

patients experience when taking iron preparations. These upsets are further aggravated during the early months of pregnancy by morning sickness, and a preparation which is both well absorbed and is associated with a low incidence of gastric irritation therefore offers considerable advantages. In the small series of patients under my care, none of the group treated with Ferro-Gradumet in the early months of pregnancy complained of gastro-intestinal side-effects and all showed an adequate response to treatment when judged by MCHC which, with one exception, was over 30 per cent following a ten-week course of treatment. The latter patient (case 12) showed a pronounced fall in both haemoglobin concentration and MCHC at about the 36th week, and in view of this was transferred to parenteral iron therapy. As will be seen from the table of results, her haemoglobin and MCHC readings continued to fall although remaining within extreme normal limits up to parturition. One other patient (case 11) received parenteral iron from 32nd week till term, showing a slight improvement in both haemoglobin and MCHC readings.

Although this was necessarily only a small-scale trial, the results indicate that adequate iron supplementation during pregnancy can be maintained by the administration of one tablet daily of the controlled release ferrous sulphate tablet Ferro-Gradumet, containing 105 mg. elemental iron, and that parenterally administered iron is rarely indicated.

The figures quoted in the text are taken from *Iron metabolism* by T. H. Bothwell and C. A. Finch and Dieckman and Wegner *Arch. intern. med.* 1934, 53:71, 188, 353.

IRON-DEFICIENCY ANAEMIA

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ANAEMIA IS A COMMON CAUSE of morbidity in general practice.^{1 2 3} Fry⁴ recorded all the cases in his practice presenting with the signs of anaemia and in whom the diagnosis was confirmed. His incidence was 17.5 per 1,000.

On the basis of these figures, the average general practitioner with a list of 2,500 would probably treat 43 new cases a year and more if he adopted screening procedures.

Of Fry's cases, 80 per cent were female and 20 per cent were male and of the total 90 per cent were iron deficient. In the male cases, a far higher proportion was demonstrated to have an underlying disease (44 per cent as opposed to 17 per cent females). The female cases were mainly due to negative iron balance. Iron-deficiency anaemia can usually be corrected by giving oral iron. Parenteral iron is only necessary where the iron stores

are grossly depleted or where oral iron is either not tolerated or is not successful.

Iron therapy can be evaluated in two ways: (1) The haematological response as measured by the rise in haemoglobin. (2) The safety factor with lack of side-effects and acceptability by the patients.⁵

The purpose of this paper is to report the results of a trial conducted in general practice using a controlled release preparation of ferrous sulphate known as Ferro-Gradumet. Ferrous sulphate is still regarded as the standard medication for iron-deficiency anaemia, but side-effects with this are common.^{6 7 8} Their incidence is not certain as several of the reports are conflicting. It is probably in the region of 13 per cent.^{6 9-15} One tablet of Ferro-Gradumet gradually releases 105 mg. of ferrous iron from a sponge-like matrix as it passes along the gastro-intestinal tract and as only 17-20 per cent of the iron is released in the first hour, the risk of gastric irritation is reduced.

In a controlled trial by Webster¹⁷ out of 20 patients known to be intolerant of iron medication, 16 experienced adverse effects after taking the conventional ferrous sulphate tablets, in contrast with only six who reported side-effects after taking Ferro-Gradumet. Five of the patients taking the placebo also reported side-effects.

In a more recent paper, Israëls¹⁶ had no case of side-effects when he reported a series of 36 patients treated with Ferro-Gradumet, in contrast with two cases with side-effects amongst his other cases. Both Israëls¹⁶ and Howard¹⁸ have confirmed the haematological efficiency of the formula.

The utilization of iron in this preparation has been investigated by Layrisse¹⁹ and Webster¹⁷ who found that the coefficient of utilization was approximately the same as for conventional ferrous sulphate. It is possible that iron absorption with the slow release preparation taken before meals may be greater than the conventionally recommended plain tablet which is taken after meals to avoid gastro-intestinal irritation.

A comparison of the results obtained when iron was given before and after meals indicated that the presence of food reduces absorption by approximately half²⁰. Stated another way, when given with meals, the amount of iron absorption varies inversely with the bulk of the meal.¹⁷

The trial

Six general practitioners co-operated in the trial. Two types of case were included—the anaemia of pregnancy and iron-deficiency anaemia. All cases whose haemoglobins were above 75 per cent (11 g./100 m.) were excluded. An attempt was made also to exclude those cases in whom there was continuing blood loss. Some doctors administered routine folic acid to their pregnant patients, while others only gave it when the haemoglobin failed to rise on iron alone. An initial haemoglobin was recorded and thereafter progress was evaluated at weekly or fortnightly intervals. All patients were treated with one tablet of Ferro-Gradumet daily, the majority of these taking it before breakfast. Some of the pregnant patients preferred taking it mid-morning.

Results

Fifty-two patients were included in the trial. In the final analysis of

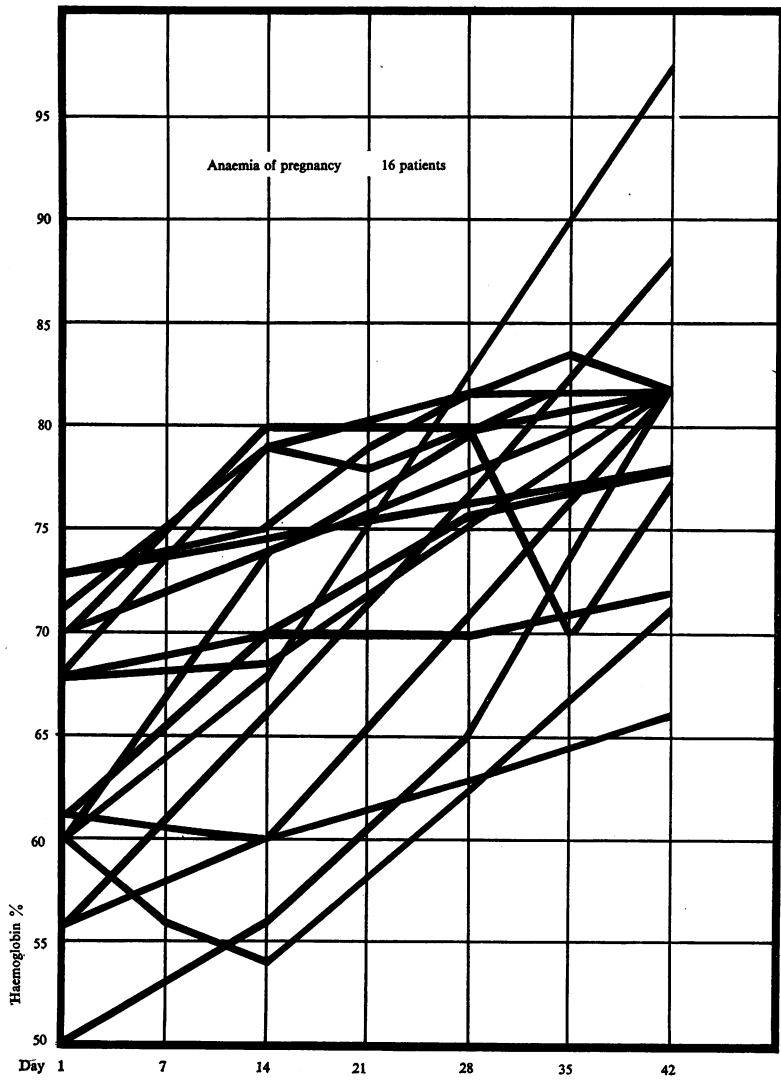


Figure
Response of patients suffering from anaemia of pregnancy

results four of the patients with iron-deficiency anaemia were excluded because their haemoglobin estimation had not been recorded for three months, but a mean rise of 20 per cent was recorded in these cases over the three-month period. The remaining cases consisted of 16 anaemias of pregnancy and 32 iron-deficiency anaemias.

Anaemias of pregnancy. The Figure shows their haematological response. This was satisfactory in all cases. None of the patients experienced symptoms of gastric intolerance but two complained of constipation.

Iron-deficiency anaemia. The response to therapy was satisfactory. The initial haemoglobin was 63.5 per cent with standard deviation of 10.1 and after three-months treatment rose to 87.8 per cent, standard deviation 12.9. $P < 0.0005$ for 30 degrees freedom. The only side-effect experienced in this group was slight nausea in three instances but in no case was it severe enough to necessitate discontinuation of therapy.

Discussion

One of the difficulties encountered in the treatment of anaemia of pregnancy is that many of the patients refuse to take their iron tablets regularly. Ferro-Gradumet which requires only one dose per day, goes a long way towards making iron therapy more tolerable. This trial has confirmed the findings of Howard¹⁸ and Israëls¹⁶ that gastric intolerance is extremely low with this presentation. It is of interest to note that Israëls¹⁶ reported a case which failed to respond to conventional iron therapy but had a normal response to Ferro-Gradumet and he speculates that it may be possible to reduce still further the number of patients who are given parenteral iron preparations. In both anaemia of pregnancy and iron-deficiency anaemia, the haematological response was within the anticipated range indicating that Ferro-Gradumet supplies an adequate amount of iron. Certainly, in patients who are not responding to conventional oral iron medication, a preparation of this type giving slow release and improved absorption could be tried before resorting to parenteral iron.²¹

Summary

A new iron formulation, Ferro-Gradumet, was used to treat 52 cases of iron-deficiency anaemia, 16 of these being anaemia of pregnancy. The incidence of gastric intolerance was negligible and the haematological response satisfactory.

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PERSONAL POINTS OF VIEW

GROUP PRACTICE

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IN 1964, THERE WERE TWO practices in this town. Each practice consisted of two doctors looking after approximately 5,000 patients. Each practice was semirural in character and extended over an area of ten miles radius of the town. Each one operated from a main surgery and at the same time maintained small lock-up branches, two at each practice, in the surrounding villages. During the year 1964, plans were made for these two practices to amalgamate, and all four doctors began to work as a group as from 1 January, 1965.

Negotiations

It was in the first quarter of 1964 that the first moves were made towards a merger. Meetings were arranged between the partners, and in the early stages, each meeting was marked by the exchange of some confidence, such as the numbers on the list, the numbers of dispensing patients, the showing of balance sheets, certain details of expenses and so on. When