TWELVE YEARS' EXPERIENCE IN TREATMENT OF SYPHILIS BY INTRAVENOUS INJECTIONS OF MERCURY, ARSENIC AND IODID OF SODIUM.

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I was glad to see the article by Dr. G. Frank Lydston¹ regarding the intravenous injection of mercury in syphilis. My own experience with this method during the past twelve years has been so satisfactory to both patients and myself that I only resort to internal medication or ointments if the patient is so situated that he can not see me as often as I find necessary, or in cases of inherited syphilis in small children.

MERCURY.

I have never used so large an initial dose of the bichlorid ($\frac{1}{4}$ to $\frac{1}{2}$ gr.) as Dr. Lydston, but as a rule have gone up gradually from $\frac{1}{20}$ or $\frac{1}{15}$ of a grain to $\frac{1}{3}$ or $\frac{1}{2}$ grain. In a few cases with initial doses of from $\frac{1}{8}$ to $\frac{1}{6}$ grain of the drug I have seen intense gastrointestinal disturbance, nausea, vomiting and bloody mucoid diarrhea, the patient at the same time suffering intensely from pain and extreme prostration.

While the syphilitic can undoubtedly stand more mercury than the non-syphilitic, still the individual susceptibility varies so much that I believe, and that is my experience, that one is on the safe side if he starts with a small initial dose and increases the amount rapidly. Especially is this caution indicated in cases of nephritis or arteriosclerosis. In severe cerebral or spinal disturbance I do not hesitate to use large initial doses.

Iodid of sodium can be used intravenously when indicated in fairly large doses of from 10 to 30 grains. It is not irritating as the potassium salt and not so troublesome and painful as are intramuscular injections of iodopin. I have never used or heard of any one else injecting the iodid intravenously; but I have been using it for years, and with proper precautions I have found it of great assistance in patients who refuse to or can not take it internally.

ARSENIC.

At first I used Fowler's solution in combination with mercury, having had good results with Donovan's solution internally, but later I used cacodylate or sodium, giving as much as 3 grains at a dose. I found that the syphilitic did better, and I attributed it to the fact that the remedy was indicated on account of the anemia from which all syphilitics at first suffer. I was very much pleased, therefore when I saw the report of Dr. Paul Salmon² of the Metchnikoff Laboratory, followed by Dr. O. Lassar's³ report of cases of syphilis cured by the intramuscular injections of atoxyl (meta arsen anilin) in large doses—from 7 to 16 grains.

While I had thought arsenic as assisting the mercury of great value, it had in reality acted as a specific when used in large doses.

I tried atoxyl in 1905 when it first appeared on the market, but had procured either a poor specimen of drug or had boiled it too long while sterilizing it, thus decomposing it. At least in cases in which I used the atoxyl it acted badly. The patients complained of chills, fever, nausea and pains all over the body. I therefore

returned to the cacodylate of sodium. Recently, however, I secured a fresh supply, and by boiling the solution barely a minute I have had no bad effects from its use. Care should be taken, however, as a too prolonged use of atoxyl has been followed by severe manifestations of arsenical poisoning owing to accumulation.^{4, 5} Thiosianamin in combination with arsenic, mercury and iodid of sodium in tertiary syphilis is indicated in those cases in which there are gummatous deposits, as it softens the scar and the pathologically infiltrated and thickened tissue, thus increasing the blood supply to this tissue and permitting the other drugs to penetrate and act on it. In 1905 Felix Mendel⁶ of Essen prepared a solution of thiosianamin and salicylate of sodium, which he called fibrolysin. As this preparation, however, formed a precipitate when the bichlorid of mercury was added, necessitating two injections, I experimented and found that by adding the thiosianamin to the bichlorid of mercury and iodid of sodium solution and boiling I obtained a clear solution, to which I then add the atoxyl or cacodylate of sodium. I use from 1 to 3 grains of the thiosianamin at a dose.

This combination acts rapidly in tertiary syphilis, especially in cases in which there are gummatous deposits in the brain or spinal cord. Recent cases of syphilitic locomotor ataxia, and most cases of tabes, which, according to Erb⁷ and other authorities, are caused by syphilis, if taken early react promptly and can be permanently cured. Even in cases of some years standing when there has not been too degenerative sclerosis the patient can be greatly improved and sometimes cured.

In tertiary cases especially, my experience is that it is best to commence with small doses of mercury and it is to be remembered that an attack of gastric crisis in a case of tabes must not be attributed to the medicine.

It is preferable in using the injection to select a vein at the elbow. Chronic syphilitics, fortunately, as a rule, have large thick veins owing to the well-known effects of the syphilitic virus on the walls of the blood vessels. Tie a bandage above the bend of the elbow, let the patient extend the arm rigidly and close the hand firmly. Wipe the skin over the vein with a mixture of ether and alcohol, freeze with ethyl chlorid and insert needle. It is best to use a large Leur glass syringe, so that one can draw the blood into the syringe and mix it with the solution, thus forming an albuminate which is less apt to irritate the walls of the veins. Remove bandage, let patient open the hand, and inject slowly, drawing the blood back into the syringe two or three times so as to mix it well with the contents, and so as to be sure that it has not caught in the walls of the vein. Should a few small bubbles enter the circulation it will do no harm.

In conclusion, I wish to say that in a previous practice of thirteen years in treating syphilitics I have never had the quick results that I have had since using intravenous treatment. If this treatment is carried out faithfully syphilis is cured more rapidly and permanently, there are fewer relapses if any, less mercury is used, and hence less bad effects on the system of a medicine, which, however useful and indicated, is still a metallic poison foreign to the body cells. The patients seldom lose weight; on the contrary, on account of the large doses of arsenic, they are apt to gain weight and hence are in better spirits and less subject to fits of depression.

1. THE JOURNAL A. M. A., Nov. 16, 1907.

2. Compt. Rend. Hebd. de la Société de Biologie, 1907, No. 10.

3. Berl. klin. Wochschr., June 3, 1907.

4. Comptes Rendus Hebdomadaires, 1907, No. 13.

5. Münchener med. Wochschr., May 30, 1905.

6. Therap. Monatshefte, February, 1905.

7. Krankheiten des Rückenmarks.