


**FAILURE OF LEVAMISOLE TO RESTORE IN VITRO LYMPHOCYTE RESPONSIVENESS IN LEPROMATOUS LEPROSITY PATIENTS**

Sir,

Leprosy exists in two polar forms: high-resistance tuberculoid (TT) and low-resistance lepromatous leprosy (LL). Borderline forms exist between the two extremes. In LL, cell-mediated immune responses to *Mycobacterium leprae* are depressed, although the nature of the defect has not been established.
Levamisole, an antihelminthic drug, restores defective \textit{in vitro} T-lymphocyte responses,\textsuperscript{6,7} though it does not restore cutaneous delayed hypersensitivity to lepromins in leprosy patients.\textsuperscript{5} We report the effect of levamisole on the depressed \textit{in vitro} responses to \textit{M. leprae} antigens and tuberculin PPD in lepromatous leprosy patients.

Fourteen Ethiopian patients (6 females and 8 males, mean age 23, range 12–36 years) were studied. Eleven of the patients had either borderline lepromatous (BL) or LL and 3 had borderline tuberculoid (BT) leprosy. The patients were untreated except for 5 patients in the lepromatous group who had been treated with dapsone for periods from 2 weeks to 20 years prior to the study.

Peripheral blood lymphocytes from these patients were stimulated in the lymphocyte stimulation test (LST) with either sonicated \textit{M. leprae}, $10^6$ bacilli/ml, of human origin or tuberculin PPD, 1 $\mu$g/ml. Freshly diluted levamisole (kindly provided by Janssen Pharmaceutica, Belgium, through Dr J Symoens) was added at the start of the cultures at concentrations varying from 0·1 $\mu$g/ml to 100 $\mu$g/ml.

We found that levamisole did not significantly enhance the depressed \textit{in vitro} lymphoproliferative responses to \textit{M. leprae} in LL patients, and in BT patients the drug did not alter the response to \textit{M. leprae}. Levamisole added to cultures of lymphocytes from the same patients did not influence the \textit{in vitro} response to PPD either.

Levamisole possesses immunostimulating properties and has been reported to restore defective cutaneous delayed hypersensitivity in cancer patients,\textsuperscript{2,10} to influence the clinical course of malignancies\textsuperscript{11} and it has been suggested that levamisole may be of therapeutic value in conditions associated with excessive suppressor T-cell functions.\textsuperscript{4} We found that levamisole did not enhance the depressed \textit{in vitro} T-cell responsiveness to \textit{M. leprae} antigens in LL patients. This is in agreement with previous reports that levamisole did not alter the lepromin reaction or lead to clinical improvement in leprosy patients, especially LL,\textsuperscript{5,9} and suggests that the nature of the defect in lepromatous leprosy is different from cases where levamisole is reported to have immunostimulating properties.

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**LEPROSY AND PRIMARY HEALTH CARE WORKERS**

Sir,

In *Leprosy Review*, 53, No. 3, dedicated to Leprosy and Primary Health Care, many thoughts have been expressed by a variety of authors. Although posts for the primary, village or community health worker (PHW) have been established in only a few countries to date, one gathers most authors agree that where PHWs have been shown to function efficiently it would be worth trying to involve them in leprosy work as well.

However, one wonders whether the PHWs could manage the many tasks various people would like to put on their shoulders. Certainly all authors agreed that support and supervision of the PHWs would be essential. I suggest that unless this condition is indeed fulfilled, the integration of leprosy work with the general work of the PHW should not be attempted, since it might well prove to be counterproductive—a case of throwing the bathtub away with the baby to save water.

If one agrees that the PHW’s role in leprosy control should remain basic, one could suggest as tasks:

1. To refer anyone with a suggestion of clinical leprosy to the nearest health centre for examination, diagnosis, classification, registration and prescription for treatment.
2. To record and issue drugs according to prescription, regularly, to registered leprosy patients; to encourage and supervise drug compliance.
3. To recognize and refer to the nearest health centre complications, reactions and suspected drug allergies/toxicities.
4. To trace defaulters and encourage them to return to the fold.
5. To educate the community and leprosy patients on leprosy.

Staff at the nearest health centre should be able, prepared and willing not only to deal with most of the patients referred by the PHW, but also to visit the PHW from time to time to see which cases have not been referred. The question arises as to which staff should visit the PHW in order to monitor their work with respect to leprosy.

It is possible the medical assistant or nurse/midwife of the nearest health centre (dispensary?) could undertake this if they have the time, transport, energy and inclination. However, even though leprosy may feature on the training curriculum of medical assistants and nurses and might be included on refresher courses, it is my experience that general health personnel show little aptitude in the careful examination of patients suspected to have clinical leprosy, or in the diagnosis or classification of the disease.

I think most of your readers will agree that the diagnosis of leprosy is easy except when it is not easy, and then it is very difficult indeed. This poses a dilemma: one should only register and treat a patient as having leprosy when the diagnosis is virtually certain, but not miss the diagnosis of early leprosy either. To handle this dilemma in an acceptable manner one requires time, skill and