



Blood Lily in Bloom

PIC QUESTION OF THE WEEK: 2/22/10

Q: Please define the disorder known as *anemia of chronic disease* and how is it treated?

A: Anemia of chronic disease is a hypo-proliferative anemia that occurs as a result of an acute or chronic immune response. It is usually associated with infection, cancer, autoimmune disease, chronic rejection after solid-organ transplant, and chronic kidney disease and results from release of cytokines such as the interleukins (ILs). The severity of anemia is usually determined by the underlying disease condition. There are a number of distinguishing factors between anemia of chronic disease and iron deficiency anemia. During periods of chronic inflammation and activation of the immune system, cytokine levels increase and iron is diverted from the pathway for erythropoiesis to various storage sites. Laboratory values are important in distinguishing these similar types of anemia (see accompanying table). Cytokines such as IL-1 and tumor necrosis factor- α (TNF- α) stimulate synthesis of ferritin, a protein that regulates iron storage. Hepcidin, another protein involved in iron regulation, is activated by IL-6. Hepcidin reduces iron absorption from the intestinal tract and also inhibits its release from storage sites. Currently there are few treatment options for anemia of chronic disease. Blood transfusions and erythropoietic agents (e.g. epoetin-alpha and darbepoetin) are the mainstay of treatment. The use of iron supplementation is controversial. While iron can inhibit the immune system, it is also a vital nutrient for microorganisms and can potentially increase the risk of bacteremia. Iron supplementation is only indicated if the patient is also iron deficient. The most important factor in treating anemia of chronic disease is to manage the associated condition.

Anemia of Chronic Disease vs Iron-Deficiency Anemia*

	RBC	Hgb	Hct	MCV	MCH	MCHC	Ferritin	Serum Iron	TIBC	Cytokine
Anemia of Chronic Disease	↓	↓	↓	↓ or ↔	↓ or ↔	↓ or ↔	↑ or ↔	↓	↓	↑
Iron-Deficiency Anemia	↓	↓	↓	↓	↓	↔	↓	↓	↑	↔

* Adapted from the references below.

References

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Jennifer L. McNeill and Colleen P. Hall, Pharm.D. Candidates

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