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Letters to the Editor

Significance of low serum ferritin levels in elderly in-patients

Sir,

In our opinion, the above study[1] 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 pg[5] 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 Our own unpublished observations, based on 156 consecutive patients aged ≥60 with unequivocal iron deficiency (that is, serum ferritin 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)

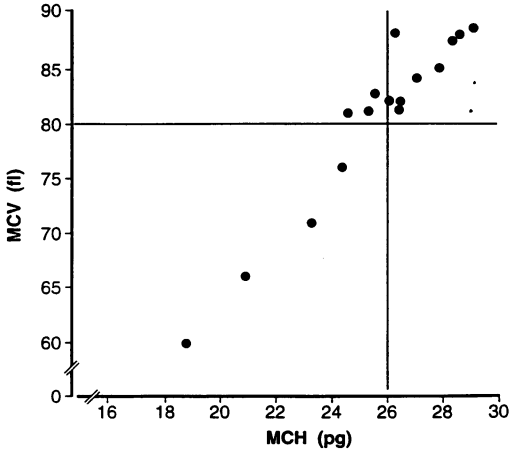

Figure 1 MCV *vs* MCH in 17 patients (14 female and three male) with serum ferritin <10 μg/l in the presence of haemoglobin ≥12 g/dl.

References

1. Joosten, E., Dereymaeker, L., Pelemans, W. *et al.* Significance of a low serum ferritin level in elderly in-patients. *Postgrad Med J* 1993, **69:** 397-400.
2. Ali, M.A.M., Luxton, A.W. & Walker, W.H.C. Serum ferritin concentrations and bone marrow iron stores: a prospective study. *Can Med Assoc J* 1978, **118:** 945-946.
3. Lipschitz, D.A., Cook, J.D. & Finch, C.A. A clinical evaluation of serum ferritin as an index of iron stores. *N Engl J Med* 1974, **290:** 1213-1216.
4. Guyatt, G.H., Patterson, C., Ali, M. *et al.* Diagnosis of iron deficiency anaemia in the elderly. *Am J Med* 1990, **88:** 205-209.
5. Bainton, D.F. & Finch, C.A. The diagnosis of iron deficiency anaemia. *Am J Med* 1964, **37:** 62-70.

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