

He has seen no larvae since nor was he able to find any in the feces after diligent search.

Contamination probably took place while seated long at stool, the flies being attracted by the presence of a slight urethral discharge. That larvae were voided ten days apart would indicate that they were from different infections. The larvae had evidently penetrated the prostatic urethra, judging by the patient's sensations, though the cystoscopic findings were negative.

I believe that the patient's word may be relied on and that this may be considered the eighth authentic case of myiasis of the urinary passages.

I am indebted to Dr. L. O. Howard, entomologist of the U. S. Department of Agriculture, for the identification of the specimen and for the copy of Chevrel's article.

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ADRENAL PRECOCITY

PRECOCIOUS DEVELOPMENT OF THE EXTERNAL GENITALS DUE TO HYPERNEPHROMA OF THE ADRENAL CORTEX

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The case to be reported presents one of those rare conditions of childhood in which with the precocious appearance of hair on the face and pubes, and the equally precocious development of external genitals, there appears an abdominal tumor due to the growth of a hypernephroma of one adrenal body.

In an exhaustive article on this subject, with the report of one case, Jump, Beates and Babcock¹ have collected from the literature records of seventeen cases, their own case making the eighteenth. In all the cases the conditions present were verified by a more or less complete necropsy. Other cases they find reported, but without necropsy, so that the diagnosis is in doubt. In one case necropsy showed both adrenals apparently normal, but the necropsy was brief, and the examination evidently superficial. Of the eighteen cases reported, fourteen were girls and four boys. In all there was an overgrowth of hair on the pubes, in fourteen an overgrowth on the face and in five in the axilla. There was overgrowth of the body, due to fat or muscular development, in all; facial acne with rough skin in some; precocious menstruation and development of the breasts in only one. Pigmentation of the skin was present in many, but in none anything like Addison's disease. Some showed mental precocity, but the majority were dull. There was a tendency in all to the development of the male characteristics at the expense of the female in the girls, and an intensification of the male characteristics in the boys. In all of the cases the tumor was found to involve the adrenal cortex, and in no case was a tumor of the medulla alone found associated with this precocious development.

As showing the peculiar change in sexual development, one case is referred to of a girl of 16 whose menstruation began when she was 15 years old and

ceased after one year. At this time she had developed a mustache and beard, and hair on her thorax. She became fat and her voice became masculine.

Of the eighteen cases reported, all patients died before they were 16 years old. Some were operated on and died shortly after. In others the growth was inoperable when the patient came under observation. Because of the hopeless character of the disease without intervention, the authors properly advise exploratory operation in the early stages of the development of the disease, hoping that the removal of the adrenal at an early stage might result in a cure.

REPORT OF CASE

T. R. F., boy, aged 5 years and 10 months, was referred to me July 6, 1914, by Dr. E. A. Moore, the family physician. In his letter arranging for the consultation the doctor referred to the precocious sexual development and to the presence of an abdominal tumor, the removal of which was desired. In reply to the letter I suggested that the case belonged to the rare class described in the journal referred to, and that it would probably be found inoperable. A few days later the patient came in, accompanied by his father and an uncle, Dr. N. F. Mason of Columbus. He was rather underdeveloped when born. The father thought the sexual development commenced when he was about 18 months old. He commenced to talk and walk at 9 months, and at 10 months he could talk well and "run like a partridge." After that his mental development ceased to keep pace with his physical. When he was 3 years old there was hair on the pubes and face, and he had a voice like a man, according to Dr. Mason. He was active and vigorous, and was quite useful in running errands. Probably in December, 1913, it was noticed that his abdomen was getting larger, and this enlargement continued and became quite rapid. The surface of the body became roughened, and covered more or less with sores, particularly on the chest and back, and acne developed on the face. The patient in height and weight was about normal for his years. The facial expression, however, seemed to be that of a man of 35 or 40. He had been shaving for some time. The face was badly marked with acne. There were great crusts over the upper chest and back. The chest looked very much as though it had been burned by Roentgen rays. The genital organs were apparently those of an adult, except that the testicles were small and not completely descended.

There was a large tumor in the abdomen, this being most pronounced on the left side. It was extensively adherent, and somewhat nodular. There seemed to be a second mass over toward the right, but no connection between the two could be determined. The legs were decidedly bowed, but this the father attributed to his walking so early. The child could utter some words, the voice being that of an adult, but he was mentally a mere child.

As the tumor was large and extensively adherent, and the child's general condition poor, it was evident that no operation should be considered and the child was sent home. While he was under my observation the urine was obtained, which was normal, though containing a faint trace of albumin. Blood-examination revealed; hemoglobin, 85 per cent.; red cells, 4,480,000; leukocytes, 14,000; polynuclears, 81 per cent.; small lymphocytes, 13.6 per cent.; large lymphocytes, 5.4 per cent.

The child's general condition remained about the same after his return home, but with gradual failure, and he died the morning of August 29. The necropsy was made by Drs. E. R. Shilling, pathologist to Grant Hospital, and H. M. Brundage, pathologist to Mt. Carmel Hospital, who reported as follows:

"Height 42 inches; chest measurement 24 inches, waist measurement 32 inches. Facial expression of a man of 40. Penis 4 inches long, with marked development of pubic hair. Testicles in the canal. Feet and legs enlarged. Linea alba distributed over the abdomen and around the ankles. The brain was removed, and appeared normal in every way. Pituitary body appeared normal, and was

1. Jump, H. D.; Beates, Henry, Jr., and Babcock, W. W.: Precocious Development of the External Genitals Due to Hypernephroma of the Adrenal Cortex, *Am. Jour. Med. Sc.*, 1914, cxlviii, 568.

removed for sections. Thyroid and parathyroids small but otherwise normal; were saved for sections. In the abdomen was a large tumor, lying between the layers of the mesentery of the descending colon. On removal could peel the kidney out of its capsule and easily traced its vessels and the ureter along the capsule of the tumor. The kidney was evidently normal and functioning. The tumor weighed about 15 pounds, and measured $12\frac{1}{2}$ by 9 inches with numerous small nodules protruding. On section the mass was very soft, well marked off into medulla and cortex, its origin evidently the left suprarenal gland. Right kidney normal, but its suprarenal gland was about the size of a walnut, red and friable. The liver was full of metastatic nodules. Other organs of the abdomen negative. The lungs contained numerous metastatic nodules. Other organs of the chest normal. Pieces of the tumor were removed for section."

Microscopic examination of the tissues by Drs. Coons, Shilling and Brundage showed the pituitary body and the pineal gland to be normal; also the thyroids and parathyroids. The kidney showed a chronic diffuse parenchymatous nephritis. The testicles were normal for a boy of his age. The large abdominal tumor was typical of rapidly growing hypernephroma, involving the adrenal cortex. The right adrenal showed a beginning hypernephroma similar to the left.

A SIMPLIFIED METHOD FOR THE INTRAMENINGEAL INJECTION OF NEOSALVARSAN IN SYPHILIS OF THE NERVOUS SYSTEM *

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Since Swift and Ellis¹ published the technic and the results of their method of introducing salvarsanized serum into the subdural lumbar spaces, there have been a number of reports from those using the original method and several modifications of the method, notably by McCaskey,² Fordyce³ and Pilsbury.⁴ There is no question that the technic is elaborate, not altogether free from danger (Lorenz⁵) and it gives no idea of the amount of salvarsan used. It is not known also what the combination of salvarsan and serum is which is injected.

Swift and Ellis found neosalvarsan solutions less irritating to monkeys when given subdurally. We found the same relation between the two drugs in dogs and in rabbits. Salvarsan, first used by us in very dilute solution, has been put aside for neosalvarsan, which seems far preferable for intrameningeal use.

Ravaut⁶ gives neosalvarsan in hypertonic solution. He uses 0.3 gm. in 5 c.c. distilled water, which gives a solution such that 1 drop equals 1 minim. Of this he gives from 3 to 12 drops by means of a special syringe, diluting it with spinal fluid. This seems an unnecessary waste of a rather expensive drug, especially if only one injection is to be given. Wile,⁷ in this country, has used Ravaut's technic with some success.

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1. Swift, H. M., and Ellis, A. W. M.: New York Med. Jour., 1912, xcvi, 53; The Treatment of Syphilitic Affections of the Central Nervous System with Especial Reference to the Use of Intraspinal Injections, Arch. Int. Med., September, 1913, p. 331.

2. McCaskey, G. W.: The Autoserosalvarsan Treatment of Syphilis of the Central Nervous System, THE JOURNAL A. M. A., May 30, 1914, p. 1709.

3. Fordyce, J.: The Treatment of Syphilis of the Nervous System, THE JOURNAL A. M. A., Aug. 15, 1914, p. 552.

4. Pilsbury, L. B.: Paresis Patients Treated with Intraspinal Injections of Salvarsanized Serum, THE JOURNAL A. M. A., Oct. 10, 1914, p. 1274.

5. Lorenz, W. F.: Wisconsin Med. Jour., 1913, xii, 171.

6. Ravaut: Quoted by Wile (Footnote 7).

7. Wile, Udo J.: The Technic of the Intradural Injections of Neosalvarsan in Syphilis of the Nervous System, THE JOURNAL A. M. A., April 11, 1914, p. 1165.

After a year's experience with the method about to be described, I feel justified in presenting it and recommending it. Ravaut's work was unknown to me until several months after we had used the method at the Milwaukee County Hospital and in private cases. In my hands the method has been most satisfactory, and, I believe, fulfils the requirements for simplicity and rationality of procedure. The patients, especially tabetics, often have an exacerbation of pains in the legs or of girdle pains, but these pass off over night, only rarely necessitating a hypodermic of morphin.

There can be no doubt that in order to render the maximum service to patients, treatment must not be so complicated that only a few exceptionally trained men in conjunction with well-equipped laboratories can administer it. It must ever be our aim to simplify therapeutic procedures so that many will be able to benefit thereby. The point in the treatment of cerebrospinal syphilis is to get the spirillicide drug to the infecting agent in the spinal cord and brain with the least harm to the patient but the greatest harm to the parasite.

It has always been our custom to inject neosalvarsan intravenously and intrameningeally at the same sitting. We have never given the latter alone except in one case of negatively reacting tabes in order to control the lightning pains.

TECHNIC

We require freshly sterilized 0.5 per cent. saline solution made from freshly distilled water; a sterile 25-c.c. glass-stoppered cylinder; a sterile 1-c.c. pipet and 10-c.c. pipet graduated in 0.1 c.c.; two sterile medicine glasses; a 20-c.c. sterile Luer syringe, with needle; a 10-c.c. Record syringe, sterile; a spinal puncture needle with stylet into which the end of the Record syringe fits, sterile; some form of arm constrictor, sterile sponges, towels, alcohol and iodine.

Nine-tenths gm. neosalvarsan is dissolved in 18 c.c. of the saline solution. One c.c. of this equals 0.05 gm. One c.c. of this to 9 c.c. saline is Solution 2. Four c.c. of Solution 2 to 6 c.c. saline is Solution 3. One c.c. of this contains 2 mg. of neosalvarsan. With all the materials and glassware ready these solutions may be prepared at the bedside.

With the 20-c.c. syringe the 17 c.c. neosalvarsan is given intravenously. The patient is then turned over on his side. Before the spinal needle is introduced 1, 2 or 3 c.c. of Solution 3 is drawn into the Record syringe. I usually do not give more than 2 c.c. or 4 mg. The spinal puncture is then made and as soon as the fluid is flowing freely the syringe containing the neosalvarsan is fitted to the head of the needle and gentle suction made until the syringe is full of spinal fluid. After holding a brief time the whole is very slowly and at the least amount of pressure injected into the meninges through the needle *in situ*.

(Note: Should more than 4 mg. be used the dilution can be made stronger as required, although 6 mg. has been my maximum dose and from 2 to 4 mg. the usual dose.)

ADVANTAGES

We claim for this method: (1) maximum of safety; there is no increase in pressure, no introduction of a large amount of foreign material, no shock from differences in temperature of the spinal fluid and the solution injected; (2) absolute control of dosage.

Several times a blood-vessel has been struck and the spinal fluid has been quite red in color. The injection of this blood-stained fluid has not resulted in one particle of harm as far as we could determine.

Injections are given one to two weeks apart, and the results and number of injections are controlled by serobiologic reactions of blood and spinal fluid.

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