Iron Deficiency Anemia

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Introduction

What is Iron Deficiency Anemia (IDA)?

"Iron deficiency anemia is the most common type of nutritional disorder worldwide, occurring in both developing and developed countries and affecting as many as one-fifth of the world population" (Huebler & McCane, 2018, p. 394). It is estimated that IDA affects 2.6% of men and postmenopausal women and an astounding 10-55% women during childbearing age worldwide (Calaf et al., 2018).

Pathophysiological Process

Common Signs and Symptoms of IDA

Signs (Subjective Findings):
- Pale colored skin (especially in eyelids, tongue/mucous membranes, and nail beds)
- Brittle nails
- Abnormal pressure (BP) in early or compensated stages and hypotension in late or uncompensated stages
- Tachypnea
- Klinefelter’s (male) mental status (AMS) or changes in the level of consciousness (LOC)
- Dysrhythmias (severe cases)

Symptoms (Subjective Findings/Participant Reported):
- Fatigue/weakness
- Palpitations
- Headache

Underlying Pathophysiology

IDA is characterized as microcytic-hypochromic anemia (see figure 1.) which can be defined as "abnormally small erythrocytes that contain sinusoidally reduced amounts of hemoglobin" (Huebler & McCane, 2018, P. 358).

"Apart from its well-known function of an oxygen carrier in hemoglobin and myoglobin, iron is required for the efficient functioning of numerous other organs and tissues" (Harmse, 2016).

"Each hemoglobin molecule is composed of two pairs of polypeptide chains (the globins) and four colorful complex iron containing hemes (the heme) responsible for the red color and oxygen carrying capacity" (Harmse & McCane, 2018, p. 98). Therefore, when iron levels are low the body cannot keep up with the demand for red blood cells.

A thorough physical assessment must performed to find the signs and symptoms of IDA.

Significance of Pathophysiology

With the prevalence of IDA being so high it is important that APNs are vigilant in identifying the signs and symptoms of IDA. APNs must have a strong understanding of the etiology, pathophysiology, and treatment of IDA. As previously mentioned, it is estimated that IDA affects 2-6% of men and postmenopausal women and 10-15% women during childbearing age worldwide (Calaf et al., 2018). Often times, the signs and symptoms of IDA can be vague and non-specific, making it a difficult diagnosis. As identified in the previous section, IDA symptoms do not generally present until stage II. After the pathological process has been occurring for sometime. Late detection can lead to worsening symptoms, comorbidities, and mortality. This is especially concerning to patients that are young and non-specific signs are commonly noticed, as they will not be able to provide the APN with presenting symptoms.

Figure 1. Demonstrates the changes in erythrocytes in IDA.
A) normal erythrocytes, B) microcytic-hypochromic erythrocytes (Kamen & Werner, 2018).

Assessment and Treatment Options

A thorough physical examination is performed to look for the signs and symptoms of IDA. A complete history of the patient and past medical history is also obtained. A physical examination is performed to look for signs of IDA. A CBC is ordered to obtain a complete blood count in order to look for abnormalities in the RBC characteristics.

Hemoglobin/hematocrit values are decreased, which indicates the body is not properly carrying and delivering oxygen to the tissues. Therefore, further testing is needed to rule out other disorders that can cause similar symptoms.

A CBC is performed to determine the number of RBCs, WBCs, and platelets in the blood. A blood smear is also performed to determine if there are any abnormalities in the RBCs.

Serum iron, total iron binding capacity (TIBC) or a hepcidin test may be ordered to determine if there is an iron deficiency. A serum folate and vitamin B12 level may also be ordered to rule out other causes of anemia.

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The bone marrow examination is performed to determine if there is an iron deficiency or if there is another cause of anemia. The bone marrow examination is performed to determine if there is an iron deficiency or if there is another cause of anemia.

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