Heberden Society

Clinical Meeting, Nijmegen, The Netherlands, May, 1972

At a joint meeting of the Heberden Society and the Dutch Society of Rheumatologists, held at Nijmegen on May 12 and 13, 1972, the following papers were given.

Absorption and Retention of Iron in Rheumatoid Arthritis*

By J. WEBER, H. W. JULIUS, C. W. VERHOEF, and J. M. WERRE (*Municipal Hospital and Radiological Service Unit, Organization for Health Research TNO, Arnhem*)

The fraction of iron initially absorbed from an oral test dose, and the fraction retained in the organism after a few weeks, can be determined by means of a double tracer technique (Boender and Verloop, 1969). The question was studied whether, in patients with active rheumatoid arthritis and anaemia, an absorption and retention test could be used to differentiate between:

- (1) Patients with and patients without iron deficiency;
- (2) Patients who will and patients who will not show an increase in haemoglobin concentration after administration of therapeutic doses of iron.

Measurements were made, by whole-body counting, in 32 patients. The test dose contained 1 mg. iron, as ferrous sulphate. The results included:

- (1) A moderate correlation between retention and the estimated amount of iron in the reticulo-endothelial tissue of the bone marrow;
- (2) A higher correlation between the retention/absorption ratio and the bone marrow iron.

Furthermore, the correlation between the retention/absorption ratio and some other parameters appeared to be:

- (3) Very moderate for both the unsaturated and the total iron-binding capacity;
- (4) Low for changes in haemoglobin concentration after oral iron therapy;
- (5) None for changes in haemoglobin concentration after intramuscular iron therapy;
- (6) None for inflammatory activity indices.

These data suggest that determination of absorption and retention of iron in patients with rheumatoid arthritis and anaemia can contribute more to the diagnosis of (latent or manifest) iron deficiency than to the differentiation between, on the one hand, patients with rheumatoid arthritis and iron deficiency anaemia and, on the other hand, patients with rheumatoid arthritis and anaemia of different origin.

As compared with six iron-deficient patients without inflammation, nine patients with rheumatoid arthritis and bone marrow iron depletion showed a significantly lower mean value of absorption and retention. Both groups, however, retained virtually all the iron they absorbed.

*Study supported by grants from the Organization for Health Research T.N.O. and the Netherlands Rheumatism Association.

Discussion

DR. A. ST. J. DIXON (*Bath*) Are you absolutely sure that your rheumatoid arthritics were not taking something such as salicylates which might have interfered with the absorption of iron?

DR. WEBER We could not entirely exclude this, but all oral drugs were stopped the day before and on the day of the test. When receiving the dose of iron some patients were also taking phenylbutazone and some chloroquine or hydroxychloroquine. I do not know of any interaction between these drugs and iron absorption.

DR. J. K. VAN DER KORST (*Holland*) I am somewhat amazed by the homogeneity of your rheumatoid arthritis group. I always imagine that anaemia could be due to multiple causes, some people losing blood from the gastrointestinal tract and others having anaemia complicated by folic acid deficiency, and so on. Have you any comments on this?

DR. WEBER I think that there may be several causes of iron deficiency in these patients. Many of our patients with rheumatoid arthritis and iron deficiency suffered from loss of blood due to menorrhagia. There was also one patient who suffered from nose bleeding. We did not observe any patients with folic acid deficiency. Some had a low serum folate but I do not think this is a good measure of folic acid deficiency.

Reference

Boender, C. A., and Verloop, M.C. (1969) *Brit. J. Haemat.*, 17, 45

Kinetics of Iron Deposition in Rheumatoid Joints. By R. M. BENNETT, D. WILLIAMS, S. M. LEWIS, and P. J. L. HOLT (*Royal Postgraduate Medical School, London*)

Stainable iron is frequently found in the synovial membrane of rheumatoid joints. Senator and Muirden (1968) give an average value of 347 $\mu\text{g. iron/g. dry tissue}$ in rheumatoid patients, compared with 15.2 $\mu\text{g.}$ in normal controls. The derivation of this iron and its possible relationship to the anaemia of rheumatoid arthritis has attracted much speculation.

We have studied the rate of iron deposition in the synovial membrane of thirteen rheumatoid knees after giving an intravenous bolus of Fe^{59} -labelled transferrin with subsequent surface counting. Four osteoarthrotic knees were studied in a similar way for comparison.

It was found that the count rate over a rheumatoid knee shows a sharp fall over the first 24 h followed by a steady rise which parallels the incorporation of labelled iron into circulating red blood cells; the count rate over the knee representing the sum of the counts due to intravascular Fe^{59} and the synovial fluid/synovial membrane content of