

every three hours, was given from 23rd for 4 days (total 6 gm.). Temperature came down 18 hours after the beginning of the treatment. Convalescence was uneventful but weakness and tachycardia persisted for about 10 days. There was a loss of 4 lb. of weight during the period of illness.

Remarks.—This is an early case of scrub typhus showing typical eschar and the clinical diagnosis was made as early as the third day of the illness and was subsequently confirmed by animal inoculation. The patient had not been out of Calcutta in recent months. The infection was probably contracted in the maidan of Calcutta or on the riverside where he used to go frequently. This case also shows the typical response of typhus fever to chloromycetin.

Our grateful thanks are due to Dr. R. O. A. Smith, Department of Microbiology, All-India Institute of Hygiene and Public Health, for the animal inoculation test.

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A SEVERE CASE OF ANÆMIA ASSOCIATED WITH HOOKWORM NOT RESPONDING TO ORAL IRON THERAPY AND PARENTERAL LIVER EXTRACT TREATED WITH INTRAVENOUS IRON

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D. R., a Hindu male, aged 41 years, was admitted for gradual weakness, swelling of legs for one week and irregular low-grade fever for about three weeks.

He gave a history of several attacks of malarial fever in the past. No other significant past or family history could be elicited.

On examination.—There was puffiness of the face and slight œdema around the ankles, marked pallor and slight icteric tinge of the conjunctivæ. Tongue very pale and smooth. Temperature 99.6°F. Pulse 100 and respiration 24 per minute. B.P. 110/60 mm. of Hg.

A few scattered rhonchi were audible in both lungs and no abnormality was detected in the heart. Spleen and liver were both palpable. In the central nervous system nothing abnormal was detected. Proctoscopy did not show any abnormality.

Laboratory findings: Blood.—Hb. 16 per cent (Sahli), 2.24 gm., R.B.C. 0.74 million per c.mm., packed cell volume 6.2 per cent, M.C.V. 83 c μ, M.C.H. 31.4, M.C.H.C. 37.4 per cent. W.B.C. 3,200 per c.mm., polymorphs 64 per cent, lymphocytes 30 per cent, mono 4 per cent, eosino 2 per cent. No malaria parasites. van den Bergh reaction negative. Icterus index 10 units. Aldehyde test negative. Widal negative.

Stool.—Ova of hookworm, a few.

Urine.—A trace of albumin. No other abnormality.

Gastric analysis.—Acid curve within normal limits.

Treatment and progress.—He was given ferri et ammon citrate 90 gr. daily in 3 divided doses, vitamin B complex and ascorbic acid tablets. A mixed diet rich in proteins was prescribed. A blood transfusion was considered, but as the patient had no relations who could donate blood and as he could not pay for professional donors, this could not be given.

After a week's treatment, the puffiness of the face and œdema disappeared but his blood condition did not show any improvement. The readings were: Hb. 16 per cent (Sahli), 2.24 gm. and total R.B.C. 0.74 million per c.mm.

He was then given in addition to ferri et ammon citrate mixture, whole liver extract (10 U.S.P. units) intramuscularly daily for a week. At the end of the second week's treatment, his temperature came down to normal but the blood condition remained practically the same, the reading being Hb. 17 per cent (Sahli), 2.38 gm. and total R.B.C. 0.75 million per c.mm.

He was then given treatment for ankylostomiasis with tetrachlor-ethylene, and the ferri et ammon citrate mixture was replaced by ferrous iron orally in the form of poly-hæmin tablets—two tablets a day. Liver extract injections were continued. At the end of third week there was slight improvement, Hb. rising to 21 per cent (Sahli) and R.B.C. to 0.78 million per c.mm.; but remained at the same level at the end of another week's treatment on the same line. The readings at the end of the fourth week were: Hb. 21 per cent (Sahli), 2.94 gm. and R.B.C. 0.76 million per c.mm.

At this stage, iron by mouth and liver extract injections were stopped. Intravenous injections of a preparation of saccharated iron oxide containing 2 per cent of elemental iron were started. The iron solution was mixed with 25 cc. of 25 per cent glucose solution and injected intravenously very slowly. 2½ cc. containing 50 mg. of elemental iron were given

on the first day, 5 cc. containing 100 mg. of Fe on 2nd and 3rd days and subsequently 5 cc. on alternate days for two weeks. There was no difficulty in injecting the solution in the vein and the patient did not complain of any discomfort either during or after the injection.

Weekly blood examinations after starting intravenous iron therapy were as follows:—

At the end of 1st week (after 400 mg. Fe)
Hb. 26 per cent (Sahli) 3.64 gm. and R.B.C. 0.81 million.

At the end of 2nd week (after 700 mg. Fe)
Hb. 33 per cent (Sahli) 4.68 gm. and R.B.C. 0.98 million.

At the end of 3rd week (after 900 mg. Fe)
Hb. 45 per cent (Sahli) 6.30 gm. and R.B.C. 2.01 millions.

Packed cell volumes	..	17 per cent
M.C.V.	..	85 cμ
M.C.H.	..	32 γγ
M.C.H.C.	..	38 per cent

At the end of 4th week, 12 days after the last injection of iron, his hæmoglobin had risen to 52 per cent (Sahli), 7.28 gm. and R.B.C. to 2.34 millions. He was given a final treatment with tetrachlor-ethylene (although his stool was negative after the first treatment), and was discharged from hospital (*see* chart below).

Comment.—The case described above was one of severe normocytic and normochromic anæmia secondary to ankylostomiasis. Such cases usually respond well to combined oral iron therapy and parenteral liver extract injections. If the anæmia is very severe, however, the hæmopoietic tissues may not respond well and a blood transfusion is necessary.

In the present case, oral iron, both as ferri et ammon citrate and as ferrous sulphate in doses, that are regarded as adequate, at first alone for a week and then with liver extract for 3 weeks failed to produce any marked improvement in the hæmoglobin and red blood cells in the blood. Blood transfusion could not be given for reasons already mentioned. It was then decided to give a trial with intravenous iron and the result obtained was very satisfactory. There was a quick response and the hæmoglobin continued to rise even after stoppage of the injection.

In conclusion, it may be said that the result obtained in the present case is sufficiently encouraging to expect that intravenous iron therapy may provide a valuable, cheap and ready weapon in the hands of the practitioners for the treatment of severe and chronic anæmias of this nature, specially so, because blood transfusion is still available only to the big hospitals and mostly for those who can pay for it.

We are grateful to Dr. K. Bhaduri, Chief Medical Officer, Calcutta Port Commissioners Hospital, for his kind permission to communicate the case records for publication and to Dr. D. Lahiry, B.Sc., M.B., Pathologist, Calcutta Port Commissioners Hospital, for the laboratory investigations of the case. The intravenous iron preparation used in this case was kindly supplied by Messrs. British Schering Limited.

Postscript, 19-7-1951.

On discharge from the hospital the patient was given leave for one month and advised to take Fersolate tablets. At the end of a month he reported to the out-patients' department when he was found to be in good general health. He was then allowed to resume his usual work. He has been working since then, without further treatment. His blood was again examined last week and showed the following: Hb. 66 per cent (Sahli), 9.5 gm. and R.B.C. 3.75 millions per c.mm.

CHART

