SOME CLINICAL FEATURES OF RINGWORM IN MALAYA AND HONG KONG

BY

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There are a number of features of ringworm of the glabrous skin as it affects our soldiers in the Far East which do not seem to be as widely recognised as they should be, largely because of deficient clinical as opposed to speculative study of the subject. There has also been a tendency to overlook known principles of cutaneous mycology and general pathology.

The material for this study was collected mostly in Hong Kong in 1953, because the seasonal incidence of the condition there emphasises certain features of the disease which are not so obvious in Malaya, where the "Hong Kong summer" type of weather persists the year round.

The meteorological conditions associated with a high incidence of body ringworm are a sustained relative humidity of over 80 per cent and a sustained temperature above 70° Fahrenheit. When these conditions obtain in Hong Kong the average wind speed is at its lowest. The obvious deduction from these facts is that increased sweating and decreased evaporation of sweat leads to waterlogging of the horny layer, which is known to interfere with the normal self-disinfecting capacity of the skin. Unfortunately we have as yet no knowledge of what it is that makes the skin so resistant to superficial mycosis, and this most obvious line of research at present leads nowhere.

There is, however, evidence that the body recovers its powers of resistance, either naturally or as a result of infection. Clinically, relapsing ringworm is extremely uncommon, as are second attacks. If they do occur they tend to be limited in extent and activity. (This refers to the common body ringworm, of course, and excludes the occasional Trichophyton rubrum type of case.) The evidence rests on more than clinical impressions, and in this instance is based on the detailed anamnestic study of a random group of 153 soldiers who had spent at least two summers in Hong Kong and were returning to the United Kingdom on normal reversion to home establishment. It was found that 77 had suffered from body ringworm, of whom 71 were affected in their first summer, 6 in their second summer, and 8 had second attacks during their second summer in the colony.

In Malaya the great majority of attacks occur in the second to fourth month after arrival, and first attacks, relapses or second attacks are rare after six months have passed. For example, a recent series of 48 cases seen in Singapore and Kluang had an incidence of 85 per cent in the second to fourth month, and only one of the remainder had been in the country longer than seven months.

What are the sites of initial lesions and the distribution pattern of the
Fig. 1.—Composite diagram of sites (frequently multiple) affected in 85 random cases of body ringworm. Facial lesions occur, but not in this series. Solid dots indicate initial lesions, the site of which was uncertain in 5 cases.

developed case? In a random collection of 85 patients the initial sites were in the following order of frequency: crutch 41, waist 15, chest 9, stocking area 7, armpit 3, arm 3, thigh 2, uncertain 5.

The overall pattern of distribution is shown in the composite figure of “Mycotic Man” made by superimposing the 85 cases already mentioned (Fig. 1). The density of lesions not unexpectedly follows the pattern of initial development and immediately suggests a connection with clothing pressure and friction.

How much temporary disability is caused by this type of ringworm? The great majority of sufferers are not treated in hospital and it is very difficult to arrive at accurate figures. However, the cases so far discussed had treatment for
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an average of nineteen days each, the extremes being three days and over ninety
days.

In-patient figures are more accurate, and those from Hong Kong for a period
of almost two and a half years show that when the disease is localised to one
body area, 75 per cent are cured within thirty days, whereas if the condition is
allowed to become generalised before admission, or if secondary complications
arise, this figure drops to just over 50 per cent.

How much invaliding disability is caused? In Hong Kong, in the period
just mentioned, 16 of the 373 patients who were treated in hospital for ringworm
were invalided (4.5 per cent). They formed but a fifth of all the skin patients
invalided in this time, and are not a very impressive number in a community
with an attack rate of 50 per cent. More will be said about these 16 cases
later.

In Singapore, between October, 1956 and February, 1958, only 2 of the
79 patients sent home with disabling skin disease had significant tinea. In each
case it was a definitive type of tinea pedis, aggravated by other factors, and
unrelated to any attacks of body ringworm.

What causes long-term disability and occasional invaliding in these cases?
An attempt to clarify this point was made by studying in detail 74 consecutive
in-patients in Hong Kong in 1953. It so happened that none had to be
invalided, and 54 were returned to duty in less than thirty-two days, leaving a
minority of 20 who were problems. Comparison between these two groups
showed marked differences which were broadly related to inadequate treatment
or management before admission on the one hand, and differences in host
reaction on the other.

For example, half the difficult group of 20 had their ringworm for three to
twelve weeks before admission, and were treated sporadically if at all. One
patient had seborrhoeic dermatitis in addition for four months, and another was
sent by sea from Malaya to Hong Kong whilst suffering from active disease.
Whilst in hospital 80 per cent of this group developed complications, as com­
pared with 26 per cent of the majority group. Similarly 60 per cent developed
fresh or recurrent ringworm lesions, compared with 17 per cent of the other
group. Although analysis of the various complications shows that temporary
ecematisation of lesions, secondary infection, and non-specific crural dermatitis
due to irritative factors including sweat retention are “normal” features of almost
equal incidence in both groups, constitutionally or emotionally determined
reactions such as seborrhoeic dermatitis, excoriation and friction dermatitis, and
avoidance of treatment are found preponderantly among those patients who
spend more than a month in hospital (see Table 1). This point gains significance
when seen alongside the real reason why most of the 16 invalided cases mentioned
previously had to be boarded. Eleven of them developed seborrhoeic or other
eczematous complications, and once again the point is brought out that it is not
the ringworm but the patient who has it that matters.

Is there any relationship between tinea pedis and the condition under review?
It must be said straight away that the clinician dealing with hundreds of these
cases is struck with the rarity of definitive fungus disease of the extremities either
before or after the attack. Abnormalities of the toe clefts are common, as they are in all British troops, but this is no more a specific disease than is otitis externa.

Table 1. Complications in 74 cases of body ringworm treated in hospital

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<tr>
<td>Seborrhoeic dermatitis</td>
<td>2 (3.7)</td>
<td>6 (30)</td>
</tr>
<tr>
<td>Crural dermatitis (non-specific)</td>
<td>4 (7.4)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Pyogenic infection</td>
<td>4 (7.4)</td>
<td>1 (5)</td>
</tr>
<tr>
<td>Local ecematisation of lesions</td>
<td>4 (7.4)</td>
<td>2 (10)</td>
</tr>
<tr>
<td>Excoriation</td>
<td></td>
<td>6 (30)</td>
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<tr>
<td>Acute scrotal dermatitis (? cause)</td>
<td></td>
<td>1 (5)</td>
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<tr>
<td>Axillary hidradenitis</td>
<td></td>
<td>2 (10)</td>
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<tr>
<td>Avoidance of treatment</td>
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<td>1 (5)</td>
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The results of microscopy are of little use in trying to settle this problem unless carefully related to the clinical condition, at the same time bearing in mind the transient nature of contamination with most skin pathogens. One has only to consider for a moment the hypothetical position of regarding a streptococcus-positive throat swabs as being synonymous with significant streptococcal carriage or follicular tonsillitis, or conversely, of calling all sore throats streptococcal tonsillitis, to see by analogy how meaningless are most investigations of "tinea pedis."

The picture that emerges so far from this study is of a disease with a very high incidence but a very low long-term morbidity. The pathogen is obviously ubiquitous, but only gets a foothold when certain sustained conditions of environment combine with a lowered power of resistance in an individual on first exposure to these conditions. The distribution pattern of the lesions suggests strongly that clothing pressure and friction play an immediate part in initiating the disease, and leaves the possibility of actual contamination of clothing being an important source of infection as one that still cannot be too easily dismissed. An occasional patient seems to develop no resistance, or is found to have a T. rubrum type of disease, but the great majority of long-term effects are attributable to constitutional or psychocutaneous breakdown in which the ringworm has played an accidental part.

Until an effective antimycotic with antibiotic properties is discovered, or more is learnt about the natural defences against cutaneous mycosis, the mainstay of management will continue to consist in encouraging high unit morale, good hygiene, and insistence upon early complete treatment in all cases. In war, in jungle tropical conditions, widespread ringworm will remain an operational risk, but in normal conditions, units that are careful of their personnel in the first few months, and do not place them in positions where prompt effective treatment is impossible to carry out when ringworm first develops, will reap the benefit of their foresight in the long run.

Why does the treatment of established ringworm take so long in many cases? The answer is twofold. Firstly, the only effective fungicides are those preparations which cause desquamation in addition to any antifungal properties they
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may possess. The only safe effective applications for routine use take five to seven days to achieve adequate peeling, and such an irritated area of skin needs ten to fourteen days in which to reconstitute itself. Secondly, sweating and clothing friction diminish the effectiveness of treatment, and this is almost impossible to avoid, not least in the bed patient, whose buttocks, crutch and thighs are constantly subject to such conditions.

Nothing has been said so far about suppurative ringworm, because this condition is a normal reaction to infection and the ultimate outlook is good. It has not been possible to estimate what proportion of cases develop this reaction, and the clinical impression during the past eight years is that the condition is becoming less frequent and less florid, which suggests that the local strains of *T. mentagrophytes* has now passed through so many human hosts that it is becoming more anthropophilic in its behaviour. The suppurative reaction usually develops during the second or third week of the disease—in other words, at the time when natural immunity develops—and eight to ten weeks pass before resolution is complete. If the impression is correct that suppurative ringworm is becoming less common, and for the reason suggested, then it follows that in general ringworm among our troops may become increasingly more indolent and difficult to cure as the fungus adapts itself to the hosts. This possibility has already been suggested by Lieut.-Colonel P. C. Mitchell (personal communications) and needs constantly to be borne in mind, for it is yet another cogent argument in favour of the principle of early complete treatment of the disease.

Finally, two points deserve to be mentioned. One is the rarity of dermatophytids among these patients. The second is to raise the question of the nature of the fine papular eruption that so commonly appears within healing sites in the third week. Is this a follicular mycid, a follicular recurrence, or due to sweat retention? Biopsies might give the answer and it would be satisfying to know.

**SUMMARY**

Body ringworm as it affects British service men in Malaya and Hong Kong is described as a condition that affects predominantly persons newly exposed to sustained conditions of high temperature and humidity.

Evidence is produced supporting the view that this abnormal susceptibility is short-lived and normal resistance soon returns.

The distribution of lesions follows a consistent pattern, being concentrated in areas of clothing tightness and friction.

Treatment is liable to be time-consuming unless early complete treatment is insisted on.

Chronic disease is rare, except in the small proportion of cases in which a constitutional or psychocutaneous breakdown is activated by the attack.

There is little to suggest that chronic definitive fungus disease of the extremities has any causal relationship to this type of body ringworm.

Attention is drawn to the rarity of dermatophytids in these cases, and the
question is raised as to the nature of a papular eruption frequently seen within healing patches in the third week.

The opinion is expressed that until an antibiotic effective against dermatophytes is discovered, or some understanding of the normal body defences against superficial mycosis is achieved, the mainstays of management of the problem will continue to be good unit morale and hygiene, and acceptance by all concerned of the principle of early complete treatment of every case.

My thanks are due to Lieut.-Colonel J. P. Baird, M.D., M.R.C.P., for helpful criticisms of this paper.

SCRUB TYPHUS IN THE DIFFERENTIAL DIAGNOSIS OF VENEREAL DISEASE

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In 1955, 106 infections of scrub typhus were diagnosed in military personnel in the Far East. An analysis of the signs and symptoms of 12 patients of this group showed that fever and chill were present in 9 patients, generalised lymphadenopathy in 11, rash in 5 and eschar with enlargement and tenderness of the regional lymph nodes in 3. Other constant findings were slow pulse and leucopenia.

In most cases the disease was contracted during operational or training duties in the jungle, and it is probable that in many instances the offending ricketsiae gained entry to the body through the skin of the legs, thighs and genitals.

It is possible that an eschar of or near the genitals may be confused with venereal disease, particularly lymphogranuloma venereum, which includes in its symptomatology genital ulcer, painful enlargement of the inguinal lymph glands and high fever. Further, the broad spectrum antibiotics, the tetracyclines and chloramphenicol often used in the treatment of lymphogranuloma venereum are very effective against the ricketsiae of scrub typhus. In view of this it is thought worthwhile recording the medical details of two soldiers referred to the Venereal Disease Department of the British Military Hospital, Singapore, as suffering from venereal disease. Both patients were eventually diagnosed as cases of scrub typhus and were successfully treated for this condition.

Case No. 1

A British soldier was evacuated from the jungle and admitted to the British Military Hospital, Kluang, on 14th March, 1956, complaining of a fever which had been present for twelve hours and an enlarged tender swelling of his right groin for four days. The previous history was irrelevant: his last admitted
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