SHORT REPORTS

Do patients receiving haemodialysis need folic acid supplements?

Patients receiving regular haemodialysis may be at risk of developing folic acid deficiency because foods rich in the vitamin must often be restricted and loss of the vitamin across the dialysis membrane is likely to occur because of its low molecular weight and only moderate protein binding.[1 2] We undertook two studies to assess the need for giving folic acid to patients receiving haemodialysis.

Patients, methods, and results

STUDY 1

Loss of folic acid during a seven-hour dialysis was measured in 15 patients, none of whom were taking supplementary folic acid. A single pass system with a 1·0 m^2 Meltec Multipoint dialyser and 11·5 μm thickness Cuprophan membranes was used, blood and dialysate flow rates being 220 and 500 ml/min respectively. Blood samples were taken from the afferent ("arterial") and efferent ("venous") dialyser lines after 30 minutes' dialysis and again after six and a half hours. The means of the two arterial and two venous serum folate concentrations were used to calculate the total loss for each patient. Serum folate concentration was measured in quintuplicate, using a competitive binding assay (Becton Dickinson Folate Radioassay kit; intra-assay coefficient of variation 5·9%).

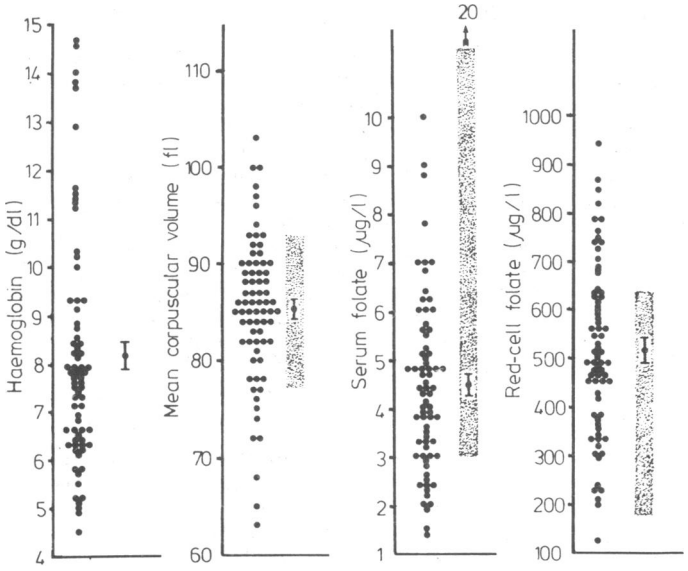
The mean afferent dialyser line ("arterial") serum folate concentration fell significantly from 4·31 ± SEM 0·47 to 3·49 ± 0·38 μg/l during the six hours' dialysis ($p < 0·01$). The median loss of folate into the dialyser was 37·3 μg (range 3·6-91·5 μg).

STUDY 2

The relation between folic acid state and anaemia was examined retrospectively in 72 patients dialysed at home for 6-120 (mean 49) months. All were taking regular oral iron supplements and had normal or raised serum ferritin concentrations. None had received a blood transfusion for at least six months or been treated with folic acid, cobalt chloride, or androgens. Monthly measurements of haemoglobin concentration and mean corpuscular volume, and less frequent measurements of serum folate and red-cell folate concentrations, had been made in all patients. The most recent simultaneous values of these variables were used in the analysis. Blood samples were taken at least 36 hours after the preceding dialysis. Haemoglobin concentration and mean corpuscular volume were measured using a Coulter Counter, and serum folate and red-cell folate concentrations by bioassay using *Lactobacillus casei*.

Mean haemoglobin concentration was 8·13 ± 0·29 g/dl, mean corpuscular volume 85·28 ± 0·90 fl (normal 77-93 fl), serum folate concentration 4·46 ± 0·21 μg/l (normal 3·0-20·0 μg/l), and red-cell folate concentration 515 ± 21 μg/l (normal 180-640 μg/l) (figure). Serum folate and red-cell folate concentrations correlated significantly (r 0·43, $p < 0·001$, Pearson correlation), but no association between the other variables was found. In only one patient was red-cell folate concentration abnormally low.

In a subgroup of seven patients with macrocytosis haemoglobin, serum folate, and red-cell folate concentrations were not significantly different from those in the remainder. Similarly, in a subgroup of 14 patients with an abnormally low serum folate concentration, mean corpuscular volume and haemoglobin and red-cell folate concentrations did not differ significantly from those in the other patients.



Haematological values in 72 patients, showing mean ± SEM values. Stippled areas indicate laboratory normal ranges.

Comment

The first study showed that the median loss of folate per dialysis was 37·3 μg, equivalent to 16 μg daily assuming thrice-weekly dialysis, which is only slightly greater than the urinary loss of about 10 μg daily in normal subjects.[3] The second study showed that although serum folate concentration was usually low—normal (mean 4·46 μg/l) and subnormal in 14 patients, red-cell folate concentration, which is probably the best single index of folate stores,[4] was well maintained (mean 515 μg/l) and was subnormal in only one patient. In addition, no patient with a low serum folate concentration had macrocytosis, and haemoglobin concentration in this group was almost identical with that in patients whose serum folate concentration was normal. The dietary folate intake of our patients (33-163 (mean 70) μg/day), though close to the minimum daily requirement,[5] therefore appears adequate to compensate for their slightly increased loss of the vitamin, and we see no justification for giving folic acid supplements to adequately nourished patients receiving haemodialysis.

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Hypothermia and hypotension in Hodgkin's disease

The presence of excessive night sweats, fever, and weight loss of more than 10% of the patient's normal weight determines the stage, treatment method, and prognosis in patients with Hodgkin's disease. I report a patient with Hodgkin's disease who developed hypothermia and hypotension and responded favourably to combination chemotherapy.

Case report

A 22-year-old man presented in September 1977 with a five-month history of excessive night sweats, 12·7 kg weight loss, and a swelling in the left upper abdomen. Examination showed no abnormality except an enlarged spleen. Blood tests showed a haemoglobin concentration of 10 g/dl, normal