THE INJECTION TREATMENT OF HYDROCELE.

BY

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IN 1903 J. C. Luke of Ocilla, Georgia, U.S.A., reported several cures of hydrocele by iodine and carbolic acid injections, and claimed almost uniform success.¹ Nine years later H. Morestin² introduced his treatment of vaginal hydrocele by injection of carbolic acid after removing some of the fluid. At first Morestin withdrew about one-third of the fluid and injected 1 c.cm. of a mixture of equal parts of carbolic acid, glycerin, and alcohol. He found that there was no pain, although there was a considerable reaction within the following few days, the scrotum swelling to a considerable size. After a few days all the oedema subsided and the vaginal swelling gradually diminished, and at the end of a few weeks the hydrocele had completely disappeared. As his experience increased Morestin became bolder, and evacuated more of the contents of the hydrocele, until finally³ he left only a small quantity of fluid in the sac, and injected 1, 2, 3, or even 4 c.cm. of his modifying fluid. In 1912 S. Mallanah described a vaccine treatment for hydrocele in the *British Medical Journal*.⁴ The vaccine was injected into the sac.

Soubeyran⁵ states that Monod, in treating this condition, injected 1 gram of alcohol 40 per cent. diluted in equal quantity of water without evacuating any fluid. Dimmricher and Polaillon used 1 c.cm. of a 10 per cent. solution of zinc chloride; this also was injected into the sac without withdrawal of fluid. These two procedures were frequently followed by recurrences. Into the sac, previously emptied, all sorts of fluid, from milk to port wine, have been injected.⁶

The satisfactory treatment of a large number of varicose veins by the injection method has induced me, like Pybus,⁷ to attempt a modified injection treatment for hydrocele.

Rationale.

A hydrocele is a closed sac lined by endothelium, and containing fluid which has a certain amount of fibrinogen in it. Hydrocele fluid, however, seldom clots, because it is not in relation with damaged tissue. In injecting varicose veins the results are obtained by causing gross surgical injury to the endothelium, which is mesoblastic in origin, and which reverts to its connective tissue type; the vein consequently becomes lined by fibroblasts and damaged endothelium, on which is deposited a very firm thrombus. If the entire endothelium of a hydrocele could be damaged, thus causing an outpouring of fibrin ferment, theoretically the fluid ought to clot and the sac to be obliterated. This was what was aimed at in the old days, when strong iodine was injected into the emptied sac. The trouble in those days was that there was no certainty of destroying the entire endothelium; this was probably because the sac was not distended with the irritant, which therefore did not reach into all the nooks and crannies. In addition, a small amount of hydrocele fluid still remained in the sac; this was probably coagulated, and absorbed a certain amount of the iodine, thus rendering it inert. If the sac were completely distended with irritant for several minutes and then emptied again, the whole of the lining endothelium in every nook and cranny would be destroyed.

I was rather chary of using quinine, because I had come across one or two patients with marked quinine idiosyncrasy, and was afraid that, if the sac were completely distended with quinine urethane solution, in a case of idiosyncrasy too much might be absorbed. I therefore decided to try injecting 25 per cent. sodium chloride into the sac, distending it completely, but with the intention of letting it out after a few minutes so as to avoid any severe caustic effect. The clinical details of two of these cases are as follows.

A patient who had had a hydrocele of about one pint for seven years, and had been tapped many times, was anxious to get rid of it, as it worried him because it was heavy. He was considered a bad operative risk on account of an old injury to his chest,

which limited his expansion. I explained what I should like to do as an experiment; he agreed, and in November, 1928, I aspirated his hydrocele through a large needle such as is used for injecting bismuth emulsion, and then filled the sac with 25 per cent. sodium chloride, distending it completely. Great pain followed in the scrotum and testicle, extending to the inner side of the thigh and groin, and passing up into the kidney region. I held the solution in for five to ten minutes to make sure that the whole of the endothelium of the sac was destroyed, and then tried to let it out; it would not come, and I suspected at once that a large slough would develop. A bigger trocar and cannula was tried, but with no result. I attributed the fact that the fluid would not flow out to the retention in the sac of some of the hydrocele fluid; the strong sodium chloride had caused outpouring of the tissue juice from the damaged endothelium so that the diluted hydrocele fluid had clotted, and, although it was not a thick clot, it was firm enough not to flow out through the trocar and cannula. At the end of a week half the scrotum became gangrenous and sloughed off, and he had fungous testis. When the slough separated (including all the tunica vaginalis) the wound granulated over in three or four weeks, and the hydrocele was completely cured. The resultant scar is not nearly so noticeable as one would have expected; he is highly satisfied with the result, as he does not have to carry about an enormous hydrocele.

Another man came to see me about the same time. He had had a hydrocele for some months, and it was getting large, so I took him into hospital. Under a local anaesthetic I made an incision in the skin a quarter of an inch long, and inserted a very large trocar and cannula; I withdrew the trocar, and in its place inserted a soft rubber catheter which fitted the cannula exactly. The fluid was allowed to escape, and the sac was washed out with normal saline. The first washing came away coloured yellow, showing that the sac had not been completely emptied of hydrocele fluid. After two or three washings the sac was distended through the catheter with 25 per cent. sodium chloride with 1 per cent. novocain. The patient felt a little pain, but not nearly so much as the first man; it was similarly referred to the scrotum and testicle, the inner side of the thigh and groin, and extended up to the kidney region. I pinched the catheter and left the fluid in for five or ten minutes, when it flowed out quite easily through the catheter; the tunica was washed out with normal saline solution two or three times, and was emptied as completely as possible. The trocar and cannula were then pulled out, one stitch being inserted into the small incision, and the patient was sent back to bed. He complained of some pain, so was given 1/12 grain of heroin. The next morning he was up and helping in the wards; he had no pain, and was discharged; at the present day it would be impossible to tell on which side he had the hydrocele.

I then read of Morestin's method of treatment, and tried it on three patients about nine months ago. In two cases I evacuated two-thirds of the contents of the sac (about the size of a closed fist) and injected 2 c.cm. of Morestin's fluid. With one patient the result was eminently satisfactory; with the other I was very disappointed. I saw the latter man about a month after the injection, and the hydrocele was larger than it had ever been. He walked into my consulting room about a fortnight ago and asked me to look at his scrotum. The hydrocele had completely disappeared.

In the case of the third patient I evacuated about half the contents and injected about 4 c.cm. of Morestin's fluid. With this patient also I was grievously disappointed at the time, but, after seeing the sequel in the second patient, I went to call on him, and, to my delight, found that his hydrocele was cured.

As modified by Soubeyran, Morestin's technique is as follows.

A hypodermic syringe and small trocar are all the instruments required. It is unnecessary to use local anaesthesia or to shave the scrotum. The place of puncture is painted with tincture of iodine of double strength. The patient is recumbent. The operator makes certain of the position of the testicle, and punctures below and outside if the gland is behind; if it is in front he inserts the trocar from behind.

1. The trocar is sharply plunged into the cavity, and the point can immediately be felt free therein.

2. The hypodermic needle is then inserted a little above the trocar and up to the shoulder of the needle. Its mobility in the sac must be demonstrated by turning it in all directions.

3. The trocar is withdrawn and the hydrocele fluid allowed to flow out slowly and almost entirely. It is a good thing to leave a small quantity in the sac to prevent the action of the carbolic acid from being too caustic.

4. As soon as the cavity is sufficiently evacuated, the trocar is withdrawn and by means of the syringe 2, 3, or 4 c.cm. of Morestin's fluid is injected. It is necessary to make the insertion very slowly, drop by drop, turning the point of the

needle in all directions so as to mix the liquid injected with that in the hydrocele.

5. The hypodermic needle is withdrawn and the scrotum is kneaded, so as to ensure the fluid reaching all parts of the sac. The puncture holes are then dressed with collodion.

No suspensory bandage is necessary, and the patient can get up if he wishes. After the injection he may feel slight pain in the testicular region radiating up the cord, but in a large number of cases there is no pain at all. At the end of a few hours the scrotum swells, becomes heavy and oedematous, and some liquid re-forms, but this is all reabsorbed. Soubeyran claims that at the end of four or five days regression begins, and is complete in two or three weeks.

It is also claimed that this injection of Morestin's fluid is quite safe for use in congenital hydroceles in children, but that iodine in these cases would be very dangerous on account of the risk of penetration into the peritoneum through the open mouth of the sac.

REFERENCES.

- ¹ Luke, J. C.: Some Cases of Hydrocele cured by Iodine and Carbolio Acid Injections. *Amer. Journ. Derm. and Genito-Urin. Dis.*, 1903, vii, 262.
- ² Morestin, H.: Hydrocèle vaginale traitée par la ponction formolée. *Bull. et Mém. Soc. de Chir. de Paris*, 1912, n.s., xxxviii, 1460-1462.
- ³ Idem: Traitement des hydrocèles par la ponction formolée. *Ibid.*, 1913, n.s., xxxix, 791-795.
- ⁴ Mallanah, S.: A Vaccine Treatment of Hydrocele. *British Medical Journal*, 1912, i, 181.
- ⁵ Soubeyran: La cure de l'hydrocèle essentielle par l'injection de formol: ses avantages. *Rec. gén. de Clin. et de Thérap.*, 1915, xxix, 17.
- ⁶ Pybus, F. C.: The Injection Cure of Hydrocele. *British Medical Journal*, 1930, i, 239.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

UNSUSPECTED TRICHINOSIS.

THE following case seems to be worth recording, if only on account of the rarity of this disease in England.

On March 6th one of us (E. H.) was called to see a young woman, aged 27, who complained of having a swollen face; this had come on overnight, and she only remembered having had a cold a few days previously. On examination oedema of the face was noticed, and particularly oedema of the eyelids. On the next day the oedema increased, and was specially intense over the maxillae. The temperature was 99.2° F. As an infection of the antra was suspected, Dr. Vitenson washed out both, with negative results. Examination of the urine, which had a peculiar deep red colour, was also negative. On the following day the temperature rose to 102° F., and the patient complained of pains all over; there was headache and pain on moving the eyes. The exhibition of salicylates gave no relief.

On March 9th the temperature rose to 102.3° F., and the pains increased in severity; moving the patient caused her to scream with pain. Chewing, opening of the mouth, and yawning were extremely painful. The biceps, deltoid, masseter, and temporal muscles were extremely sensitive to the touch; the joints, however, were not affected. The knee-jerks were slightly diminished. On the 10th and 11th the same picture was present, but, in addition, the neck muscles began to hurt, and the abdominal muscles were tender.

A provisional diagnosis of trichinosis was made reluctantly, but the subsequent blood count verified it. On March 12th the count was: polymorphonuclears 43 per cent.; lymphocytes 24 per cent.; mononuclears 9 per cent.; and eosinophils 24 per cent. On the next day the eosinophils had risen to 25 per cent.; there was hoarseness and slight difficulty in deglutition. A specimen of faeces was examined, but nothing abnormal was found. On March 14th and 15th the patient complained of severe pain in the girdle area and hiccup. There was throughout the illness obstinate constipation, with insomnia and depression. Treatment with 5-grain doses of thymol three times daily was started, and during the next few days the illness began to abate. The temperature on the 18th went down to normal; there was slight itching of the soles of the feet and palms of the hands, and severe itching of the nose. On March 21st eosinophils had risen to 40 per cent., and the blood status on March 23rd was as follows: leucocytes 13,000; polymorphonuclears 39 per cent.; lymphocytes 18 per cent.; hyalines 3 per cent.; and eosinophils 40 per cent.

On going into the history of this case we were able to discover that a few weeks previously the patient had eaten a piece of raw bacon on bread, not wanting to make a fire and fry it. That we think was the probable source of infection.

We are recording this case here, although the patient has not quite recovered and our investigations are not completed, because we think it quite possible that other cases of this disease may occur, and are occurring at present in London. It is very likely that they are being mistaken for rheumatism, as trichinosis is practically unknown in this country. It is agreed that this disease almost invariably appears in epidemic form, and we are wondering whether there will be further cases. We also would like to suggest a tightening up of meat inspection, since it is extremely easy to overlook trichinosis if no microscopical examination of the meat is made. It is true that the frying of the bacon makes the trichinae innocuous, but there is need to warn the public against eating raw bacon in any circumstances, since trichinosis is an extremely distressing disease and may assume epidemic character if precautions are not taken.

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Reports of Societies.

COLIFORM INFECTIONS OF THE GENITO-URINARY TRACT.

AT the meeting of the Medical Society of London, on March 24th, with Mr. DONALD ARMOUR in the chair, Sir THOMAS HORDER opened a discussion on coliform infections of the genito-urinary tract, dealing particularly with their clinical aspects.

Sir Thomas Horder remarked that before beginning to study this disease certain associated pathological conditions must be borne in mind or a broad view be taken of the pathogenesis. The mechanism of infection must be considered if the cases were to be dealt with on a right basis. The avenue of infection of the urinary tract was dubious. Although proof was extremely difficult, there was no reason *a priori* against the view that in an acute case the urinary tract had been invaded from the blood stream. Those concerned were generally content, however, to regard the infection as not haematogenous, but entirely local. The evidence of occasional positive blood culture did not take one very far. The lymphatic route was equally difficult to prove, and almost impossible to disprove. The proximity of the colon to the renal pelvis, and perhaps the special tendency of the right kidney to infection, were highly suggestive, but nothing more. An ascending route was postulated when there were urethral or bladder infections of an obvious kind, generally associated with prostatic enlargement, stricture, neoplasm, or calculus; it was possible that this route was followed in some cases, for which the term "primary" was used. It did not follow that because there was no evidence of interaction going on in the bladder the route of invasion of the renal pelvis was not the ascending one. The female urethra was very short, and the disease was more common in women than in men. But the argument at all points was difficult. He had seen what appeared to be a well-marked case of direct infection from wife to husband during the honeymoon, and more than once had seen what seemed to be direct infection from husband to wife. In all these questions it had to be borne in mind that the renal pelvis was by far the most susceptible part of the urinary tract. It did not necessarily follow that when the form of onset suggested a pyelitic origin the organism was not present in other parts of the tract at the same or an earlier period. He had wondered whether in some cases the prostate was the organ or tissue through which the infection reached the tract. Very acute cases occasionally occurred in young adults in which the initial symptoms were urgent dysuria, strangury it might be, and with no clinical suggestion of pyelitis. Quite certainly the prostate was not infrequently the source of reinfection in cases which had for a time been quiescent.

The frequent association of disease in the alimentary tract with urinary infection was universally accepted, and perhaps occasionally overstressed, but that was a less serious error than to overlook it. The alimentary tract might show merely an associated coliform infection, but