Postgrad Med J (1993) **69**, 892 - 895

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 Our own unpublished observations, based on 156 consecutive patients aged ≥60 with unequivocal iron deficiency (that is, serum ferritin 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).

O.M.P. Jolobe
H. Rakicka
Department of Medicine for the Elderly,
Tameside General Hospital,
Fountain Street,
Ashton-under-Lyne OL6 9RW, UK.

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)

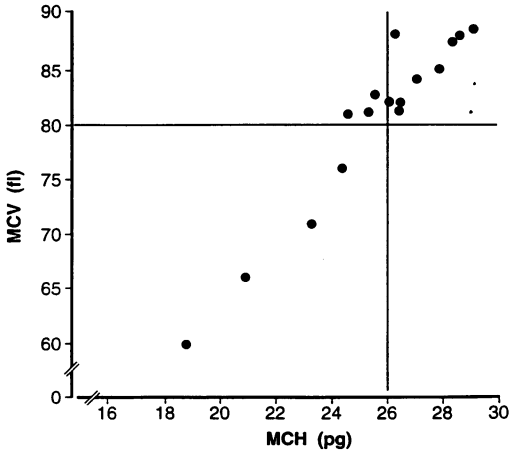

Figure 1 MCV *vs* MCH in 17 patients (14 female and three male) with serum ferritin <10 μg/l in the presence of haemoglobin ≥12 g/dl.

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

specificity of 95% as compared to a bone marrow aspiration. This higher than expected value might result from an increase in ferritin with age and from the role of ferritin as an acute phase reactant.

Therefore, using 12 μg/l as a discriminant value as proposed by Jolobe and Rakicka in their study will exclude many elderly patients with iron deficiency anaemia.[5] As a consequence, elderly patients with a ferritin level >12 μg/l and iron deficiency anaemia will not be investigated adequately. We, like Guyatt *et al.*[1] think that the serum ferritin levels in the elderly should be interpreted differently from those in younger patients. A serum ferritin level less than or equal to 50 μg/l may be a useful indicator to take into account the possibility of iron deficiency in elderly patients. In equivocal cases and for higher ferritin levels, a bone marrow aspirate would be required. Further studies investigating the clinical usefulness of the different cut-off levels of serum ferritin in the diagnosis of iron deficiency in elderly patients are warranted.

E. Joosten
Department of Internal Medicine,
Division of Geriatric Medicine,
University Hospitals K.U. Leuven,
U.Z. Sint-Pieter,
Brusselsestraat 69,
3000 Leuven, Belgium.

References

1. Guyatt, G.H., Oxman, A.D., Ali, M. *et al.* Laboratory diagnosis of iron-deficiency anemia. *J Gen Intern Med* 1992, **7:** 145–153.
2. Patterson, C., Turpie, I.D. & Benger, A.M. Assessment of iron stores in anemic geriatric patients. *J Am Geriatr Soc* 1985, **33:** 764–767.
3. Guyatt, G.H., Patterson, C., Ali, M. *et al.* Diagnosis of iron-deficiency anemia in the elderly. *Am J Med* 1990, **88:** 205–209.
4. Joosten, E., Hiele, M., Ghoos, Y. *et al.* Diagnosis of iron deficiency anemia in a hospitalized geriatric population. *Am J Med* 1991, **90:** 653–654.
5. Jolobe, O.M.P. & Rakicka, H. Significance of low serum ferritin levels in elderly in-patients. *Postgrad Med J* 1993, **69,** 892.

Age-related differences in simultaneous interarm blood pressure measurements

Sir,

Interarm blood pressure (BP) differences[1] have posed a new problem over recent years since the advent of thrombolysis as the treatment of choice in acute myocardial infarction, namely can a dissecting thoracic aortic aneurysm be excluded in a patient with a definite myocardial infarction and yet a systolic BP difference greater than 10 mmHg?

We report four patients who were admitted with an acute onset of constant, crushing, central chest pain radiating to the left arm who had such a systolic BP difference. The BP was initially read with a ward sphygmomanometer, and then repeated by a second observer with a different sphygmomanometer. All the patients were aged over 50 years, and two also complained of slight back pain. Pulses were palpable and equal in both arms, and all patients were in sinus rhythm, with no carotid or subclavian bruits. Myocardial infarction was diagnosed by a classical history, with electrocardiographic evidence of greater than 2 mm S-T elevation in at least two limb or chest leads. Chest X-ray showed a normal mediastinum in all cases, and thrombolysis was administered with no complications. All patients were discharged within one week, with the systolic BP difference unchanged.

The concern about dissecting thoracic aortic aneurysm at the time of their presentation proved unfounded, and yet must be considered, particularly if the chest pain radiates through to the back or back pain is predominant. Prior documentation of interarm BP differences may help reduce this concern, as well as reduce misclassification of BP status.

J.T. Lear
I.G. Lawrence
A.C. Burden
Leicester General Hospital NHS Trust,
Gwendolen Road,
Leicester LE5 4PW, UK.

Reference

1. Fotherby, M.D., Panayiotou, B. & Potter, J.F. Age-related differences in simultaneous interarm blood pressure measurements. *Postgrad Med J* 1993, **69:** 194–196.

Aspirin and risk of fatal colon cancer

Sir,

It has been proposed that regular aspirin use may decrease the risk of fatal colon cancer[1] and in a recent correspondence, Odeh[2] proposed two possible mechanisms. We write to suggest a third possible mechanism.

Non-steroidal anti-inflammatory drugs (NSAIDs) such as aspirin, indomethacin, piroxicam and sulindac inhibit the growth of colon tumours induced by chemical carcinogens in rodents.[3–6] It is proposed this beneficial effect of NSAIDs is related, at least in part, to their ability to inhibit prostaglandin (PG) formation.[7] Previous studies have shown that colon tumours produce increased amounts of PGE_2 compared with surrounding tissue.[8] This PGE_2 may play a role in pathophysiological processes including tumour-related angiogenesis[9] and depression of cellular immunity.[10] Tumour-derived PGE_2 may therefore further tumour growth in the colon.[11] By contrast, inhibiting PGE_2 synthesis could be tumouricidal by reducing blood flow to the tumour coupled with enhanced immunorejection.[2,12]

Thus, NSAIDs may possess tumouricidal properties in the colon. This would account for the beneficial effects observed in animal models and the low risk associated with regular NSAID ingestion. Of considerable interest would be the effect of NSAIDs on established colon cancers, where an initial report is encouraging.[13]