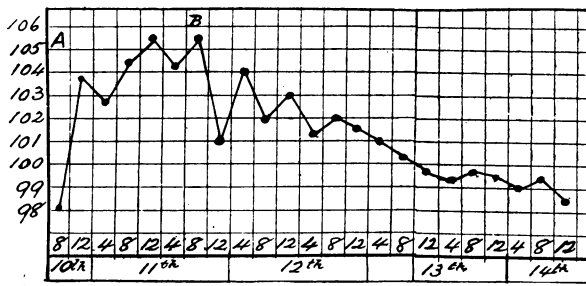


I arrived there about 4 a.m. and found him very much better—temperature down to 102° F., and pulse, though still weak, much better than in the previous evening. His subsequent progress is best seen in the annexed chart.



A, Cauterized with carbolic acid. B, 40 c.cm. serum.

At the same time as the serum was injected we injected a few minims of liquefied carbolic acid in three places, about ½ in. to the proximal side of the pustule.

Result.

There was great enlargement of the glands in the axilla and elbow for several days after the injection, but it gradually subsided.

REMARKS.

The chief points of interest about this case are:

1. The apparently long incubation period—ten days—if counted from the date that the man got the blood of the anthrax-infected animal over his hand; he was certainly cleaning the byre after the third animal's death, but had not the same opportunity of getting infected that he had on the 29th.

2. The rapid amelioration of the symptoms after the injection of the serum.

3. Recovery without excision of the pustule. Most cases of recovery after treatment by Sclavo's serum have been treated by excision as well. Herley reported 8 cases of anthrax treated by Sclavo's serum and excision, with only one death. In one case only was excision not performed.¹

REFERENCE.

¹ *Lancet*, December 4th, 1909.

INTRAMUSCULAR AND INTRAVENOUS INJECTIONS OF ANTIMONY IN TRYPANOSOMIASIS.*

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The following experience is published now in order to place it within reach of those engaged in the study and treatment of trypanosomiasis; later a record of three and a half years' observation upon this case of trypanosomiasis, in whom antimony treatment was carried out, will be published in full.

Intramuscular Injection.—The preparation used was metallic antimony in Lambkin's oily medium, received from Sir Patrick Manson, who procured it from Mr. Plimmer, who had tested it in the Lister Institute and used it in the treatment of syphilis

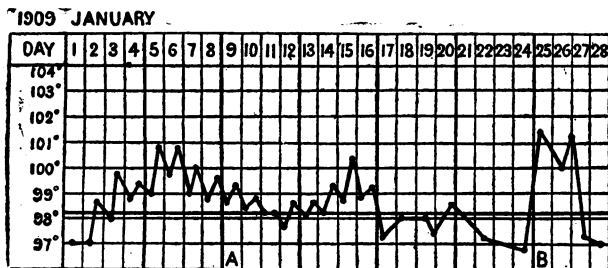


Chart 1.—January 3rd, 1909. Intramuscular injection (buttock) 10 minims = ½ grain of precipitated metallic antimony in Lambkin's oily medium. Followed immediately by severe local pain and swelling—no necrosis. Duration of symptoms, two weeks. A, Fever due to antimony; B, fever due to trypanosomes.

* Presented as a preliminary report before the meeting of the Association of American Physicians, 1911.

in one of the British military hospitals. Ten minims, representing one-half grain, of the precipitated metallic antimony were injected into the muscles of the left buttock. Within an hour the patient experienced great local discomfort, which increased till the whole buttock was greatly swollen, painful and tender to such a degree that the least pressure of his body upon the bed, where he was compelled to remain, caused him to call out with pain. Even with such cause removed the pain was so intense that morphine had to be used frequently. This condition, accompanied with sleeplessness, lasted for ten days, when the swelling, pain and tenderness gradually subsided, and within fourteen days from the date of injection the patient was able to walk about, and two days later all inconvenience had disappeared. When the area of swelling had lost the tenderness sufficiently to allow of palpation, it was found to be tense, hard, and fairly sharply defined to a circular area of about 18 to 20 cm. in diameter. There was no necrosis. The temperature was as shown in Chart 1.

Sir Patrick Manson had recommended the use of the injection "once every one, two, three, or four weeks," the maximum dose being "20 minims (5 per cent. mixture), equal 1 grain," beginning with "10 minims." From the experience here recorded such treatment was, however, impossible, even had the patient not refused, which he did most emphatically.

Intravenous Injection.—The preparation used was antimony sodio tartrate, also received from Sir Patrick Manson, who had procured it from Mr. Plimmer. One-sixth of a grain in normal saline was injected into a vein of the arm. From November 10th, 1909, to February 1st, 1910, thirteen injections were given with intervals of about four days; on one occasion there was an interval of sixteen days, on another an interval of eight days. The thirteenth injection was received at about 11 a.m. on February 1st, 1910. About twenty minutes after leaving the laboratory, while on his way home, he was suddenly seized with nausea and great weakness. He managed to reach his home unaided. Before I could reach him he had had a chill and violent abdominal pain. When I saw him he was greatly prostrated, complained of intense headache, and had a temperature of 103.6° (see Chart 2). This lasted five or six hours, when it subsided to normal.

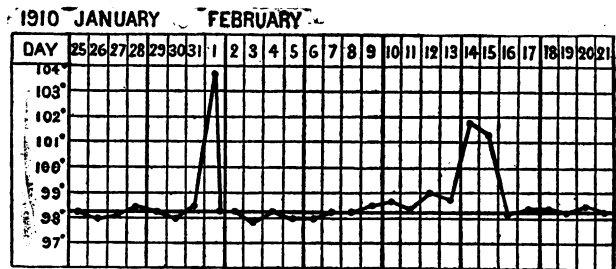


Chart 2.—February 1st, 1910. Twenty minutes after intravenous injection of ½ grain antimony sodio tartrate (being the thirteenth injection since November 10th, 1909) the patient was seized with violent nausea, abdominal pain, chill, and great weakness. Temperature as above. Symptoms persisted five or six hours. February 14th, same symptoms (less severe) as those of February 1st. Trypanosomes absent. Indican in great excess. From October 9th, 1909, to January 31st, 1910, 1½ to 2 grains (in 3 pints of water) antimony lithium tartrate, by mouth daily.

The blood was negative for trypanosomes. The urine showed great excess of indican, otherwise it was normal. For twelve days the weakness and abdominal distress continued, and on the thirteenth day from the former paroxysm he had, for six hours, a similar but somewhat less severe attack. Trypanosomes were not found at the time of this second fever, and have been absent upon all subsequent examinations.

Blood and spinal fluid inoculations into monkeys (Rhesus), rats, and mice have been attended by negative results.

From October 9th, 1909, to January 31st, 1910, he took daily by the mouth 1½ to 2 grains of antimony lithium tartrate in three pints of water in addition to the intravenous injections.

Similar sudden, but less severe and never alarming, outbreaks of toxic symptoms occur (according to Todd†) with the administration of mercury. In the case here reported the manifestations were severe, alarming, and entirely without warning. The great excess of indican, had it been noted before the last injection, might have been a warning.

The urine had been watched carefully for signs of disturbed renal function, but with negative results.

The behaviour of the disease subsequent to the antimony poisoning was most important. From June, 1907, to November, 1909 (prior to the intravenous administration of the antimony), there were twenty-six febrile paroxysms associated invariably with trypanosomes in the peripheral blood. From that date the active antimony treatment, as recorded

† Private communication—unpublished.

above, was begun, and except for the two rises of temperature occurring with the other symptoms of poisoning, no fevers have occurred, and trypanosomes have not been found in the peripheral blood or in animals inoculated with blood and spinal fluid. That is, parasites and fever have been absent for one and a half years.

THE TREATMENT OF SERUM SICKNESS OCCURRING IN DIPHThERIA.

BY
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THOUGH "serum sickness" in the great majority of cases is not attended by danger, the symptoms are in the highest degree unpleasant. When a patient who seems to be making rapid progress towards recovery is suddenly seized with pain, more or less severe, accompanied by signs of great prostration, a conspicuous eruption and a high temperature, forming a clinical picture as sinister in aspect to the lay mind as any previously present in the disease, it is not to be wondered at that such a condition, lasting in all its intensity for several days, should lead the uninitiated to think that the cure is as bad as, if not worse than, the disease. The following is an example :

CASE I.

O. P., aged 7 years, was treated with 16,000 units of antitoxin (given in four doses) for an attack of diphtheria. She improved rapidly and was progressing favourably when, a week after the last injection, she was suddenly attacked in the middle of the night with abdominal pain. A few hours later the temperature, previously normal, was found to have risen to 102°, whilst the pulse was 125. The pain increased in severity and extent, invading the upper and lower limbs and back. There was also swelling of the neck and tongue, while the face, trunk, and extremities were covered with a typical urticarial eruption. This condition lasted for fully three days.

In this case the pain was considerably relieved by the application of heat in the form of poultices and fomentations. Calcium lactate given in 5-grain doses every three hours caused the disappearance of the rash, but no other effect was seen. The two following cases, however, responded to treatment in a much more gratifying manner.

CASE II.

Wilfred A., aged 5 years, received 14,000 units. Ten days after the first injection severe pain developed in the fasciae and tendons of both lower limbs, while an urticarial rash appeared on the chest, the temperature being raised several degrees. After eight 5-grain doses of sodium salicylate, given every three hours, the pain and eruption completely disappeared, while the temperature fell to normal. Uninterrupted recovery followed.

CASE III.

Harry D., aged 12 years, was treated with 14,000 units. The diagnosis of diphtheria in this, as in the two previous cases, was confirmed by a bacteriological examination made in the laboratories of the Clinical Research Association.

The patient's progress was satisfactory until about twelve days after the first injection, when he was seized with severe pain in the abdomen and right groin, accompanied by stiffness in the knee, ankle, and shoulder joints, and in the muscles of the neck. The temperature rose rapidly from normal to 102.2°, while the pulse was 114. There was also a well-marked urticarial eruption.

Five grains of aceto-salicylic acid were given every three hours. Next morning the temperature was normal, and the pulse 72, while the pain and rash had entirely vanished. No more unfavourable symptoms followed.

In Dr. Goodall's interesting and valuable article which appeared in the JOURNAL of February 11th we are reminded of the special liability of asthmatics to abnormal reaction after the injections of antitoxin. In connexion with this the following suggestive remark occurs :

The symptoms lead one to suspect that there may be an affection of the respiratory mucous membranes like the urticaria which comes out at the same time all over the skin.

Does not this point to the presence of an angioneurotic factor playing a leading part in the etiology (essentially the same both in the ordinary type of "serum sickness" and in the particular class of cases referred to in the above quoted sentence, though these may differ somewhat in their attendant circumstances), which in its turn may be due to an abnormal condition of the blood ?

SOME NOTES ON THE ABSORPTION OF IRON.

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WITH a view to assisting in the settlement of the still vexed question of the relative absorbability of the inorganic iron salts and the so-called organic preparations, I have been making a number of clinical tests in cases of chlorosis. The selected cases were quite typical of the condition, although only in one instance were the symptoms at all severe. The results obtained include the improvement in the blood condition, as estimated by a count of the red blood corpuscles and the percentage of haemoglobin, as well as an average daily estimate of the amount of iron excreted in the faeces on a fixed dose of each preparation of iron administered, over and above the food iron. In the series of cases referred to in this paper I used two well-known organic preparations of iron which shall be named respectively Preparation A* and Preparation B† and two of the inorganic salts of iron most commonly employed, that is, Blaud pill freshly prepared, and a solution of the ammonium citrate of iron. Of these, Preparation A, in which the iron is in combination with vegetable albumen, was taken as the standard; and the dosage of the other preparations used was based upon the amount of iron in each tablet of A. This I found to be approximately 0.75 grain of iron which on testing yielded 0.63 grain in the ferrous state. The other preparations, therefore, were administered so as to give the equivalent of $\frac{4}{3}$ grain of iron three times daily.

Blood examinations were made in each case before treatment and after a period of treatment, and produced some interesting results. But the main object of the inquiry was to note the amount of iron excreted in the faeces as a daily average, and, after making allowance for a fixed amount of iron in the food, what the comparative ratio of absorption was. With the object of obtaining a food-constant excretion of iron, all the patients were first placed upon Schmidt's dietary for a week until in every case the typical stools were obtained—smaller and less bulky than those resulting from milk diet or a mixed dietary, and weighing on an average 80 grams. As will be seen below, the amount of food iron excreted in the faeces was fairly constant in each case, being on an average 0.0022 gram in the fresh faeces, and 0.0089 gram in the dry state.

CASE I.—Treated with Preparation A.

Before treatment :

Red blood corpuscles...	...	...	3,400,000
Haemoglobin...	...	...	70 %

Faeces—

(a) Fresh ...	...	...	0.0028 % iron
(b) Dry ...	...	...	0.0097 " "

After treatment for a month :

Red blood corpuscles...	...	...	4,272,000
Haemoglobin...	...	...	88 %

Faeces—

(a) Fresh ...	...	...	0.031 % iron
(b) Dry ...	...	...	0.112 " "

CASE II.—Treated with Pil. Blaud.

Before treatment :

Red blood corpuscles...	...	...	3,800,000
Haemoglobin...	...	...	70 %

Faeces—

(a) Fresh ...	...	...	0.0031 % iron
(b) Dry ...	...	...	0.010 " "

After treatment for a month :

Red blood corpuscles...	...	...	3,848,000
Haemoglobin...	...	...	72 %

Faeces—

(a) Fresh ...	...	...	0.075 % iron
(b) Dry ...	...	...	0.218 " "

CASE III.—Treated with Ammonium Citrate of Iron.

Before treatment :

Red blood corpuscles...	...	...	3,808,000
Haemoglobin...	...	...	70 %

Faeces—

(a) Fresh ...	...	...	0.0016 % iron
(b) Dry ...	...	...	0.0090 " "

* The preparation known as Ferroglidine.

† Haematogen.