Iron deficiency in patients with chronic heart failure: A systematic literature review

Marilies Bauer, Sandra Ressl, Evelyn Walter

Institute for Pharmaeconomic Research, Vienna, Austria

Objectives

Iron deficiency (ID), a non-cardiovascular comorbidity, is highly prevalent in chronic heart failure (CHF) patients and imposes a significant disease burden for CHF patients with enormous impact on their outcome and health care costs. Thus, this study was designed to identify epidemiological data, screening and treatment guidelines, costs as well as outcome of intravenous iron treatment in patients with CHF and iron deficiency.

Methods

A comprehensive literature review was undertaken for all publications from 1998 to September 2014 using Medline, EMBASE, Cochrane, Science Direct and Pubmed databases, comprising English and German articles. The review focused on studies based on patients with chronic heart failure and iron deficiency, with or without anemia. Articles were systematically selected if they included data for iron deficiency on at least one of the following criteria: epidemiology, screening and treatment guidelines, costs and clinical outcomes. Additional articles were found via hand search using references from eligible articles.

Results

Database search yielded 5,132 articles and 55 additional articles were identified via secondary hand search. Of the 73 eligible articles; 30 were removed on deficiency on at least one of the following criteria: epidemiology, screening and treatment guidelines, costs and clinical outcomes. Additional articles were found via hand search using references from eligible articles.

Prevalence

Despite new therapeutic advances, CHF remains a severe disease with a poor outcome. CHF patients have also decrease functional capacity and low quality of life. The recent ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012 recognize ID as a common co-morbidity in heart failure. The highest published prevalence rates of CHF, up to 11.5%, are documented for Europe. In addition there is a correlation between the prevalence of ID and the NYHA stages. Disease severity assessed by NYHA class proved to be powerful and an independent predictor of a disordered iron status.

Screening and treatment

Current guidelines recommend that assessment of all patients with suspected heart failure should include an evaluation of iron status to detect ID. Iron therapy should be considered in all patients with CHF who have ID regardless of whether anemia is present or not. A correction of ID with oral iron will often take longer due to non-adherence or interruption due to side effects (e.g. gastrointestinal). Moreover the intolerance of oral iron preparations is very common as well as the impaired intestinal absorption due to hepcidin upregulation, presence of GI mucosal edema and reduced blood. Therefore, replenishment of iron stores with intravenous iron can achieve rapid improvement, less side effects and better compliance to treatment.

Costs

Considering the included studies of this review, healthcare expenditure on CHF costs 1-2% of the total healthcare budget. The highest proportion of costs is related to hospital care (61%) followed by rehabilitation and nursing homes (25%). Moreover there is a significant correlation between healthcare costs and NYHA stages. Compared with the NYHA class I, there is a cost increase in NYHA II of 14%, in NYHA III of 48% and in NYHA IV of 71%.

Conclusion

CHF represents a major and growing public health problem and is often associated with ID as co-morbidity. Intravenous iron can be an option to improve outcome (patient status), and reduce health care costs.