

## Assessment of Iron Status and Iron Deficiency in the Elderly Population

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The prevalence of anemia, a common multifactorial condition in the elderly increases with age. Anemia is an critical health problem among the elderly population. A previous study in the United States of America and Europe by Patel, et al. (2008) demonstrated the prevalence rates of anemia ranging from 8% to 25%. The third United States National Health and Nutrition Examination Survey (NHANES III) demonstrated that 11% of men and 10.2% of women more than 65 years of age were anemic, respectively. The World Health Organization (WHO) reported that iron deficiency with estimated one billion people affected, is most common and widespread nutritional disorder, globally. Around one-third of the cases of anemia in the elderly people is due to nutrient deficiencies (iron, B12, and folate). Approximately, 30% to 50% of the elderly individuals with anemia have multiple causes of anemia. Iron deficiency is the only nutrient deficiency that affects the large number of children and young women in developing countries in addition to the significant prevalence in industrialized countries. Physiologically, the total body iron amount (approximately 3-4 grams) is maintained by a fine balance between three illustrious factors: 1) iron supply, 2) body requirement, and 3) blood losses. Gastrointestinal malabsorption, increased blood losses, and insufficient dietary iron intake are the most common causes of iron deficiency in the elderly persons, whereas an increased iron demand is the main cause of iron deficiency in children and fertile females. Chronic gastrointestinal diseases, for examples : esophagitis, peptic ulcer, gastritis, colonic cancer or pre-malignant polyps, inflammatory bowel disease or angiodysplasia are nearly always the cause of iron deficiency and iron deficiency anemia the elderly.

According to the WHO criteria, a hemoglobin (Hb) level less than 13 grams/deciliter in men and less than 12 grams/deciliter in women are defined as anemic. Nevertheless, these criteria have been criticized because they were based on statistical distributions (i.e. equivalent to two standard deviations below the mean)

in the reference samples that did not include persons who are more than 65 years of age., making unfeasible to be applied for the aging population. Whereas normal body ferritin concentrations vary by age and sex, in contrast to Hb, body ferritin levels are not affected by residential elevation above sea level or smoking behavior. Nevertheless, body ferritin levels increase during inflammation and do not reflect the size of the iron store that makes the interpretation of high serum ferritin or normal concentrations difficult in areas of inflammation or widespread infection. High serum ferritin levels indicate iron overload in the absence of inflammation or liver disease. The International Nutritional Anemia Consultative Group (INACG) meeting, held in Quito, Ecuador in 1987 concluded that at all ages a serum ferritin concentration, typically assessed with enzyme-linked immunosorbent assays (ELISA) of less than 10-12 micrograms/liter indicated a depletion of iron stores.

In conclusion, malnutrition is an obvious cause contributing to iron deficiency in the elderly individuals. Nevertheless, assessment of the aging patients' nutritional status plays a critical role in the diagnosis of anemia in this population.

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