very rare; indeed, MacCallan and Rasheed Bey have never seen the accommodator muscle affected in any of their cases. All varieties of membranous conjunctivitis may be accompanied by glandular enlargement. When it occurs in epidemics true diphtherial conjunctivitis appears to pass from eye to eye, and it is rare to get a history of contact with patients suffering from the usual forms of diphtheria. Symblepharon is never seen after the disease in Egypt, but 63 per cent. of MacCallan and Rasheed Bey's cases had corneal ulceration, and 50 per cent. lost one or both eyes; this unfortunate record—so much worse than might have been anticipated from European experience—was largely due to the fact that diphtherial, like many other forms of tropical conjunctivitis, is often a mixed infection. When in doubt as to the cause of a membranous conjunctivitis a dose of antitoxin should always be given whilst waiting for the bacteriological report. Constant irrigations with eusol and painting of the conjunctiva with 2 per cent. silver nitrate solution are recommended; when the lids are swollen hot fomentations should be used. Fly-proof rooms or tents are advocated, and careful disinfection should be carried out at the end of each case, for diphtherial membranes, when dry and kept in the dark, may produce cultures months afterwards. Those in contact with the cases are advised to gargle with potassium permanganate solution (1 in 5,000) thrice daily, and to wear protected glasses; utensils should be disinfected in buckets containing solution of cyllin (1 in 200), and the same disinfectant should be placed in convenient spittoons.

Swimming Bath Conjunctivitis.

Of late years attention has been directed in various centres in Europe to the occurrence of severe epidemics of conjunctivitis which have had their origin in swimming baths. In one at least of these, which occurred in Berlin, the bath was well cleaned and well built. The interest of these observations to the tropical ophthalmologist lies in the clear implication that the conjunctiva may be readily infected from contaminated water, and that we have here a possibly fruitful line of investigation in our study of the epidemics of conjunctivitis with which we are so familiar in the tropics. It may well be that under tropical conditions water, and especially dirty water, may at certain times of the year breed in abundance some at least of the forms of organism which are responsible for such epidemics. No one who has visited Turkish baths in an Eastern city, or who has watched Oriental natives performing their ablutions in polluted water, can fail to be suspicious of the possibility of this form of transmission of infection.

Pediculous Conjunctivitis.

Some years back Ruata recorded the observation that the eyelids of negroes are especially liable to attack by the pubic louse. More recently Blanc has noticed a close connexion between pediculosis of the scalp and phlyctenular conjunctivitis both in France and in Tunis. It is of peculiar interest that the connexion between these two conditions in his tropical practice was equally marked both amongst Europeans and Arabs. He has had similar experiences also at Athens and in Crete. To confirm the connexion he injected into the eye of a monkey an emulsion of ground-up lice and produced a typical phlyctenular conjunctivitis a little over two months after the inoculation.

Koch-Weeks Conjunctivitis.

In lands where trachoma is rife, Koch-Weeks infection plays so important a part that prophylactic measures against it merit very careful study. Recently Nicolle, Conseil, and Cuénod have been studying the advantages of preventive inoculation against this form of conjunctivitis. Both subcutaneous and subconjunctival injections were employed, and the patients were then subjected to the instillation into the conjunctival sac of fresh cultivations of the Koch-Weeks bacillus without any serious symptoms supervening, whilst a control case showed typical infection. To those who know the havoc wrought in tropical countries amongst trachomatous patients by mixed infections—in which the Koch-Weeks organism plays a by no means unimportant part—these observations will have a very real importance.

THE TREATMENT OF VARICOSE VEINS OF THE LEG BY INJECTIONS.

BY

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DURING my student days I became greatly interested in varicose veins of the leg, on account of the number of operations performed and the number of recurrences which I saw at the dispensary. It was evident to me then that there was no one operation which could with certainty be relied on to effect a cure, recurrences taking place after each of them in a large proportion of cases. This impression has been greatly deepened since, and has led me to try some other means of benefiting these patients without the necessity of incapacitating them for work for at least six weeks and without the risk of a general anaesthetic.

Dr. Sicard in 1923¹ described his method of injecting varicose veins with sodium salicylate. Thrombosis of the veins is produced. The danger of producing thrombosis in veins, to my mind, was the fear that the thrombosis would extend up the vein or produce embolism. Having had at that time (May, 1923) a large experience of treating haemorrhoids by injection, and also having convinced myself from clinical experience and the examination of microscopic slides that thrombosis was produced in these haemorrhoids, that the thrombosis did not extend up the vein, and that embolism was not produced, I commenced injecting veins with sodium salicylate, and have now treated thirty cases by injection.

My first patient was a female shop assistant with varicose veins of both legs. The left leg, being the worse, was injected. She was kept in hospital for one week after the injection, but was allowed to go about the wards. At the end of the week she was sent home. I have seen her at various intervals since, and on the last occasion she asked me to inject the other leg. She has never been off work since May, 1923, on account of the varicose veins, while previously she had to take days off repeatedly. The other cases have all been treated as out-patients and have not been incapacitated beyond one day, except one case in which cellulitis was produced.

The method employed by Dr. Sicard when using sodium salicylate is as follows: The susceptibility of the patient to the drug is tested by injecting about 1 c.cm. of 20 per cent. solution into the veins. If there is no reaction next day a stronger solution is used, but it is recommended not to go above 40 per cent. Several sections can be injected at the same time, but the total dose of sodium salicylate should not exceed 3 grams. No constricting band is used. The patient, as a rule, complains of a very severe pain coming on immediately after the injection and lasting about one minute. Occasionally goose-flesh feeling and slight cramp in the leg or foot are noticed, lasting for a short period. Dr. Sicard states that this method is very suitable for varicose veins which are bunched together, and that one injection may effect a cure. If a cure does not result the treatment can be repeated. Immediately following injection the vein swells, and its contents can be felt becoming hard. When examined about a week afterwards one or two things will be found if a cure is going to be effected: (1) a hard mass is felt in the vein at the seat of injection, and (2) in addition it is found in some cases that thrombosis is extending down the vein. In no case was extension up the vein noted. Later the vein, if thrombosis has extended downwards, becomes replaced by a fibrous cord. If thrombosis has only occurred at the seat of injection, the veins below remain patent and varicose, but whatever happens the patient always states that the veins are reduced in size and the strength of the limb is greatly increased. On account of the severe pain experienced after injecting sodium salicylate, I have been trying the effect of mercury perchloride (1 in 500). A few minims only are injected at different points. There is less pain, the swelling of the vein is much less, and the results are as good. My method is to insert into the vein a fine needle pointing downwards. When the blood flows freely through the needle I attach the syringe containing the fluid to be

injected, block the vein above the needle with my left thumb, and inject slowly into the vein. The syringe is then removed, and the blood prevented from flowing out of the needle by placing a finger on the mount. The needle is left *in situ* for about one minute, or until no blood flows out of it. The left thumb is removed at the same time as the needle is withdrawn. During the operation the patient is seated at a convenient height. By this method the fluid is prevented from getting into the cellular tissues. In one case, where some 30 per cent. solution of sodium salicylate got into the cellular tissues, a cellulitis was produced and a slough formed at the site of injection. As the tissues over a varicose vein are very thin and their vitality greatly reduced, this is liable to happen unless great care is taken to ensure that no fluid escapes into the subcutaneous tissues. Where a varicose ulcer or eczema is present the effect of the injection is sometimes very marked.

In no circumstances would I recommend the injecting of an inflamed vein. In my opinion, before treatment is begun a considerable period should elapse after inflammation has been present, both on account of the danger of producing a recrudescence of the inflammation and subsequently septic emboli, and also, in some cases, after phlebitis it is found that a cure has resulted.

I do not claim that the results of injecting varicose veins are better than those obtained by operation, or that the liability to return of the varicose condition is less (in fact, I would expect the percentage of recurrences to be higher); but I do claim that the treatment improves the circulation in the legs, and consequently the strength of the lower extremities, without incapacitating the patient in any way.

REFERENCE.

¹ *Journ. de Thérap. Franç.*

DORSO-LUMBAR DISLOCATION OF THE SPINE REDUCED BY OPERATION.

(With Special Plate.)

BY

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THE occurrence of spinal dislocation without fracture is extremely rare below the cervical region. The case to be described was practically a pure dislocation of the twelfth dorsal from the first lumbar vertebra.

Walter R., aged 25, motor driver, was admitted on February 4th, 1924, to the Royal Infirmary, Preston, suffering from shock and paraplegia. The following history was obtained: When driving a heavy vehicle from Ormskirk to Preston, the same evening, he had stopped just round a right-angled bend in the road, and got underneath the car, taking the rear light with him, to inspect and repair a leaking petrol pipe. Another vehicle ran into the stationary car from behind, and knocked it forwards a few yards; one of the wheels passed over R.'s body.

On admission the patient was conscious and in a state of severe shock. There were numerous abrasions of skin over the chest and upper abdomen, especially on the right side. Both lower extremities were completely without power of movement; knee- and ankle-jerks were absent. There was no sensation in the right foot and reduced sensation in the other parts of the lower limbs. The patient complained of great pain in the back and at the right side of the chest; respiration was difficult. Subconjunctival haemorrhage was present in both eyes. There was swelling and loss of alignment of spinous processes at the dorso-lumbar region, without undue prominence of any particular spinous process. Sphincteric control was lost. The abdomen was soft, and resonant in the flanks. The tenth right rib was fractured.

X-ray examination on February 5th showed a lateral dislocation of the twelfth dorsal from the first lumbar vertebra, with displacement of the lower portion of the spine to the right. Apart from a small chip of bone detached from the left upper margin of the first lumbar body, the injury was a pure dislocation (see Fig. 1).

An attempt at reduction under anaesthesia on February 6th by traction, etc., was unsuccessful.

On February 7th, assisted by my colleague Mr. A. Toulmin, I exposed the injured part by a median dorsal incision, with the patient in the prone position. The articular processes were intact; the left lower articular process of the twelfth dorsal vertebra was placed externally to the left upper process of the first lumbar, thus opposing reduction. Laminectomy of the first lumbar was performed, but this did not help matters much, except to give a better view of the spinal cord, which was seen passing obliquely in a strap-like manner between the displaced vertebrae. The spine was then flexed at the injured part by raising the lumbar bridge of the

operating table. This disengaged the articular processes; by lateral pressure they were forced into correct alignment and the spine was then allowed to extend by letting the bridge down. The articular processes thereupon fell into their correct positions, and as they were intact there was no tendency to recurrence of the displacement (see Fig. 2). The dural sheath of the cord appeared to be uninjured. Muscles and fasciae were united as well as possible; a small drain was placed at the lower end of the wound.

After operation the patient was kept on his back, with a pillow under the injured part of the spine. There was complaint of pain and "pins and needles" in the legs for two days. Cystitis was present, the urine being alkaline and containing blood and pus. Regular catheterization was necessary.

On February 11th very slight active movements were elicited at the left great toe. Tested on February 21st, most of the muscles of both lower limbs were found to respond to faradism, the responses being weaker on the right side than on the left. Within three weeks there were feeble active movements in the muscles of both limbs, above and below the knee. Under treatment by massage and electrical stimulation these gradually became stronger. Sensation was normal, except at the right sole, where it was diminished, and over the right great trochanter, where it was absent over a small area (see later). A small bed sore over the sacrum appeared, but soon healed.

By March 10th the cystitis, in spite of the usual remedies, was alarming; the urine was very foul, and the patient was running a temperature of 100° to 101° every evening. There was a small hard swelling above the pubic symphysis. On March 20th a suprapubic incision was made and pus evacuated from an abscess behind the symphysis. A separation of the symphysis, wide enough to admit a finger, was found; this injury had hitherto escaped observation. The bladder was then opened and a tube inserted. Subsequently the patient's general condition improved markedly. The suprapubic incision eventually closed, after which catheterization was again necessary. There were no signs of returning control over the anal sphincter. The patient was discharged, to attend as out-patient, on September 18th. He had been trying his legs, assisted by crutches, occasionally during the previous three or four weeks.

Present condition (October 28th): The general condition is fairly good, and the patient maintains a cheerful outlook, as indeed he has done ever since the accident. He eats well; his weight is 8 st. 6 lb. (normally 9 st. 10 lb.). The operation wounds are well healed. He can get about the house without the aid of a stick; outside he can walk about half a mile with two sticks. He takes an aperient every three days, otherwise his bowels do not act. Having taken the aperient, he prepares to be incontinent. He wears a catheter, leading into a portable urinal. The catheter is removed and replaced twice weekly.

In walking the right leg is thrown outwards, as slight foot-drop is present. The left leg is a sound and useful limb, with full range of movement, active and passive; but the knee-jerk is weak and the ankle-jerk not elicited. The right leg is considerably weaker—for example, when sitting in a chair the patient can only partially extend the knee with the foot off the ground. Full passive extension of the knee is obtained, but not full flexion. The ankle is somewhat stiff and cannot be dorsiflexed passively to less than a right angle. The anterior and posterior tibial muscles have active power, but are weak; toe movements are almost absent. The peronei exhibit very faint active movements. The anterior part of the foot is somewhat inverted, giving a slight degree of pes cavus. No knee- or ankle-jerk is elicited on the right side, and the whole limb feels cold to the touch as compared with the left. There is slight oedema at both ankles and feet, more marked on the right side. Sensation to light touch with cotton-wool and to pin-prick is present over both lower extremities, except at a small area, about 4 inches square, over and above the right great trochanter, extending almost to the iliac crest. This area is quite anaesthetic to touch and pain; no doubt it indicates a laceration of the twelfth dorsal nerve, whose lateral cutaneous branch supplies this area. Although present, sensation is diminished at the right sole. Plantar reflex is not obtained at the right foot; at the left the second to fifth toes extend slightly, and the great toe remains motionless.

The right thigh measures 2 inches less than the left in circumference at middle; the right calf is half an inch less than the left. Oedema of the right calf masks the wasting of muscles. The muscles of the left leg respond to faradism, including the intrinsic muscles of the foot. On the right side response is feeble and absent from the peronei and foot muscles.

The urine is alkaline and deposits pus and phosphates; specific gravity 1020; albumin present. Treatment is being continued. (There has been some improvement in the condition of the urine since this report was written, and it is hoped soon to dispense with the catheter.)

Comments.

The spinal cord being crushed at the lower part of the lumbar enlargement—where the centres for control of the bladder and rectum are situated—recovery of voluntary control of these was not to be expected. Most of the nerve fibres to the muscles of the lower extremities have left the cord above the level of the injury in question, and in this case they soon began to recover from the pressure to which they had been subjected. A laceration of the twelfth dorsal nerve, at its exit from the intervertebral foramen between the twelfth dorsal and first lumbar vertebrae, is readily conceivable, to account for the area of anaesthesia over the great trochanter on the right side.