

TREATMENT OF SCABIES AND PEDICULOSIS WITH PYRETHRUM

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IN view of the unhappy position in which we are placed in regard to the treatment of scabies

(Continued from previous page)

In this series coramine was found to be of value, in contradistinction to the M. & B. 693.

CONCLUSIONS

In this small epidemic of influenza it was found that the sulphonamide group of drugs appeared to have no beneficial action on the respiratory type of the disease, and unless other workers obtain more encouraging results I consider that the toxic side-effects of this group of drugs are sufficient to contraindicate the use of the drugs of this type in the treatment of this disease. I consider that the underlying lesion which is of the greatest importance is the serious damage which influenza produces on the circulatory system.

I am unable to offer any explanation for the incontinence found in the two patients whose case-histories are given above.

SUMMARY

A small epidemic of influenza is reported, in which two patients developed incontinence, one showing incontinence of urine, and the other showing double incontinence.

Respiratory complications were not benefited by the administration of M. & B. 693.

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and as scabies and pediculosis have assumed positions of considerable importance in the present conditions under which both civilians and troops are living in Great Britain, we think it worth while publishing a short account of our observations on the effect of pyrethrum on simple scabies and pediculosis or when complicated by secondary infections.

It was recognized during the last world war that conditions of pyoderma, e.g., impetigo, boils, etc., had an important relationship with scabies. The pyrexia of unknown origin in its common form of trench fever was a sequel of pediculosis, and/or scabies.

Scabies

Scabies is extremely common in this country and occurs chiefly during the winter. Textbook descriptions of this disease are seldom met with among patients attending the hospital outdoor department as by the time they seek medical relief, extensive involvement of the body has already taken place. It is not uncommon to find itch on every part of the body except the face and the head, resulting in conditions which it would be difficult for an inexperienced observer to diagnose. The secondary pyoderma is also extensive and is generally of a varied nature. Many patients find it difficult to move and are completely crippled for the time being.

A very large number of remedies have been recommended for the treatment of scabies. Of all remedies, sulphur in its various forms is generally acknowledged to be the most efficient and the rate of cure in severe types of scabies which was met with in France in the last war was 31.7 days as against 3 days for the average early case.

We have no personal experience of treatment of this disease by benzyl benzoate. We have, however, used a 10 per cent ointment of finely powdered flowers of *Pyrethrum cinerariaefolium* with vaseline not only in human scabies and pediculosis but also in mange in rabbits and dogs and the striking success we have met with in these diseases in all our clinical trials has prompted us to bring it to the notice of the medical profession with a view to its wider application.

Earlier records show that pyrethrum in the form of an ointment has been used by Sweitzer (1936) in scabies. As we have had no access to his original papers, we are unacquainted with such details as the strength of the ointment used, the types of scabies in which it was tried, etc. However, he regarded this ointment as a clean, effective and valuable remedy.

Method of application.—The freshly prepared ointment should be well rubbed on the parts of the body affected by itch, especially in the evening, and once again before retiring to bed. The itching is generally relieved within 48 hours after its application. When secondary infection has set in, it is advised that the pus should be first let out before the parts are washed with

soap and hot water. As soon as the skin is dry the ointment should be applied in a thick layer. Very marked improvement is generally noticed within 48 hours after its application even in severe types showing considerable inflammation of the affected parts. If the instructions are carefully followed patients who have been crippled on account of severe inflammation will be able to undertake their usual avocations after 3 days.

What direct effect pyrethrum has on the organisms responsible for secondary infections, it is difficult to say. It is nevertheless true that after its application the ulcers show signs of healing within a remarkably short space of time.

It is not possible for us to state the average period needed for cure. As most of our patients were treated in the out-patients' department, we were not able to keep in touch with them till they were absolutely cured and the last trace of the disease had disappeared.

Ill effects.—We have not so far come across any bad effect following its application even practically over the whole body. It also does not cause any irritation of the conjunctiva when applied on the eyelids.

Pediculosis

Lice are commonly found in this country on the hairs of the head especially in women of the lower classes and in beggars, who have generally uncleanly habits. They are also not uncommonly found on European and Anglo-Indian school girls who do not wash their hair daily. The other form of pediculosis due to *Phthirus pubis*, though not very rare, is sometimes met with among all sections of society.

The symptoms caused by their presence are merely local irritation, and complications mentioned in textbooks are rare.

In louse infestation either by *Pediculus humanus capitis* or by *Phthirus pubis*, application of pyrethrum either in the form of a pomade or a watery extract is followed by equally beneficial results. As soon as the pyrethrum comes in intimate contact with the louse, the latter becomes at once inactivated and is soon killed. The fundamental basis of treatment therefore is to lay stress on the point that whatever preparation is used, it must be well rubbed into the hairs to ensure this contact.

Pediculus humanus capitis

Method of application.—The pomade is prepared with white vaseline in 8 to 10 per cent strength and is applied once in the evening. The application is to be continued for 5 days in succession which is generally taken as the incubation period of eggs (the incubation period of eggs in Calcutta during winter months is from 7 to 10 days). It should be noted that pyrethrum has no effect on nits but post-embryonic stages are quickly acted upon by it.

The watery extract is prepared by soaking 2 oz. of coarsely powdered pyrethrum flowers in about 20 oz. of water for half an hour, and thereafter heating it in a water-bath short of boiling point for another half hour. It is particularly useful in women who have long hair, and who are unwilling to apply any greasy material to their hair. Although the watery extract is slower in its action than when pyrethrum is used with vaseline, it nevertheless contains toxic properties powerful enough to kill the post-embryonic stages of this insect.

As much of the hair as possible should be immersed in a bowl containing the extract and the rest of the hair should be treated with a sponge soaked with the fluid. The treatment must be continued once daily during the incubation period of the nits.

Phthirus pubis

In connection with the action of the ointment on the crab louse we would like to refer to two cases, both boys aged 6 years and 8 years respectively, who were admitted in the hospital for some other disease in addition to infestation of the eyelids by crab lice. At the time of their admission they had blepharitis, conjunctivitis and severe inflammation of the eyelids following the infestation. Application of the ointment on the eyelids twice a day was quickly followed by recovery in the course of 3 days.

Discussion

Castellani and Jackson (1915) stated that pyrethrum powder had a very feeble action on lice. We carried out experiments on identical lines with pyrethrum grown in Japan, Kenya and India, the pyrethrum content of various samples varying from 0.5 to 1.5 per cent and found that all insects were killed within half an hour. The ointment however acts very quickly. In fact, death may occur almost immediately after its application. The watery extract acts more slowly and it takes about 3 hours for the insects to die. When vaseline is replaced by an oil, its action is uncertain.

According to Castellani and Jackson (1915) vaseline, lard and lanoline are all efficacious in themselves. According to our observations they act mechanically by blocking the spiracles of the insects. Pyrethrum, on the other hand, has a pronounced toxic action. When simple vaseline is used, the action depends on the number of spiracles which are completely blocked. While a louse will be killed almost instantly when it is immersed in vaseline, a small quantity when applied on its dorso-lateral surface, has either no action at all or the insects are not affected for 3 to 4 hours. In the case of pyrethrum ointment the action is certain and takes place quickly.

We have intentionally left out the question of reinfection in scabies during the course of pyrethrum treatment. Reinfection may take

(Continued at foot of opposite page)

A NOTE ON THE TREATMENT OF RELAPSING MALARIA

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AFTER an ordinary course of quinine, in at least 60 per cent of cases of benign tertian malaria infection, a relapse occurs. There are some patients who persistently relapse, under conditions where the possibility of reinfection can reasonably be excluded. When such a case is encountered, one should first make sure that the drug—quinine, other cinchona alkaloid, or atabrin—is actually being taken in the doses prescribed, and, secondly, that it is being absorbed; this can be ascertained with a reasonable degree of accuracy by testing the urine by the Tanret-Mayer test in the former two cases and by the Tropp and Weise (1933) method* in the last. If the drug is being absorbed, there is no reason why the oral route should be abandoned in favour of any other route, e.g., intravenous or intramuscular, and little will be gained by increasing the dose beyond the usual 10 grains three times a day or prolonging the

course beyond 10 days (if the cinchona alkaloids are being used, or 0.1 g. thrice daily for 7 days if atabrin is the drug).

Recently, such a patient came under our charge in the hospital. Details of the case are given below :—

The patient, a European male, aged 27 years, was admitted to the Carmichael Hospital for Tropical Diseases on the 1st October, 1940, complaining of sickness, headache, and pains in the joints and left side of chest with a temperature of 102.2°F.

The history was that he came to India in September 1939, since when he had seven attacks of malaria. During the first attack he was given quinine by mouth, as well as by six intramuscular injections. During the second attack he was treated with a course of atabrin and plasmochin. For subsequent attacks he was given quinine or atabrin with or without plasmochin, under medical supervision; he did not remember the details of doses. His last attack was in the first week of September, when he was given quinine, 30 grains a day, for 10 days.

The present illness started on the 27th September with fever and rigor, which recurred every alternate day. His spleen was enlarged one inch below the costal margin and was tender; the liver was just palpable. No other abnormality was detected. He had pain on the left side of chest which was apparently due to splenitis. Blood examination showed scanty benign tertian parasites.

On the following day, the temperature was normal, but the blood smear showed scanty trophozoites.

He was left without any specific treatment until the 5th October when he was given alkalis (sodium bicarbonate gr. 15 and sodium citrate gr. 30) followed half an hour later by a mixture containing 10 gr. of quinine, three times a day, with plasmochin 0.01 gm. twice a day for 10 days. On the 11th day (16th October) he was given an injection of sulpharsenol, 18 centigrammes, intramuscularly. Next he was given a 'tonic' mixture, with liquor arsenicalis—*miv*, twice a day after food, for one week. On the 23rd he was given a second injection of sulpharsenol—24 centigrammes. During this period he was getting a slight temperature of about 99°F. in the evening. The blood was therefore examined by a cultural method for malarial parasites; the result was negative. He was however given another course of quinine, gr. x, twice a day for 7 days from the 24th. Subsequently, he was completely afebrile. The second course of quinine was followed by a third injection of sulpharsenol—30 centigrammes. During this period the patient definitely felt a sense of well-being and gained 5½ pounds in weight.

He was discharged after 32 days in hospital, with a recommendation for a change of climate for a few months. He was instructed to inform us should he get another relapse.

He remained entirely free from fever for more than 6 months and gained another stone in weight.

Comment.—It was shown by Acton as early as 1919 that quinine acts on the malarial parasites best in an alkaline substratum, and the alkaline treatment of relapsing benign tertian, sometimes called Sinton's treatment, is dependent on this fact.

The addition of plasmochin in small doses to the ordinary course of quinine has been shown to reduce the relapse rate considerably (Sinton and Bird, 1928).

During the last war, on account of the shortage of quinine, the Germans used salvarsan in the treatment of malaria. In the Balkan countries, where the type of malaria is very resistant

* Add 2.5 c.cm. of 60 per cent NaOH and 25 c.cm. of ether to 50 c.cm. of urine; shake well and separate the ether; to the latter add 5 c.cm. of N/10 hydrochloric acid. The atabrin is extracted by the acid and the intensity of the yellow colour will be in proportion to the atabrin content.

(Continued from previous page)

place either from the patient himself or from an infected person or object, such as bedding, garments, etc. The female mite is a 'cave dweller' and lays from 15 to 20 eggs during her lifetime. The eggs hatch in 5 or 6 days. Transmission usually occurs at night when the acari are most active. Reinfection therefore depends on the destruction of eggs, larvae, nymph and adults for which extensive and continued treatment of the patient for at least a week after cure is necessary. In addition to this, complete disinfection of articles of clothing and bedding, that may have become contaminated, should be advised.

Pyrethrin, the active principle of pyrethrum, is an unstable compound and should under no condition be exposed to sunlight. It should also be freshly prepared.

It should be remembered that if pyrethrum is used, only *P. cinerariæfolium* should be selected.

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