorrhage where the client loses a lot of blood. This can be from surgery or major trauma. If occurring slowly, there will be a low RBC concentration, if it occurs quickly, it will likely cause hypovolemic shock.	due to conditions that cause the patient to lose blood over time such as menstrual cycles and ulcerations that are bleeding. This typically causes a decrease in iron within the body.
Clinical Manifestations	Fatigue, pallor, and SOB can all occur. The patient may also be lightheaded or may experience chest pain.	Manifestations are similar to those of regular anemia including shortness of breath and fatigue. There may also be cardio and cerebral manifestations. Neutropenia and thrombocytopenia may occur.	The symptoms are typically caused by the degree of blood loss. The more blood lost, the more severe the symptoms. These can include tachycardia, postural hypotension, low cardiac output, rapid thready pulses and pallor with cool skin. If it gets very bad, it can lead to lactic acidosis and possibly death.	There may be paleness and fatigue, but in some cases there may not be detectable symptoms other than lab values.
Diagnostic Studies	-decreased Hgb/Hct, TIBC -normal or decreased MCV, reticulocytes, serum iron, transferrin -normal or increased ferritin -other values normal	-decreased Hgb/Hct, reticulocytes -normal or increased MCV, serum iron, TIBC -other values normal	-low Hgb/Hct -normal or increased reticulocytes -normal or decreased MCV -other values normal	-low Hgb/Hct, MCV, serum iron, TIBC -normal or increased reticulocytes -normal or decreased bilirubin -other values normal
Drug Therapy	May use erythropoietin therapy if the anemia is caused	Treatments may include hematopoietic stem	IV fluids are used to help replace volume in the blood to help with	This is typically treated with iron supplements as the

	from renal disease or cancer therapies. Can also be managed with blood transfusions.	cell transplant, immunosuppressive therapies, steroids, ATG therapy, as well as cyclosporins. The most common treatment for people is a HSCT, if they have an HLA match and they are younger than 55.	circulation. There can also be blood transfusions/transfusion of other blood products depending on the patient. The patient may also receive iron in order to help RBC production in the bone marrow.	disease process slowly causes decreased iron over time.
Nursing Management	If receiving blood transfusions, we want to monitor for transfusion reactions. We also want to make sure we are getting updated lab values to check the effectiveness of the therapy.	Most important thing is to find whatever is causing the anemia. The biggest things we can do are to take steps to prevent infections and hemorrhages.	The biggest things we can do in these situations is to try and replace as much blood volume as we can and prevent any more blood loss. We also want to find where the bleeding is coming from in order to stop it. Prevention of blood loss includes continuous assessment of surgical sites and drainage systems.	The best thing in this scenario would be to keep an eye on how much blood has been lost and then figuring out where the bleeding is coming from in order to help stop it.

Table 3	**Acquired Hemolytic Anemia**	**Hemochromatosis**	**Polycythemia**
Etiology	Reb blood cells are normal, but there are other factors, such as autoimmune diseases, antibodies, infections, and toxins, that destroy them.	This is where the patient has too much iron in their body. It is typically hereditary (recessive) and causes the intestines to absorb more iron than that or a normal individual.	This is the increased production of red blood cells. Primary polycythemia is where there is an increased production of all blood products that causes the blood to have a higher viscosity and volume. Secondary polycythemia can be caused due to hypoxia or tumors.
Clinical Manifestations	Patients may experience jaundice related to high levels of bilirubin from RBCs being destroyed. They might also experience hepatomegaly and splenomegaly.	Typically have iron levels above 50g. Symptoms may not develop until later in life. Early symptoms may include fatigue, joint pain, impotence, and abdominal pain accompanied with weight loss. The later	There can be vertigo, visual changes, HTN, and headache. One of the main symptoms is pruritis that can be made worse by hot water. Patients may also have heart failure, chest pain, paresthesia, and

		symptoms may include hepatomegaly that can lead to cirrhosis. It can also cause diabetes, skin pigment changes, heart issues. Joint issues, and atrophy of the testicles.	intermittent claudication. Patients are also at risk for hemorrhage.
Diagnostic Studies	-decreased Hgb/Hct -increased bilirubin -normal or increased MCV, serum iron, ferritin -increased reticulocytes and slightly increased transferrin -normal or decreased TIBC -other value normal	-increased serum iron levels, TIBC, and serum ferritin -can also do liver biopsy to determine iron concentrations	-high hemoglobin and RBC count, but RBC are smaller than normal. -low or normal erythropoietin (primary), and increased erythropoietin (secondary) -high white blood cells, platelet counts, leukocyte alkaline, phosphatase, uric acid and cobalamin -high histamine
Drug Therapy	The biggest thing here is to make sure the kidneys are able to function appropriately. We will likely give folate and immunosuppressive agents in order to preserve RBCs.	Patients may receive iron chelation therapy, which removed excess iron through the kidneys. Patients may undergo iron removal, where 500 mL of blood per week is removed until the iron reaches a normal amount.	Removing blood in order to keep hematocrit normal and below 45%, which overall reduces blood volumes. This can sometimes cause low iron levels, but it is not worrisome usually. Patients may receive myelosuppressive agents in order to stop or maybe slow the growth of blood cells. Aspirin administered at a low dose can be used to reduce the chances of clotting. Due to high uric acid, allopurinol can also be given.
Nursing Management	It is important to be prepared to initiate emergency therapies for the patient such as IV hydration and electrolyte replacements in order to preserve kidney function.	We want to educate patients to reduce dietary intake of iron and vitamin c. We also want to try and have early detection in order to try and prevent heart failure, diabetes, and cirrhosis.	If polycythemia becomes severe, then the nurse might have to preform phlebotomy in order to decrease Hct. We want to ensure patients have appropriate I and O and ensure they do not have fluid volume overload or deficit. If we give the patient a myelosuppressive

			it is important to monitor them for adverse effects.