

slight bodily disturbance that there is a good prospect of ability to resume work in ten to fourteen days and of freedom from any recurrence. Immediate removal from the scrotum is especially advisable to prevent hopeless extension to the groins, which may take place very rapidly by the lymphatics (Morley, 1911).

The value of such regular examination every six months for ten years has been established by Dr. Grey at a group of Lancashire mills. He found several suspicious changes which proved to be early stages of epithelioma. Dr. Scott also carries out a similar examination in the shale-oil industry.

Selection of Oils.—The regular use of only the safer oils or blends recommended by the Manchester Committee's scientific staff is advisable; but even if this be done it will be some years before all danger from the disease ceases in spinners who have worked with carcinogenic oils.

Protection of Skin.—The wearing of an additional trouser garment, such as shorts, diminishes contact with oil on the overalls and lessens friction; reasonable attention should also be paid to washing, especially in the scrotal region.

A protective ointment should be used by men over 50 and by those who have an unusually dry skin.

An advisory handbill on epithelioma, with illustrations of its appearance when in a stage suitable for early removal, on lines similar to the one prepared by the Home Office on anthrax (1930, Form 1893), would be helpful.

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THE DERRIS ROOT TREATMENT OF SCABIES

BY

LESLIE SAUNDERS, M.B., B.S.,

Captain, R.A.M.C.

The varied factors responsible for the prevalence and transmission of scabies are to a large extent unavoidable, but the question of its prevention and control must be faced in the light of present-day circumstances as one of the most difficult public health problems. New factors have arisen which probably account for the increase in the incidence of scabies seen in civilian practice. For example, many citizens are now huddled together throughout the night in over-populated shelters where sanitary arrangements are inadequate, and some have been unable to remove their clothes for several weeks. Facilities for bathing have in addition become difficult. It is obvious that with the increasing strain thrown on the medical profession to-day scabies assumes an unpleasant but realistic problem, and one which is becoming unduly prevalent in the Army.

The generally accepted method of treatment in civilian practice is the three-day use of sulphur ointment. Other specific drugs which have been used to destroy the parasite are balsam of Peru, beta-naphthol, and benzyl benzoate. Storax ointment, pernil, kathiolan, mitigal, and the sodium-thiosulphate-hydrochloric-acid method all have their advocates. It is often left to the patient to arrange the disinfection of his bedding and clothing: little wonder is it, then, that recurrences are so frequent. The disadvantages of sulphur ointment are: (1) its greasy

and messy qualities, whereby pyjamas become quickly dirty and uncomfortable to wear; (2) the disagreeable odour of the ointment; (3) the confinement of patients to their own rooms during the course of treatment; (4) the likelihood of sulphur dermatitis arising from prolonged application, and therefore its danger in inexperienced hands.

All the mentioned methods of treatment essentially require baths and disinfection of bedding and clothing. The treatment detailed below will show that neither bathing nor disinfection of clothing is necessary for obtaining a cure.

Thomas and Miller (1940) stated that rotenone in a 1 or 2% lotion produced prompt cure in twenty-four unselected cases. I had been in medical charge of a main dressing station where many cases of scabies were seen, and their results induced me to try the treatment. However, instead of using the rotenone solution, which was relatively expensive and difficult to procure, I made a solution of derris root powder, from which rotenone is extracted. The powder was of tested strength and was guaranteed to comply with the requirements of the Ministry of Agriculture as a dressing against the warble-fly.

Derris or tuba root consists of the dried rhizome and roots of the *Derris elliptica* Benth and *Derris malaccensis* Prain, climbing plants that are cultivated in the Federated Malay States, Sarawak, Singapore, Sumatra, and Johore. The powder has a slight odour and a bitter taste, and on inhalation produces a feeling of numbness in the tongue and throat. The root contains up to 10% of the crystalline substance rotenone (C₂₃H₂₂O₆), which is known as tuba toxin. Three other crystalline substances—deguelin, tephrosin, and toxicarol—have been isolated. The active constituents are soluble in acetone, benzene, chloroform, ether, and carbon tetrachloride. They are insoluble in water, weak acids, and alkalis. Derris is used extensively in horticulture and agriculture as an insecticide, especially against the warble-fly.

The results of the investigations with derris root may be grouped into three classes.

(A) Experimental Investigation

Solution Used.—A warm solution of 1 gallon of water and 1 oz. of soft soap was prepared, and to this was added 4 oz. of the derris root powder. The mixture was stirred thoroughly, and with the resulting lotion treatment was instituted on 21 unselected cases of scabies. The diagnosis was made in the majority of cases by the combined features of the itch and burrows. In addition these cases had been previously diagnosed as scabies by one or two other medical officers. In view of this and of my own diagnosis based on clinical grounds the spotting of the parasite in every case was considered unnecessary. The parasite cannot always be seen owing to the existing pyoderma; and, again, particularly in patients of cleanly habits, no burrows are in evidence and the search for the parasite proves fruitless. The diagnosis in these cases has to be made by the history of itching at night and the signs of scratching in the areas of characteristic distribution.

Method of Application.—Each patient was given a preliminary bath. He was then instructed to rub the lotion with cotton-wool all over the body from the neck down to the toes, paying particular attention to the spots on the hands, wrists, armpits, and groins. A nursing orderly was detailed to assist in the application on the back and buttocks. The lotion was allowed to dry on the body, and the patient, wearing only pyjamas, was then isolated in a ward. His clothing and bedding were disinfected. One application was given during the morning and one at night, and this procedure was continued until all irritation had ceased. On an average ten applications were found to be sufficient (Table I).

TABLE I.—Experimental Investigation

| Case No. | Type of Case | Duration in Days | Applications | Follow-up 2 Weeks after Treatment | Follow-up 4 Weeks after Treatment | Results |
|----------|--------------|------------------|--------------|-----------------------------------|-----------------------------------|---------|
| 1 | Severe | — | 14 | +++ | +++ | Cured |
| 2 | Moderate | 3 | 10 | ++ | +++ | " |
| 3 | Severe | 4 | 15 | ++ | +++ | " |
| 4 | Slight | — | 6 | +++ | +++ | " |
| 5 | Severe | — | 10 | ++ | +++ | " |
| 6 | Moderate | 21 | 10 | ++ | +++ | " |
| 7 | Severe | 3 | 12 | + | +++ | " |
| 8 | Moderate | 2 | 10 | ++ | +++ | " |
| 9 | Severe | 7 | 10 | ++ | +++ | " |
| 10 | Slight | 1 | 8 | ++ | +++ | " |
| 11 | Severe | 21 | 10 | +++ | +++ | " |
| 12 | " | 7 | 10 | ++ | +++ | " |
| 13 | " | — | 8 | ++ | +++ | " |
| 14 | Moderate | 7 | 10 | ++ | ++ | " |
| 15 | " | — | 8 | ++ | ++ | " |
| 16 | Severe | 7 | 7 | ++ | +++ | " |
| 17 | Slight | 3 | 10 | ++ | +++ | " |
| 18 | " | — | 9 | ++ | +++ | " |
| 19 | Severe | 14 | 10 | ++ | +++ | " |
| 20 | Moderate | 10 | 7 | +++ | +++ | " |
| 21 | " | 14 | 7 | ++ | +++ | " |

+ = Rash stationary ; ++ = rash disappearing ; +++ = rash disappeared.

The results obtained from these investigations were encouraging. An effort was then made to standardize the treatment and to reduce the number of applications. The watery solution did not appear to adhere to the skin except in patches, and so it was decided to introduce an ingredient which would produce a slight lather, dry, and leave a thin coating of the powder on the skin. It should be pointed out here that in the preparation of the lotion the powder did not dissolve but formed a pale chocolate-coloured suspension.

(B) Six Applications on Patients wearing Pyjamas Only

Solution Used.—4 oz. of the derris root powder was added to 1 gallon of cold water and thoroughly stirred.

TABLE II.—Six Applications on Patients wearing Pyjamas Only

| Case No. | Type of Case | Duration in Days | Applications | Follow-up 2 Weeks after Treatment | Follow-up 4 Weeks after Treatment | Results |
|----------|--------------|------------------|--------------|-----------------------------------|-----------------------------------|------------------|
| 1 | Moderate | — | 6 | ++ | +++ | Cured |
| 2 | " | 6 | 6 | ++ | +++ | " |
| 3 | " | 14 | 6 | ++ | +++ | " |
| 4 | Slight | 2 | 6 | ++ | +++ | " |
| 5 | " | 3 | 6 | ++ | +++ | " |
| 6 | Severe | 14 | 6 | ++ | +++ | " |
| 7 | Moderate | 2 | 6 | ++ | +++ | " |
| 8 | Severe | 14 | 6 | +++ | +++ | " |
| 9 | Slight | 2 | 6 | +++ | +++ | " |
| 10 | Moderate | 14 | 6 | ++ | +++ | " |
| 11 | Severe | 28 | 6 | ++ | +++ | " |
| 12 | " | 10 | 6 | ++ | +++ | " |
| 13 | Moderate | 7 | 6 | ++ | +++ | " |
| 14 | Severe | 7 | 6 | ++ | +++ | " |
| 15 | " | 12 | 6 | ++ | +++ | " |
| 16 | Moderate | 4 | 6 | ++ | ++ | " |
| 17 | Slight | 21 | 6 | ++ | +++ | " |
| 18 | Moderate | 4 | 6 | ++ | ++ | " |
| 19 | " | 7 | 6 | ++ | ++ | " |
| 20 | " | 7 | 6 | ++ | ++ | Failed to report |
| 21 | Slight | 3 | 6 | ++ | ++ | Cured |
| 22 | Moderate | 14 | 6 | +++ | +++ | Failed to report |
| 23 | Slight | 5 | 6 | +++ | +++ | Cured |
| 24 | Moderate | 2 | 6 | ++ | +++ | " |
| 25 | " | 7 | 6 | ++ | +++ | " |
| 26 | " | 4 | 6 | +++ | +++ | " |
| 27 | Severe | 10 | 6 | ++ | +++ | " |
| 28 | " | 2 | 6 | ++ | +++ | " |
| 29 | " | 21 | 6 | +++ | +++ | " |
| 30 | Moderate | 7 | 6 | ++ | +++ | Failed to report |
| 31 | Severe | 14 | 6 | +++ | +++ | Cured |
| 32 | " | 5 | 6 | +++ | +++ | " |
| 33 | Moderate | 2 | 6 | +++ | +++ | " |
| 34 | Severe | 3 | 6 | ++ | +++ | " |
| 35 | " | 7 | 6 | + | +++ | " |
| 36 | " | 7 | 6 | + | +++ | " |
| 37 | " | 14 | 6 | + | +++ | Failed to report |
| 38 | " | 7 | 6 | ++ | +++ | Cured |
| 39 | Moderate | 4 | 6 | +++ | +++ | " |
| 40 | " | 6 | 6 | ++ | ++ | " |
| 41 | Severe | 7 | 6 | ++ | +++ | " |
| 42 | " | 6 | 6 | +++ | +++ | " |
| 43 | " | 6 | 6 | ++ | +++ | Failed to report |
| 44 | " | 7 | 6 | ++ | +++ | Cured |
| 45 | " | 7 | 6 | ++ | +++ | " |
| 46 | Moderate | 7 | 6 | ++ | +++ | " |
| 47 | Severe | 4 | 6 | ++ | +++ | " |
| 48 | Moderate | 4 | 6 | +++ | +++ | " |
| 49 | Severe | 28 | 6 | +++ | ++ | " |
| 50 | " | 14 | 6 | ++ | +++ | " |
| 51 | " | 14 | 6 | ++ | ++ | " |
| 52 | " | 8 | 6 | ++ | ++ | " |

To each 1/2 pint of lotion used 1 teaspoonful of soap flakes, such as "lux" or "sylvan flakes," was added to obtain the desirable lathery effect.

Method of Application.—52 unselected patients were treated as follows (Table II). Each patient received six applications, one in the morning, afternoon, and evening for two consecutive days. All patients were given the same instructions as those of Class A, and all wore pyjamas. No preliminary bath was given.

After reviewing the results it occurred to me that, since the powder was having the desired effect on the skin, it might be equally efficacious on the clothes worn by the patient. As I have explained, a thin coating of powder was found on the patient's skin after the lotion had dried. Therefore by wearing the same clothes this powder would have a chance to penetrate them and so destroy any parasites that were present. The powder would therefore exert its action on skin and clothing alike.

(C) Six Applications on Patients wearing Clothes

In this group of patients the same solution and the same method of application were employed as in Class B, but with one difference: each patient wore his own clothing. He of course undressed for each application. Bedding only was disinfected. No baths were given. The results are shown in Table III.

TABLE III.—Six Applications on Patients wearing Clothes

| Case No. | Type of Case | Duration in Days | Applications | Follow-up 2 Weeks after Treatment | Follow-up 4 Weeks after Treatment | Results |
|----------|--------------|------------------|--------------|-----------------------------------|-----------------------------------|------------|
| 1 | Moderate | 7 | 6 | ++ | +++ | Cured |
| 2 | " | 3 | 6 | ++ | ++ | " |
| 3 | Severe | 3 | 6 | ++ | +++ | " |
| 4 | Moderate | 14 | 6 | ++ | +++ | " |
| 5 | Severe | 9 | 6 | ++ | +++ | " |
| 6 | " | 6 | 6 | + | +++ | " |
| 7 | " | 11 | 6 | ++ | +++ | " |
| 8 | " | 14 | 6 | ++ | +++ | " |
| 9 | " | 10 | 6 | ++ | +++ | " |
| 10 | " | 14 | 6 | +++ | +++ | " |
| 11 | " | 7 | 6 | ++ | +++ | " |
| 12 | " | 10 | 6 | +++ | +++ | " |
| 13 | " | 3 | 6 | +++ | +++ | " |
| 14 | " | 12 | 6 | ++ | +++ | " |
| 15 | Moderate | 5 | 6 | + | +++ | Recurrence |
| 16 | " | 18 | 6 | +++ | +++ | Cured |
| 17 | Severe | 6 | 6 | ++ | ++ | " |
| 18 | " | 9 | 6 | +++ | +++ | " |
| 19 | Moderate | 5 | 6 | ++ | +++ | " |
| 20 | Severe | 4 | 6 | + | ++ | " |
| 21 | " | 8 | 6 | ++ | ++ | " |
| 22 | " | 11 | 6 | ++ | +++ | " |
| 23 | Moderate | 14 | 6 | ++ | +++ | " |
| 24 | Severe | 7 | 6 | ++ | +++ | " |
| 25 | " | 3 | 6 | +++ | +++ | " |
| 26 | Moderate | 4 | 6 | +++ | +++ | " |
| 27 | Severe | 2 | 6 | ++ | +++ | " |
| 28 | " | 5 | 6 | ++ | +++ | " |
| 29 | " | 7 | 6 | ++ | ++ | " |
| 30 | " | 9 | 6 | ++ | +++ | " |
| 31 | Moderate | 14 | 6 | ++ | +++ | " |
| 32 | Severe | 6 | 6 | ++ | +++ | " |
| 33 | " | 3 | 6 | ++ | ++ | " |
| 34 | Moderate | 8 | 6 | ++ | ++ | " |
| 35 | " | 12 | 6 | +++ | +++ | " |
| 36 | Severe | 2 | 6 | ++ | +++ | " |
| 37 | Slight | 3 | 6 | +++ | +++ | " |
| 38 | " | 3 | 6 | +++ | +++ | " |

Commentary

These findings are encouraging enough to justify publication at this stage. The treatment is of great value where water is scarce and baths are difficult to procure, as in severely bombed areas and in the Middle East. By wearing his clothes the patient is able to carry on with his duties, and expense and trouble are avoided. Thus in the fighting Forces the problem of scabies becomes a regimental one and not a hospital responsibility. The strength of units would be better maintained and consequently the efficiency of such units would be raised. Those affected with scabies in shelters would be able to carry out the treatment quite simply in them provided space was set aside for such a purpose.

The advantages of this method are as follows: (1) the treatment is non-odorous, non-greasy, and non-messy; (2) the bed-clothes or underclothes are not stained; (3) it is not expensive—each case costs about a penny for a course of treatment; (4) treatment is standardized at two days' duration; (5) it dispenses with the trouble of having clothes disinfected, thereby avoiding hospital treatment; (6) recurrences are few; (7) supervision is unnecessary; (8) baths are unnecessary.

The disadvantage of the method is that some patients complain of a burning sensation in the region of the scrotum and penis after four or five applications. Three or four days after starting the treatment there may be a very mild excoriation of the affected area, particularly the scrotum, and a scaling and slight exudation of serum may appear. This, however, does not incapacitate the patient, and within a week it usually disappears without treatment. The complication is probably due to the strength of the solution. Since using a half-strength solution on a new series of cases the excoriation has been observed in a very much milder form in only 3 cases out of 50. This development was seen in 8 cases in Class A, 15 cases in Class B, and 12 cases in Class C. In spite of this complication patients frequently make such remarks as: "The best night's sleep for a fortnight"; "This should have been used years ago" (this patient was treated three times previously with sulphur ointment); and "Good stuff, this: it does stop the itching."

I should like to express my thanks to Lieut.-Colonel J. F. W. Meenan, R.A.M.C., whose patience and kindly encouragement have contributed towards the completion of the above investigations. To Lance-Corporal A. Murdoch, R.A.M.C., my gratitude is due for his careful help, which has greatly assisted me in compiling these results.

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SUBCUTANEOUS LIGATURE OF VARICOSE VEINS

BY

H. S. RUSSELL, M.D., B.Sc.

The ability to treat varicose veins by injection of sclerosing solutions is now an accepted part of a practitioner's therapeutic equipment. Unfortunately there are many cases which need something more drastic than injection alone. A positive Trendelenburg sign usually means that ligation of the saphenous vein will be required, either in the thigh or at the saphenous opening.

The methods described by recent writers are not applicable widely enough, as they require the use of an operating theatre, and many patients are unable to stay away from their work in order to attend hospital. For some time I have been trying to evolve a technique which would allow ligation of a varicose vein to be performed with a minimum of complication in the consulting-room. The method now used will be described.

Method of Ligation

The instruments required are one 2-cm. syringe, one perineal needle, strong silk or silkworm-gut, 2% novocain solution, and sclerosing solution as preferred (5% sodium morrhuate solution in my own case). The patient usually sits, but occasionally a standing position allows the vein

to be found more easily. At the highest point where the vein can be clearly defined the skin is prepared and an intradermal injection of 0.2 c.cm. of novocain is made on each side of the vein. The wheals should be one to one and a half inches apart. The perineum needle threaded with silkworm-gut is now passed through one wheal, under the vein, and out through the other wheal. In some of the early cases the vein was accidentally transfixed, but this appears to be of little consequence apart from the bruising that results. If this mishap is suspected the needle should be left in position until the rest of the treatment has been completed. Transfixion of the vein can be easily avoided by inserting the needle for an inch or so in a direction parallel to that of the vein, and then changing the direction across the course of the vein. The suture is drawn through and the ends are left loose.

A sclerosing injection is now made at the level of the suture, the ends of which are then tied firmly over a tightly rolled pad of gauze. In the earlier cases rubber tubing was used instead of gauze, but the increased elasticity caused the ligation to cut through the skin and leave a scar. A strip of elastoplast is applied over the gauze pad. The whole operation takes about two minutes to complete. The veins below the ligation require injection also, but quite small amounts of sclerosing solution will suffice, as the downward current of blood has been checked. These additional injections can be left over until the stitch is removed, which is done on the fourth day.

After tying the ligation it is pleasing to demonstrate that the vein is now empty. This can be done by getting the patient to contract and relax his calf muscle several times or, more simply, by "milking" the vein downwards. The demonstration is quite effective if the case is a suitable one for the method.

Results

The first case was treated eighteen months ago and the result is still good. Most of the patients have been able to work during the period of treatment. They are well pleased with the result, and there is no scar. Out of a total of nearly 30 patients 3 have returned later to have the other leg treated in the same way. The majority of the patients had either been refused injection treatment elsewhere because of the large size of their veins or had been treated unsuccessfully. It should be more generally recognized that injecting sclerosing solution into a vein which contains blood under pressure will not cure the condition, and may produce an area of pigmentation, thus bringing the whole method into disrepute.

There was one partial failure in the series. In this case I could not define the vein above the knee and had to tie it at a point where venous pressure was fairly high. The vein became patent again in a few weeks, though in the interval large veins below the point of ligation were successfully sclerosed. This man had previously had his leg treated at several hospitals and is pleased with the result, but I regard it as a failure. He ought to have had the Trendelenburg operation.

The most satisfactory case was that of a woman aged 40, who had had bilateral varicose veins for twenty years. They were rather larger in diameter than the average thumb, and extended to the middle of the thigh. Subcutaneous ligation in both thighs and half a dozen injections have produced a perfect cosmetic result. After six months there are still a few tender nodules at the sites of large varicose dilatations, but her ulcer has healed, her legs look normal, and she can walk as far as she likes without trouble.

Complications.—One ulcer developed at the site of ligation. In this case the patient did not attend as instructed