



Dietary Impacts on Iron-Deficiency Anemia in Patients with Heart Failure

A below average amount of hemoglobin resulting from a deficiency of iron (iron-deficiency anemia) and heart failure are commonly comorbid conditions. The hemoglobin in blood is responsible for carrying oxygen to the body's tissues, which is particularly important for those with heart failure. When the body lacks oxygen, the heart must work harder to pump blood placing additional strain on an already taxed cardiovascular system.¹

Because of this relationship it is important for patients with heart failure, as well as those who provide care for them, to understand the effect of iron-deficiency anemia on the cardiovascular system and to explore strategies to increase iron levels in these patients.

WHAT CAUSES LOW IRON?

A host of factors can be involved in the development of iron-deficiency anemia: inherited bleeding disorders; high levels of lead in the environment or drinking water; trauma or surgery resulting in significant blood loss; or engaging in endurance activities.

Recent research, however, has identified that another important factor contributing to the increasing incidence of iron-deficiency anemia in the U.S. population is a changing eating pattern.² Once a provider has determined that no other more serious factors are contributing to a patient's low iron levels, a corrective strategy that involves dietary changes may be implemented.

WHAT ABOUT RED MEAT?

The recent literature has cited the move away from red meat as a major contributor to a rise in iron-deficiency anemia.² Red meat consumption has been discouraged for individuals with, or at risk for, heart failure because it contributes the production of the gut microbiota metabolite trimethylamine N-oxide (TMAO).³ The production of TMAO in the digestive tract has been associated with the development of plaque in the arteries (atherosclerosis), which is known to be linked to the mechanisms of heart failure.^{3,4}

As the U.S. population has adopted a diet emphasizing white meat, fish and plant-based meat substitutes, logic would dictate that the rates of heart failure-related deaths would drop.⁵ However, now that researchers better understand the relationship between iron deficiency and poor outcomes in patients with heart failure, new studies show that reducing individuals' intake of red meat hasn't had the intended effect of reducing overall mortality.²

CAN DIETARY CHANGES REALLY IMPROVE IRON LEVELS?

While severe iron deficiency may need to be treated with intravenous iron delivery, a moderate case of iron-deficiency anemia can be treated through diet. Dietary interventions such as salt fortified with both iodine and iron have been shown to improve iron levels on a population level.⁶ Iron can also be introduced through food sources.

IRON SOURCES

The iron found in animal products like meat, fish and poultry (haem sources) are absorbed best by the body. This explains why people who include meat and fish in their diets usually have higher iron stores.⁷ But plant foods such as leafy greens, grains and legumes (nonhaem sources) also contain some iron.

It is important to consider the source of dietary iron, as well as the quantity. A handful of cashews may have more iron (1.5 mg) than a chicken breast (0.4 mg), but because the cashews are a nonhaem source, the body may not be able to absorb, store and use as much of that iron as it can from chicken.⁷ Patients hoping to increase their iron levels through diet must consider the dietary sources of their iron, and usually including a mix of both haem and nonhaem sources results in higher levels of iron.

DIETARY COMPONENTS THAT HELP OR HINDER IRON ABSORPTION

Food choice to correct iron-deficiency anemia is important, as is the method of consumption. Certain foods, when eaten in tandem, actually increase the body's ability to take in and store iron, while other foods will inhibit iron absorption. Vitamin C, found in citrus fruit and tomatoes, increases iron absorption, while calcium, tea and coffee, and phytates found in some wholegrains make it more difficult for the body to store iron.

THE BOTTOM LINE

In patients with heart failure, moderate iron-deficiency anemia can be improved by introducing a variety of iron-rich foods into the diet. Caution must be used however, to avoid exacerbating the condition by ingesting too much red meat; although red meat is rich in iron, it is also responsible for an increase in gut reactions that make heart failure worse. The best strategy is to introduce a variety of meat and plant-based iron sources, to make sure vitamin C is eaten with iron-containing foods while avoiding too much coffee, tea and dairy during mealtime.

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