HEART RESEARCH

Openventio PUBLISHERS

ISSN 2377-164X Open Journal http://dx.doi.org/10.17140/HROJ-2-e002

Editorial

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Volume 2 : Issue 3
Article Ref. #: 1000HROJ2e002

Article History
Received: October 22nd, 2015
Accepted: October 26th, 2015
Published: October 27th, 2015

Citation
Aronow WS. Treatment of cardiac hemochromatosis. *Heart Res Open J.* 2015; 2(3): e3-e5. doi: 10.17140/HROJ-2-e002

Treatment of Cardiac Hemochromatosis

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Treatment of iron-overload states is important to prevent or reverse cardiac dysfunction.[1-5] Removal of excess iron from the tissues in these patients reduces generation of free radicals, decreasing organ damage.[6,7] Removal of excess iron stores includes therapeutic phlebotomy and iron-chelating agents. Management of the disease causing iron overload and dietary management are also important in treating cardiac hemochromatosis. Dietary management includes avoidance of medicinal iron, mineral supplements, excess vitamin C, and uncooked seafoods.[5] Congestive heart failure should be treated with guideline-directed medical therapy for heart failure.[8]

Therapeutic phlebotomy is the treatment of choice in non-anemic patients with cardiac hemochromatosis. Phlebotomy should be initiated in men with serum ferritin levels of 300 µg/L or more and in women with serum ferritin levels of 200 µg/L or more, regardless of presence or absence of symptoms.[5] Phlebotomy should remove 1 unit of blood (450-500 mL) weekly until the serum ferritin level is 10 to 20 µg/L and maintenance of the serum ferritin level at 50 µg/L or lower thereafter by periodic removal of blood.[5] Each unit of blood removed depletes 200-250 mg of iron from the blood, which mobilizes an equal amount of iron stored in the tissues to form hemoglobin.[9] Patients with ferroportin mutation-associated iron overload may not tolerate a more aggressive schedule.[10] Serum ferritin is measured every month until it reaches 200 ng/mL and once in 1 to 2 weeks after. Hemoglobin and hematocrit should be measured before each phlebotomy. Phlebotomy should not be performed if the hematocrit falls below 80% of the previous value.[11] After reaching a target ferritin level less than 50 ng/mL and transferrin saturation below 30%, the frequency of phlebotomy is decreased. The frequency of maintenance phlebotomy varies once every few months to few years depending on the iron reaccumulation rate.[12] Adequate hydration is recommended before and after phlebotomy to prevent volume depletion. Phlebotomy reduces myocardial iron content and improves left ventricular diameter, left ventricular fractional shortening, left ventricular ejection fraction, left ventricular mass, and left atrial dimension in patients with cardiac hemochromatosis.[13-15]

Medical therapy to treat congestive heart failure from cardiomyopathy and serious cardiac arrhythmias in patients with cardiac hemochromatosis must be used until phlebotomy possibly combined with iron chelation therapy reduces the excess myocardial iron content.[5] Complete atrioventricular block caused by iron depostion may need implantation of a permanent pacemaker.[16]

Phlebotomy is not a treatment option in patients with anemia (secondary iron-overload disorders) nor in patients with severe congestive heart failure.[17] In these patients, the treatment of choice is iron chelation therapy.[18] Iron chelating agents increase the iron excretion rate by binding to the iron in plasma and tissues, depleting the body of excess iron.[19] Serum ferritin levels should be monitored periodically. When the serum ferritin level falls below 1000 ng/mL, iron chelation therapy should not be given.[20] Deferoxamine, deferiprone, and deferasirox are the 3 iron-chelating drugs approved by the United States Food and Drug administration for therapy of chronic secondary iron overload.

End-stage cardiomyopathy caused by hereditary hemochromatosis was successfully

treated with erythrocytapheresis in combination with left ventricular assist device support.[21]

Cardiac transplantation is a therapeutic option for patients with cardiac hemochromatosis with severe congestive heart failure refractory to optimal medical therapy and cardiac resynchronization therapy.[8,22]

CONFLICTS OF INTEREST

The author has no conflicts of interest.

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