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Editorial

DIAGNOSIS AND MANAGEMENT OF SINGLE LESIONS IN LEPROSY

Introduction

Most clinicians will probably agree that it is more difficult to ascertain the diagnosis leprosy if only one skin lesion is found (which looks like leprosy) than if the patient presents with several lesions. In other words, a high sensitivity (few false negative diagnoses) *and* a high specificity (few false positive diagnoses) are difficult to achieve in patients with only one skin lesion, and in particular, if the single lesion is on the face, where unimpaired sensation does not exclude a diagnosis of leprosy.[1] If the single lesion is an enlarged nerve many clinicians will 'for all practical purposes' decide that the diagnosis must be leprosy and that antileprosy treatment should be commenced although, even in highly endemic areas, not all nerve enlargement is due to leprosy. In Ethiopia definitive histopathological evidence of leprosy was found in only 42 out of 81 biopsies from (presumably enlarged) peripheral nerves.[2] There have also been several reports about ischiatic nerve damage following injections of quinine, which can be confused with nerve damage due to primary neuritic leprosy.[3,4]

The extent of the problem

The first question to be asked is: 'What is the size of the problem, is it worth discussing?' During a school survey in Panaji (India) the 'majority' of 26 newly-found patients had single lesions.[5] When 10,163 students were examined in the Kaniyambachi Panchanyat Union 137 leprosy cases were detected of whom 86·1% had but a single lesion.[6] On the other hand, only 15·4% of patients found during a school survey covering 21,412 students around Surat (India) had single lesions.[7] Among 172 nonlepromatous patients belonging to the Armed forces of India 59·8% had a single lesion at the time of diagnosis.[8] In South India the proportion of single-lesion leprosy detected between 1987 and 1991 in a Government Leprosy Control Unit and in the field area of a Central Leprosy Teaching and Research Institute were 56% and 61%, respectively. These proportions were higher among children (71%, 1227/1713) than among adults (48%, 1395/2893). Most of the patients were found during surveys.[9] In Malaŵi (Africa) the

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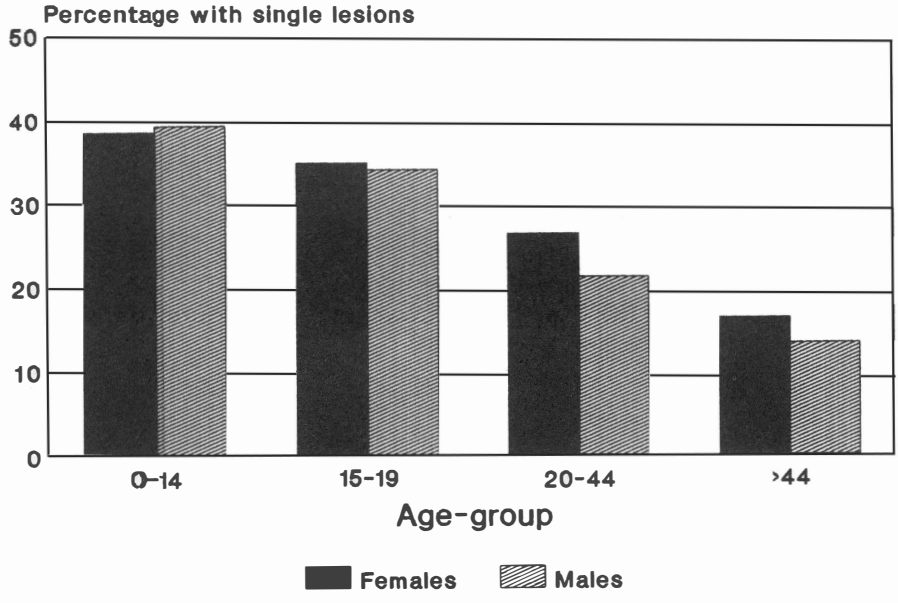

Figure 1. Percentage of new PB-leprosy patients with single (skin) lesions by age group. Malawi 1984–94.

percentage of patients with a single skin lesion varied considerably from year to year but was between 20 and 30% for most years between 1984 and 1994. The vast majority of these patients were self-reporting. There is, like in South India, a clear trend for the percentage of single lesions to decrease with age, as can be seen from Figure 1.[10] This age related trend can be interpreted in three ways: young people are examined more thoroughly or, they self-report earlier than older people or, the percentage of pauci-bacillary patients with single lesions is genuinely higher among younger than among older people.

However, on the whole the data mentioned suggest that at least a proportion of single lesion leprosy will, without treatment, progress towards multilesion leprosy. This interpretation is supported by many case histories of patients who (if asked carefully) can tell that their disease started with one lesion, and how long it took for subsequent lesions to appear. This time lag can be weeks, months or even years.

If the above interpretation is correct—and there is little reason to doubt it—it is certainly an argument to take single lesions seriously in order to prevent multilesion leprosy which is already associated with considerable nerve damage at the time of diagnosis.[9,11]

The anatomical distribution of single lesions, because they are thought to be the initial lesions, has been used to try to illuminate modes of transmission. Such studies are however only useful where patients were found during population surveys, or where no stigma at all is attached to the disease. Among self-reporting patients most lesions will be on the exposed parts of the body where they can not be hidden.[12] When comparing data from vaccine trials in Uganda and Burma (Myanmar) and from a total population survey in Karonga district (Malawi) considerable regional differences in the distribution of single lesions emerge: in Malawi and Uganda 29 to 44% of single lesions were on the

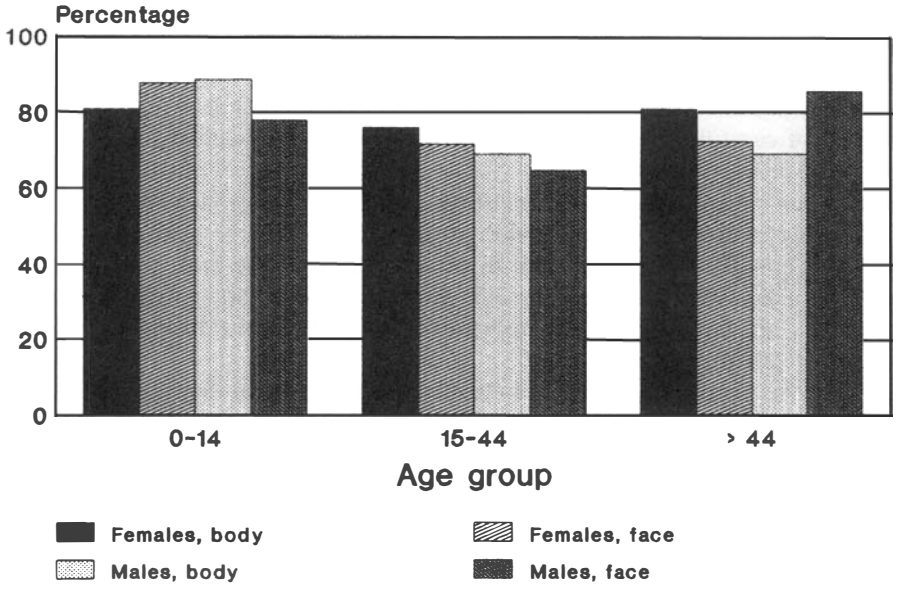

Figure 2. Percentage of suspects with single (skin) lesions in whom a definite diagnosis of leprosy could be made, Karonga district (Malaŵi) 1979–94.

face of patients under 20 years of age. In Burma the face was the site of single lesions in a mere 3%. On the other hand, in Burma 18% (86/469) of single lesions were found on the buttocks while in Malaŵi only 4% (8/182) were found in this covered area.[13] Whether these differences are really expressions of different modes of transmission remains to be seen. No doubt further data from population surveys would be useful to help in the interpretation of the findings.

Diagnostic problems

As a rule single-lesion leprosy is paucibacillary leprosy, but my own observations and several published reports suggest that occasionally multibacillary leprosy may also present itself as a single lesion.[14–16] However, on the whole the problem of classification would appear to be a minor one.

On the other hand, single-lesion leprosy can be confused with single lesions due to a number of other diseases.[17] Prominent among these in my experience are vitiligo, pityriasis alba, granuloma annulare, granuloma multiforme, actinic lichen planus,[18] pseudolymphoma, Jessner's lymphocytic infiltrate, eosinophilic granuloma, sarcoidosis, morphea, tinea and even necrobiosis lipoidica which is frequently anaesthetic.[19] Once sporotrichosis was reported to have entered the differential diagnosis.[20]

However, the question arises whether diagnostic issues are a genuine problem for leprosy control programmes or whether these single lesions are at the fringe of the main activities of programmes, namely the treatment of patients and the prevention of disabilities. There do not seem to be many published reports discussing this question. In India a senior medical officer could only confirm the diagnosis leprosy in 80% of 142

suspects detected by paramedical workers.[21] It is, however, not clear how many of these cases had single lesions, and so I have to refer to some unpublished data. These are presented in Figure 2. On the whole, about three quarters of single lesions, which were suspected by paramedical workers to be due to leprosy, were indeed due to leprosy when the results of careful clinical examinations by a medical officer and histopathological examination results were combined.[22,23] The differences between the face and the rest of body, between males and females, and between different age groups are minor, although in children the proportion of single-skin lesions which could be confirmed to be due to leprosy was consistently higher than in other groups. These data confirm that single lesions pose a considerable diagnostic difficulty after having shown that single lesions are the only sign not only in a high proportion of suspects found during surveys but also among self-reporting patients.

It would be easy to suggest that better training in general dermatology for all staff involved in the diagnosis of leprosy and the general establishment of histopathology services would solve the problem of the sensitivity and specificity of the diagnosis of single lesions. This might be the answer in isolated circumstances but it can obviously not be the general solution. Nor is it likely that polymerase chain reaction (PCR) technology, which must be more sensitive than Ziehl-Neelsen staining, will become readily available to help solve diagnostic problems in the field.[24]

The future

If there was a single dose treatment for leprosy which, at least in paucibacillary leprosy, was 100% effective, free from serious side-effects and cheap, one could envisage simply giving this treatment to all suspects with single lesions. Perhaps only a minority would benefit from this treatment, in so far as some genuine leprosy lesions might have healed by themselves without treatment, and in so far as a proportion of lesions would not be due to leprosy. But if no serious side-effects occurred this would be ethical and be similar to the situation in schistosomiasis, ascariasis and onchocerciasis, where targeted mass treatment is given without ascertaining a diagnosis in each and every treated individual.[25,26]

There is some evidence that single (paucibacillary) leprosy heals faster than multi-lesion leprosy. After 6 months of treatment with monthly rifampicin and daily dapsone (WHO/MDT) 20/33 single lesion cases but only 5/33 multilesion cases had become 'inactive' in a study in India.[27] In another study 58/72 (81%) of single-lesion leprosy cases had become inactive after 6 months of treatment but only 334/506 (66%) of multilesion cases.[28] Even more relevant to the proposal to develop a safe single-dose treatment for (suspected) single-lesion leprosy is a trial carried out in Zaire. Two single-dose regimens (rifampicin plus clofazimine versus rifampicin, clofazimine, dapsone plus ethionamide) were compared. The differences between them were negligible: for both regimens probabilities of cure in patients with 1 or 2 lesions were well above 80%.[29] On the other hand, single doses of new agents, minocycline, clarithromycin and fluoroquinones, proved not to be bactericidal in pilot trials.[30]

Nevertheless, to develop a single-dose regimen seems to be the way forward to deal with suspected single-lesion leprosy rather than to develop better diagnostic skills or more sophisticated methods of diagnosis, which are unlikely to ever reach district

hospitals and health centres. Therefore further trials with single-dose regimens are urgently required to develop one standard regimen. With such a single-dose regimen for suspected single-lesion leprosy, school surveys and contact surveys would become meaningful once more, because in many places it would not be necessary to build up a treatment network and promote health education to encourage patients to come for regular treatment. A lot of multilesion leprosy and nerve damage could no doubt be prevented with a safe and effective single-dose regimen for single-lesion leprosy.

Whether it might be useful to treat people in leprosy endemic areas who show no signs of leprosy with such a single dose, e.g. of rifampicin, ofloxacin and minocycline, is another question. A plan exists to do just that in the Federated States of Micronesia.[31] Unfortunately however, no provision seems to have been made yet for a placebo group to study the long-term effects of this intervention.

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