RESPONSE TO LEPROMIN UNALTERED BY APPLICATION OF ZINC TO THE SKIN IN LEPROMATOUS LEPROSY PATIENTS

Sir,

Writing in the Lancet in 1979, Golden *et al.* [1] drew attention to the fact that thymic atrophy in malnourished children can be reversed by zinc supplementation. To see if their defect in cell-

mediated immunity was also associated with zinc deficiency, they skin-tested 10 children with *Candida* antigen on both forearms, 1 test site being covered with locally applied zinc sulphate and the other with placebo ointment. There was a highly significant increase in the typical delayed hypersensitivity reaction at the site covered with zinc and the authors concluded that zinc deficiency is a cause of the immune defect in malnutrition. They also commented that the local application of zinc might enhance the reliability of skin tests, in, for instance, the diagnosis of tuberculosis. A year later, Fernandez *et al.*[2] published further evidence of the importance of dietary zinc deficiency in causing impairment of cell-mediated immune responses. Oral zinc has been used beneficially as an adjunct to antileprosy drugs in various situations.[3–5]

We decided to investigate the possibility of altering skin test responsiveness of lepromatous leprosy patients to lepromin, by zinc topical application. Fifteen inmates of Hansen's Disease Rehabilitation Centre (Janla, Orissa), categorized as lepromatous leprosy based only on clinical features, were chosen for the study. Age of the patients ranged from 10 to 60 years; duration of the disease was from 6 months to 30 years; all were currently under treatment with dapsone 50–100 mg daily, though for varied periods. Slit-skin smears were positive for acid-fast bacilli in all but 5 patients.

Zinc was applied (1% $ZnSO_4$ in white petroleum jelly) to the middle one-third of the flexor aspect of the right forearm (test), twice a day with an interval of about 8 h between the applications. Plain petroleum jelly, applied over a corresponding area of the left forearm served as untreated control. Patients were instructed not to remove the applied jelly for at least 3 h after each application. This was done for 15 days.

On the sixth day of applying jelly, 4 patients developed mild urticaria at the site of application (in 2 patients urticaria was present in both the left and right forearms; in the other 2, urticaria was confined to the right forearm). This disappeared completely by the next day. A single patient developed erythema (right forearm > left forearm) on day 10 of the study which persisted for 3 days. The significance, if any, of these observations is not known.

On day 16, lepromin (Dharmendra antigen, courtesy of U Sengupta, CJIL, Agra) was injected intradermally in both the forearms of all 15 patients. All the patients remained lepromin negative.

It is possible that the period of application of zinc (15 days) was insufficient and we fully appreciate that no firm conclusions can be drawn from an isolated study of this kind on a limited number of patients. However, it is our intention to continue this work and to extend our studies to include patients with the non-polar forms of leprosy. Meanwhile, we submit these preliminary observations in the hope that others will report similar studies on the effect of locally applied zinc in leprosy, tuberculosis or related diseases.

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