

How to investigate and treat iron deficiency

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Iron deficiency is still a common problem in the general population. Dr Mackinlay describes an approach for identifying the cause and implementing treatment.

Remember

- Particular groups are at increased risk of iron deficiency, such as toddlers, boys aged between 11 and 14 years, and women of reproductive age.
- Three stages of iron deficiency may be identified. They range in severity from depleted iron stores, through iron deficient erythropoiesis (in which an effect on haemoglobin production may not be evident), to frank iron deficiency anaemia.
- Iron deficiency is one of the most common causes of a hypochromic, microcytic anaemia (Figure). Other important causes include thalassaemia and the anaemia of chronic disease.
- Although inadequate dietary iron remains one of the most common causes of iron deficiency in the population, a careful history and physical examination (with or without further investigations) are required to exclude blood loss as a cause.
- Coeliac disease can cause iron deficiency without any gastrointestinal symptoms being present.

Assessment

- An assessment of iron stores is helpful in confirming the presence of iron deficiency. Serum ferritin is the best indicator of total body iron stores; however, it is an acute phase reactant and the level may be elevated spuriously by intercurrent infection, inflammatory disease, hepatic disease or neoplasia.
- In uncomplicated iron deficiency, serum iron is reduced and total iron binding capacity and transferrin estimations are elevated. Transferrin saturation under 15% is usually indicative of iron deficiency.
- Rarely, a bone marrow examination may be required for a definitive assessment of iron stores.
- The serum transferrin receptor assay, although not yet routinely available, will be useful in differentiating between iron deficiency anaemia and the anaemia of chronic disease.

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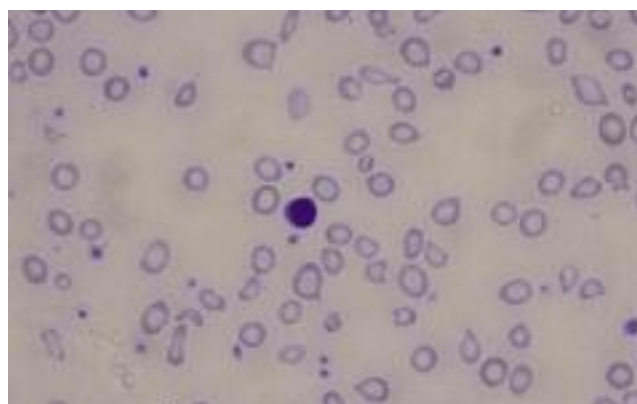


Figure. Hypochromic, microcytic red blood cells and occasional pencil cells in severe iron deficiency anaemia (haemoglobin 23 g/L).

An increase in the serum transferrin receptor level is a sensitive measure of iron deficiency.

Management

- Identifying and treating the cause of iron deficiency are the first and foremost tasks in management. Depending on the clinical scenario, further investigation may not be required – for example, in the case of a young woman with poor dietary iron intake and heavy periods. Alternatively, gastrointestinal evaluation (including endoscopy of the upper gastrointestinal tract and colonoscopy) may be indicated to exclude a gastrointestinal cause – for example, in the case of a middle-aged man with asymptomatic iron deficiency. Other investigations may be appropriate, depending on the clinical circumstances.
- A presumptive diagnosis of iron deficiency may be followed by a therapeutic trial of iron supplementation. With adequate iron replacement, the haemoglobin level should increase by about 20 to 40 g/L every three weeks and return to normal.
- The great majority of patients with iron deficiency can be treated with oral iron supplements. There is an array of products available: Ferro-Gradumet (ferrous sulfate) has the highest elemental iron content.
- Iron therapy should continue for six months to replenish body stores. Recurrence of anaemia is common when the period of replacement therapy is insufficient.
- Dietary adjustments to increase red meat intake are important.
- Iron absorption can be enhanced by concomitant supplementation with vitamin C. It is reduced by tannins in tea and coffee.
- Uncommonly, parenteral iron supplementation may be required in individuals who have marked intolerance to oral iron or malabsorption, or patients in whom the rate of blood loss exceeds the ability of the gut to absorb iron.
- Combined haematitic deficiencies (i.e. iron and vitamin B₁₂ or iron and folate deficiencies) should be considered in the presence of normal red cell indices or when a patient fails to respond to iron supplementation.

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