CHLOROSIS, WITH ESPECIAL REFERENCE TO ITS TREATMENT BY INTESTINAL ANTISEPTICS.¹

BY CHARLES W. TOWNSEND, M.D.

DURING my last year's service in the out-patient department of the Massachusetts General Hospital I endeavored to observe the results of the treatment in chlorosis from intestinal antiseptics according to the theory of Forscheimer.²

In order to make sure of the diagnoses, the blood corpuscles were counted at least once in each case, and the hemoglobin was estimated at each visit. For this work, by means of the Fleischl hemometer and Zeiss blood-counter, I am greatly indebted to my assistants, particularly to the hospital externes, Drs. Elliot P. Joslin and C. B. Barney.

The average per cent. of hemoglobin in the 87 cases of chlorosis studied was 35.5 per cent. the extremes being 18 and 72 per cent.

The youngest patient was fifteen, the oldest thirty-four years; 70 per cent. were between sixteen and twenty years of age, 20 per cent. between twenty-one and twenty-five years.

Sixty-three per cent. were born in the United States; 19 per cent. were Irish; 12 per cent. from the Provinces; one was colored. Twenty per cent. of the immigrants became chlorotic within a year of their arrival here, and more than half of these came from the Provinces. This is a familiar fact, and is commonly explained by a change of manner of living from out-of-doors to the confined work of domestic servants. This, however, cannot explain the effect in all cases, for I have known nursery maids who spent a larger part of their time in the open air and who led very hygienic lives to become chlorotic within a short time of their emigration from the Provinces. The climatic change seems to be the underlying cause. The duration of the disease was under six months in 70 per cent. of the cases, while 15 per cent. had suffered from six months to one year, and another 15 per cent. had suffered over a year.

The most common symptom was palpitation, all the patients complaining of this, generally on the slightest exertion. All but three complained also of dyspnea on exertion.

Seventy-four per cent. complained of headache, 75 per cent. of dyspepsia, 65 per cent. of constipation, leaving 35 per cent. where the bowels were regular.

In 54 per cent. menstruation was scanty, in many of these being also irregular. In 15 per cent. it was normal. In 11 per cent. it was profuse; and in 20 per cent. there was amenorrhea in periods of two months to a year. In two of these menstruation had never occurred.

Edema, usually confined to the legs but sometimes more general, was said to occur in 34 per cent. of the cases.

The color of the cheeks, lips, conjunctivæ, tongue and finger-nails was noted in each instance; and as this record was, with rare exceptions, made only by myself there was less chance of error by variations in the scale of estimation. I have tabulated these results in percentages of the total number, classing them as pale (which includes the white or colorless), fair and good. I have put them in the order of their value for

diagnosis. Thus the nails are placed first, being pale in 95 per cent. of the cases, while the conjunctivæ are put last, showing pallor in but 64 per cent. of the cases.

TABLE OF COLOR IN PERCENTAGES.

	Pale.	Fair.	Good.
Nails	95	5	0
Cheeks	89	7	4
Tongue	84	15	1.2
Lips	76	21	2.4
Conjunctivæ	64	25.5	10.5

I was surprised at this last result, as I had formerly considered the color of the conjunctivæ of special value in diagnosis. The color of the nails varies somewhat with the method of examination. When the fingers are fully extended, as is usually the case when the patient presents them for inspection, the circulation under the nails appears to be partly cut off, and the middle or sometimes proximal half of the nail becomes white. This I found could occur, especially by hyper-extension of the fingers, even among the plethoric, but was much less marked, as a rule, than in the anemic. By examining the fingers partly flexed this error could be avoided. Besides the color of the tongue, the flabby and often indented appearance was generally present. Marked indentation from the teeth was noted in 34 per cent. of the cases, which is much understating its frequency, as this condition was recorded in the latter half of the cases only.

All of the cases were examined for bruits and heart murmurs. The *bruit de diable* was present in 86 per cent. of the cases, being heard in a little more than half of these, or in 45 per cent. of all the cases, in both sides of the neck. In about 15 per cent. of all the cases a bruit was heard in the left side of the neck alone, and in 25 per cent. of the cases on the right side alone.

As regards the systolic murmur at the base of the heart this was present in 50 per cent. of all the cases; but in nine of these it could be heard only after increasing the heart-beat by exertion, the patient being made to walk across the floor several times. In a few cases the disappearance of the bruit or murmur was noticed; thus the systolic murmur disappeared in one case when the hemoglobin reached 63 per cent., and in two cases 68 per cent., the hemoglobin before treatment being respectively 23, 28, and 28 per cent. A bruit heard at the left alone at 50 per cent. disappeared at 75 per cent. Bruits heard at both sides at 40 and 38 per cent. disappeared from the right at 55 per cent. in one of the cases, and from the left at 76 per cent. in the other.

TREATMENT.

It is to be remembered that as out-patients these cases continued in their former life, modified but slightly by directions given as to diet, etc. The results should not, therefore, be compared with those obtained inside a hospital.

There were 30 cases which could be carefully followed who were treated with beta-naphthol without iron for purposes of intestinal antiseptics. Two grains were given three times daily, and the average length of treatment was three and one-third weeks. The average gain in hemoglobin per week in these cases was a little less than 2 (1.85) per cent., the greatest gain being 10 per cent. per week for two weeks and 6 per cent. for five weeks. The patient that did the worst lost 7.50 per cent. per week for two weeks.

¹ Read before the Boston Society for Medical Improvement, February 10, 1896.

² Transaction of Association of American Physicians, 1893.

After three weeks of beta-naphthol treatment, if the patient gained less than two per cent. of hemoglobin a week she was put on Bland's iron pills.

There were 31 cases treated with Bland's pills, five grains only, *t. i. d.*, for an average length of four weeks. The average gain per week was a fraction over five per cent. (5.07) or more than two and a half times as much as in the case of beta-naphthol. In Dr. Stone's cases treated in this clinic with Bland's pills, a gain of five per cent. per week is stated to be a fair average.

As so many cases were constipated (65 per cent.), although less than are generally supposed, and as this symptom was always treated with cascara, whether the patient was given beta-naphthol or iron, it seemed to me of interest to treat a series of these constipated cases with cascara alone. Seven cases were so treated; to some of these *nux vomica* and hydrochloric acid being also given where the stomach was also disordered. The results, however, were not encouraging, as these cases after treatment averaging two weeks and one day lost on an average one and a half per cent. of hemoglobin a week. The greatest gain made was but four per cent. in one case. These results, as well as the 35 per cent. of the cases of chlorosis without constipation, do not bear out Sir Andrew Clark's deduction that chlorosis is largely dependent on constipation.

Of the 31 cases treated with iron, 12 had previously had a preliminary treatment for three weeks with beta-naphthol with an average loss of one-twelfth per cent. per week. When put on iron these gained 6.7 per cent. per week for an average of four and two-thirds weeks. This certainly shows the superiority of the iron treatment in these cases and seems also to point to a certain advantage from the preliminary treatment with beta-naphthol; for of 19 cases treated with iron without the preliminary beta-naphthol treatment, the average gain for three and one-half weeks was 4.5 per cent. per week. A simple computation will show, however, that at the end of seven weeks the last set of cases continuing the slower gain would be ahead of the other cases with the two sets of treatment. What the effect of a combination of the two treatments at the same time would be I am trying to find out at the hospital now and the field looks promising from the results obtained above.

TABULATED SUMMARY OF TREATMENT, SHOWING AVERAGE GAIN IN HEMOGLOBIN PER WEEK.

Beta-naphthol, 30 cases	1.85%
Bland's iron pills, 31 cases	5.07%
Cathartics alone, 7 cases	-1.50%
Bland's pills, after a preliminary treatment of beta-naphthol, 12 cases	6.70%
Bland's pills, without a preliminary treatment of beta-naphthol, 19 cases	4.50%

ADDENDA.

Since the above was written I have been able to test the effect of iron and beta-naphthol combined in three months' service in the out-patient female medical department of the Massachusetts General Hospital. During this time 92 cases of chlorosis were recorded. Of these 28 were observed from two to seven weeks or an average of 4.3 weeks.

Those seen once or twice only were excluded.

In all the hemoglobin was estimated at each visit and, to make sure of the diagnosis, the blood was counted once. For this work I am greatly indebted to the externe, Mr. W. H. Smith, and a number of

able assistants. It is to be noted that the average of two readings of the hemometer was always taken, and without the knowledge of the percentage obtained at the previous visit, the examiner thus avoiding prejudice.

The cases were all treated with two grains of beta-naphthol in tablet form and five grains of Bland's iron pills three times daily.

The average gain per week in these 28 cases was 7.9 per cent., the maximum gain being 20 per cent. per week for two weeks in one case, 14 per cent. for three weeks in another, 13 per cent. for four weeks in another, while another patient averaged a gain of 11.4 per cent. a week for five weeks.

The average amount of hemoglobin possessed by each patient before beginning treatment was 48 per cent. After 4.3 weeks of treatment it was 82 per cent. The rapid return of health, as shown by the symptoms of the patient and the improvement in color, was often most striking.

The results of this combined treatment, as will be seen, are considerably better than those obtained with iron alone, and much better than those with beta-naphthol alone.

A STUDY OF THE BLOOD IN CASES OF TUBERCULOSIS OF THE BONES AND JOINTS.

BY JOHN DANE,
Assistant Surgeon Infants' Hospital, Boston.

ALTHOUGH such a vast amount of labor has been spent during the past ten years in investigating the conditions occurring in the blood in a great number of diseases, as yet very little has been recorded concerning the alteration that it shows as a result of tuberculosis affecting the various bones and joints. The surgical aspect of disease in these situations has been ably dealt with by many of the leading surgeons, both in general works and in special volumes devoted to this subject. Moreover, making up, as disease of the bones and joints does, so large a part of the cases that are brought for treatment to the orthopedic surgeon, their nature has been most exhaustively dealt with in all the text-books and countless monographs of that specialty. But so far as I have been able to find, no attempt has as yet been made to see if there is any constant relation between the pathological lesion in these cases of surgical tuberculosis and the condition of the blood, especially with reference to the presence or absence of a leucocytosis. Feeling that such a relationship, if it were proved to exist, would not only be interesting from a scientific point of view, but might be made to contribute some valuable data to the practising surgeon in his attempts to treat this frequently recurring disease, I set about a series of examinations of the blood upon the cases in the wards of the Children's Hospital in Boston. For the use of this clinical material, and for many acts of kindness during the progress of the work I am indebted to Dr. Bradford and Dr. Burrell of the staff of that institution.

In the literature of the blood it is generally agreed that tuberculosis, in all the vast variety of forms in which it occurs, is a disease that does not increase the number of the white corpuscles to any considerable extent. When it appears to do so, it is owing to a superseded lesion of an inflammatory nature. In