TOTAL DOSE "IMFERON" DRIP

by

U. N. PATHAK*, M.M.S.A., M.R.C.O.G.

Iron deficiency anaemia in the last trimester of pregnancy continues to be a big problem in any ante-natal clinic. Although oral iron is safe, effective and cheap, and so remains the treatment of choice, some patients fail to take it regularly. Parenteral administration of iron has to be resorted to in such cases. Intramuscular route necessitates series of injections either in ante-natal clinics or the Surgery of the general practitioner; intravenous administration of total dose of Iron Dextran complex ("Imferon") offered a suitable alternative.

Material and Method

All patients requesting hospital confinement were supplied with tablets of ferrous sulphate on their visit. Routine haemoglobin estimation was carried out at this stage and at 32 weeks, or earlier if the booking levels had been below 65% (9.6 gms). The patients with low haemoglobin were further investigated, viz. M.C.H.C., P.C.V., blood film and in some cases, serum iron estimations. Only confirmed cases of iron deficiency were selected. In all, 70 patients were treated by this method. They could broadly fall into the following categories:—

(1) Haemoglobin less than 50% (7.5 gms) at first visit. There were six patients in this group.

(2) Haemoglobin between 50-65% (7.5-9.6 gms) at first visit and failure to show a rise (or even fall) after six weeks of oral therapy (only patients' word was taken for this purpose). There were 24 patients in this group.

(3) Haemoglobin above 65% (9.6 gms) at first visit, but less than 65% (9.6 gms) at 32 weeks. There were 26 in this group.

(4) Those referred by the general practitioners with haemoglobin less than 60% (8.9 gms). These were invariably near 36 weeks and were 14 in number.

Method

The dose of iron dextran complex was calculated according to the formula advised by the manufacturers, which is:—

$$9\ W + \frac{W}{6}\ (100 - Hb\%) = \text{mg of iron}$$

The formula relates the quantity required to body weight and haemoglobin deficit with an allowance for development of foetus and iron lost in placenta and normal third stage blood loss.

*Senior Registrar, Jubilee Maternity Hospital, Belfast (Present Address — Lecturer, Department of Obstetrics and Gynaecology, University of The West Indies Jamaica, W.I.).

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The total dose of Imferon required was diluted with normal saline. The concentration was kept as near 5% as possible, using either a pint or a litre bottle as the case may be. The patient was admitted in the morning received her infusion and, if there had been no reactions, invariably allowed home the same evening. The infusion was run at 30 drops per minute to begin with, increasing it to 45 drops per minute, subsequently. The range of time for this infusion was 4½-12 hours, with an average of 7.7 hours. No iron therapy in any form was given after the infusion until the delivery of the patient.

Results

Haemoglobin was checked at intervals of 2 weeks, 3 weeks and 6 weeks after infusion and at postnatal visit. Two patients failed to show more than 5% rise and were taken out of the series and managed differently. The rest showed a steady increase. The response was most marked in Group I. The rise in haemoglobin at the end of 2 weeks was 10-20%, with an average of 15% (Fig. 1). The response in Groups II-IV was less marked, the rise being 2-10%, with an average of 7 (Figs. 2, 3 and 4).

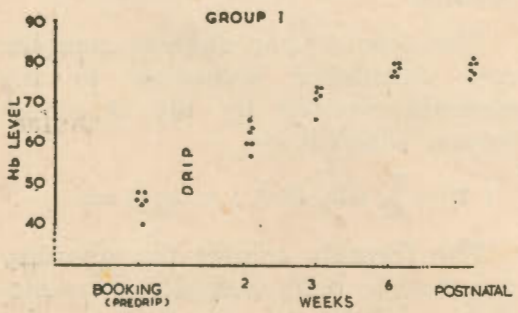

Fig. 1
Showing rise in Haemoglobin per cent following "Imferon".

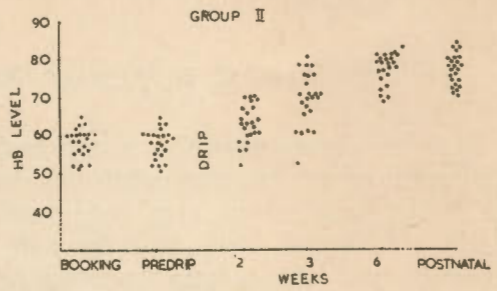

Fig. 2
Showing rise in Haemoglobin per cent following "Imferon" drip.

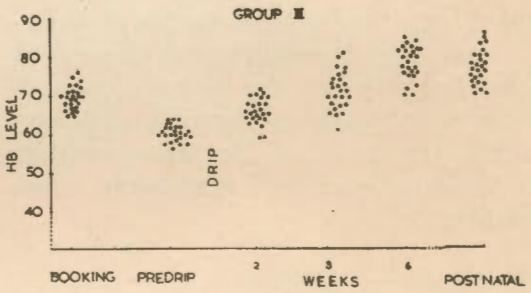

Fig. 3
Showing rise in Haemoglobin per cent following "Imferon" drip.

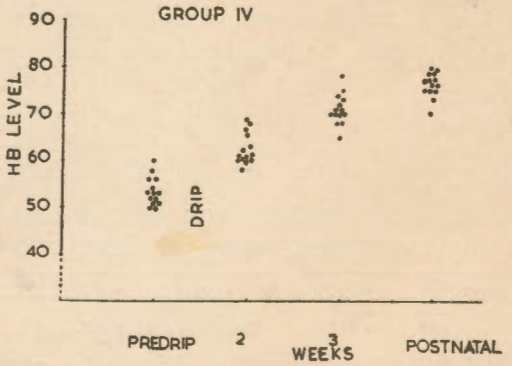

Fig. 4
Showing rise in Haemoglobin per cent following "Imferon" drip.

In Group I, at the end of 3 weeks, there was a further rise of 3-10% with an average of 5, while in Groups II-IV, the response was comparatively sharper, the rise being 2-10% with an average of 5 (Figs. 1-4).

The 6 week response in haemoglobin rise was 10-26%, with an average of 15% for all groups, there being no patients in the study with haemoglobin levels below 72%. Varde (1964) noted a similar phenomenon, the initial rise being rapid and the second phase more leisurely.

There were no severe reactions in the series. The mild ones are divided for convenience into local and general (Table I).

TABLE I

LOCAL	
Sore arm	11
Superficial thrombophlebitis ..	2
GENERAL	
Pyrexia 1°F	2
2°F	2
Headache, dizziness, nausea ..	6
Associated urinary infection ..	3

Local

Thirteen patients complained of local reactions; eleven of these had "soreness" only and did not need any treatment. Definite thrombophlebitis was seen in only 2 cases and was mild; only one patient had to be detained in hospital for 3 days on this account. Varde (1964) also, using saline as a diluent, reported only 7 cases of thrombophlebitis in a series of 307. However, experience with dextrose is not so happy. Lane (1964) found an incidence of 33% with 5% dextrose, falling to less than 5% with 3% solutions.

General

Four patients exhibited a rise of temperature, 2 of these only 1°F. In the other 2, the temperatures rose to 100.4°, one of these had rigors and the infusion had to be discontinued. Everybody else completed theirs and stayed in hospital overnight. Even the patient with rigors completed her infusion later without any further difficulty.

Six patients admitted to headaches, dizziness and nausea during infusion or within the first 24 hours. However, it is worth mentioning that 2 offered the complaints, the other 4 admitting this only on direct questioning.

Three patients reported on their first visit (one week after infusion) symptoms suggesting urinary infection. This was confirmed by microscopy and culture. In one case this was a definite recurrence of an earlier attack while the other 2 were new cases. All 3 were settled on Furadentin, 100 mg. twice daily.

Discussion

Iron deficiency anaemia responds to oral therapy, in fact as fast as following intramuscular route (Cope *et al.*, 1956). The pregnant patient however is notoriously unreliable about the regularity of her intake and this may in fact be the major cause of lack of rise of haemoglobin in Group II, or actual fall in Group III. Parenteral route presents a sure mode of iron administration in such patients. Intramuscular route has the potential risk of carcinoma (Richmond 1959) and staining (no less a hazard in the female!). So it was decided to use Iron Dextran

Complex as total dose intravenous infusion.

The earlier experience with 5 per cent dextrose as a diluent had been rather unhappy. Two patients, out of a total of 26 (not included in the present series), had severe generalized reactions, an experience confirmed by Clay *et al.* (1965) subsequently. Normal saline offered a natural alternative as a diluent. The administration was smooth and the patients tolerated the drip well. There were no major reactions. Out of the 26 minor reactions in 13 patients, only one was severe enough to warrant her stay in hospital for 3 days. This is less than the reactions following intramuscular route (Lawrence and Moulton, 1960).

The response to infusion was good, only 2 patients failing to show more than 5 per cent increase in haemoglobin. The haemoglobin increase was most marked and rapid in patients with low haemoglobin (Group I). In other groups the haemoglobin increase was not as rapid as noted by Basu (1963) or Lane (1964), but the graph did seem to level off at the end of a 6 week period. Final haemoglobin figures were all close to 80% near term, an aim we all try to achieve in antenatal care (Giles and Burton 1960). The loss in placenta and third stage haemorrhage did not seem to affect the haemoglobin.

This does not increase bed load. One bed kept for this purpose in the ante-natal ward will suffice for well over 150 patients in one year. With increasing experience and confidence this could be carried out as outpatients procedure. The coincident saving in blood is yet another tempting factor. Yet the most important fact is the attitude of the patient. They preferred this one half day "ordeal" to either ingestion of tablets throughout their pregnancy or the prospect of repeated intramuscular injections.

Summary

Seventy patients were treated with total Dose Iron Dextran Complex ("Imferon") using normal saline as diluent. All showed satisfactory haemoglobin increase except 2. There were no severe reactions. Thirteen patients suffered minor reactions, which did not have any adverse effect on the mothers in any way.

Acknowledgment

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