COMMENT: THE SERODIAGNOSIS OF LEPROSY

Sir,

We have read the Editorial 'The serodiagnosis of leprosy' by Dr P. G. Smith, published in *Lepr Rev*, 1992; **63:** 97–100, with great concern.

In Cuba, where the elimination of leprosy as a public health problem is defined by WHO has almost been achieved, we are already discussing how to eliminate *Mycobacterium leprae* transmission, its causative agent. The WHO strategy is based on the administration of MDT to at least 80–90% of registered cases and the encouragement of early self-reporting of cases, and aims essentially at the elimination of infection, thus preventing transmission.[1] MDT was implemented in 3 Cuban provinces in 1989 and was extended to the whole country in 1990, but in fact the therapeutic regimen (600 mg daily RMP given for 6 and 3 months to MB and PB patients, respectively, followed by monthly injections of 225 mg DADDS, all administered by health personnel) that had been used since 1977 until it was substituted by MDT proved to be effective. Only 6 of 1211 MB patients treated for at least 5 years were discovered to be relapsed in a drug resistance study conducted just before MDT implementation (A. B. González, unpublished observations). Such treatment was given to most of the patients but this does not seem to have made any obvious impact on *M. leprae* transmission because in the period 1972–90 the annual case detection rate is represented by a practically flat curve with a very slight declining trend (R. Gil, unpublished observations).

From the above-mentioned facts it could be believed that the elimination of *M. leprae* transmission could take longer than would be expected if the only method was to treat confirmed cases. Therefore, early diagnosis together with prompt treatment appears to be crucial to achieve elimination. But, besides the fact that early diagnosis is not always easy to attain due to many very well-known reasons, it should be ascertained how early this should be. Perhaps individuals incubating the highly infectious forms of the disease are capable of acting as a source of transmission for varying periods before their leprosy becomes manifest and these could pass on the disease to others before they themselves are diagnosed. We have some evidence that this might occur.[2] In Cuba, on average during the last few years, around 60% of the cases have been diagnosed less than 12 months after the onset of the clinical signs and only 10% after 5 years and more, so that in order to interrupt transmission it will definitely be necessary to detect these cases even earlier.

It is generally accepted that patients at the lepromatous area of the spectrum make the major contribution to the spread of *M. leprae*, therefore in order to interrupt transmission what is really important is the early detection and treatment of as many *M. leprae* transmitters as possible. In this respect the PGL-I ELISA is useful because it is virtually 100% sensitive in lepromatous leprosy. The usefulness of this serodiagnostic test should be discussed and evaluated in relation to particular epidemiological situations. Marked differences in the distribution of leprosy types between the populations of different geographical areas have been observed due to unknown reasons. Because of this, it is not too surprising that a great deal of work would have to be done, for instance, in Malawi, where 95% of the patients are PB,[3] to find a few presumably infected individuals who are suspected of incubating MB leprosy because of the observation of elevated PGL-I antibody levels. It seems important to us that in the study by Chanteau[4] only 1 of 10 individuals who developed leprosy among a group of 1123 contacts in Polynesia, followed up for up to 6 years, was lepromatous and that he/she showed a high PGL-I antibody level between 20 and 30 months before being diagnosed. We do not agree with Dr Smith's observation on the results of the Venezuelan study[5] that it was a striking finding that most of the 20 cases occurred in those who had not had elevated antibody levels. The results (OD readings) for each individual serum sample were expressed as a proportion of the value observed for the positive control sample in each microtitre plate—a pool of sera from 6 patients with LL or BL leprosy with known high levels of antibody to PG-I. If a cut-off value had been set at 0·25 sample/positive control ratio, 14 of the 20 cases (70%) would be considered seropositive, but the seropositive proportion of all sera would be 33·4% which

is somewhat higher than that commonly found for leprosy contacts in published reports on this subject, and if the cut-off value were at a 0·5 ratio (which could, in our opinion, undoubtedly be regarded as 'elevated') 35% of the developed cases would show antibody levels above this value and the total seropositive proportion would only be 5·8% which is at the low end of the range commonly reported. On the other hand, 13 (65%) of these cases developed paucibacillary disease (2 TT, 1 BT and 10 I) and it is well known that this assay is of low sensitivity in these leprosy types. Again, 2 of the 3 cases who developed lepromatous leprosy (1 LL and 1 BL) showed very high antibody levels, and the third one (BL) still showed a value of 0·37.

It is true, as Dr Smith writes, that even with a test which had a specificity of 95%, if only 1/1000 of those screened really had leprosy, there would be 50 times as many false positives as true positives in detecting cases. But the lepromin test might provide a useful means for discovering those who are at risk of developing MB leprosy and becoming new sources of infection in the community. We fully agree with Dr Smith in that there is little to be gained by extending case-finding activities if currently identified cases are not properly treated. Nonetheless, we workers on leprosy must not be in a hurry to throw this tool into the waste basket.

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