Letters to the Editor

Significance of low serum ferritin levels in elderly in-patients

Sir,
In our opinion, the above study¹ was flawed by the implied assumption that all serum ferritin levels below 50 µg/l were equally valid for the diagnosis of iron deficiency. In actual fact, when the diagnosis of iron deficiency is validated by absence of stainable iron from a bone marrow aspirate, only serum ferritin levels <12 µg/l possess 100% specificity for this diagnosis.^{2,3} The likelihood ratio for iron deficiency falls from 41.47 in elderly subjects with a serum ferritin of ≤18 µg/l, to 3.12 in those with serum ferritin levels in the range >18 ≤45 µg/l.⁴
Joosten *et al.*¹ also questioned the sensitivity of a mean corpuscular volume (MCV) <80 fl as a screening test for non-anaemic iron deficiency.¹ Although originally regarded as having comparable validity for the diagnosis of iron deficiency, a mean corpuscular haemoglobin (MCH) <26 pg² now seems to have lapsed into disuse as a screening test. Our own unpublished observations,

based on 156 consecutive patients aged ≥60 with unequivocal iron deficiency (that is, serum ferritin <10 µg/l), indicate that an MCH <26 pg provides a more sensitive indication of underlying iron deficiency than an MCV <80 fl. Combined results from patients with moderate hypoferritinaemia (serum ferritin = 5.1–9.9 µg/l) as well as patients with severe hypoferritinaemia (serum ferritin ≤5.0 µg/l) (Table I), showed that there were 125 patients with MCH <26 pg vs 102 patients with MCV <80 fl. In 100 instances both red blood cell indices fell below these cut-off levels. The subgroup of 17 patients (14 females and three males) with haemoglobin levels ≥12.0 g/dl also showed a trend favouring greater sensitivity of an MCH <26 pg as an index of unequivocal iron deficiency (Figure 1).

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Table I RBC indices in severe and in moderate hypoferritinaemia (percentage of total number of patients in parentheses)

Subgroup	Ferritin ≤5.0 µg/l	Ferritin = 5.1–9.9 µg/l
MCV <80 fl + MCH <26 pg	53/74 (71.6)	47/82 (57.3)
MCV <80 fl	53/74 (71.6)	49/82 (59.8)
MCH <26 pg	61/74 (82.4)	64/82 (78.0)
Hb ≥12 g/dl	5/74 (6.8)	12/82 (14.6)

References

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Figure 1 MCV vs MCH in 17 patients (14 female and three male) with serum ferritin <10 µg/l in the presence of haemoglobin ≥12 g/dl.

This letter was shown to Dr Joosten and colleagues who reply as follows.

The recommended cut-off point for serum ferritin to discriminate between iron deficiency and non-iron deficiency varies in the literature, mostly between 12 and 20 µg/l for a non-geriatric population. These traditional cut-off points dividing normal and abnormal are not optimal.¹ Patterson *et al.*² and Guyatt *et al.*³ clearly demonstrated that serum ferritin is the best single laboratory test to diagnose iron deficiency anaemia in elderly patients with an optimal cut-off in terms of maximizing accuracy of 45 µg/l.^{1–3} In a similar study, we confirmed those data with a cut-off point of 50 µg/l as the best discriminant between iron deficiency and non-iron deficiency.⁴ The likelihood ratios associated with the different serum levels were as follows: 0.21 for ferritin >100 µg/l; 0.49 for ferritin between 50 and 100 µg/l; 7.65 for ferritin between 20 and 50 µg/l and infinity for ferritin levels less than or equal to 20 µg/l. A cut-off point of 50 µg/l corresponds with a sensitivity of 76% and a

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