

that the hypopigmented skin macule is an indicator of a hypersensitivity reaction to sensory nerve myelin. McDougall<sup>(6)</sup> has put forward an attractive theory on the mechanism of hypopigmentation in leprosy. He relates the hypopigmentation as a consequence of free radical formation during the cell-mediated immune response. We may assume that a hypopigmented skin lesion is, therefore, an early indicator of the immunopathological mechanism affecting the nerve trunk.

The above-mentioned hypothesis allows us to raise questions on the possible modalities of preventive therapy to be established for patients without clinically detectable loss of nerve function but classified on the basis of skin lesion.

How important is the close association between the subclinical neuropathy and the skin lesion? Can we consider that in leprosy the earliest skin lesion may be considered a forerunner of clinical neuropathy?

Yohannes Negesse, M.D.

ALERT/AHRI  
P.O. Box 1005  
Addis Ababa, Ethiopia

## REFERENCES

1. CRAWFORD, C. L., EVANS, D. H. and EVANS, E. M. Experimental allergic neuritis induced by sensory nerve myelin may provide a model for nonlepromatous leprosy. *Nature* **251** (1974) 223–225.
2. DYCK, P. J., LAMBERT, E. H. and O'BRIEN, P. C. Pain in peripheral neuropathy related to rate and kind of fiber degeneration. *Neurology* **26** (1976) 466–471.
3. NEGESSE, Y. "Silently arising clinical neuropathy" and extended indication of steroid therapy in leprosy neuropathy. (Letter) *Lepr. Rev.* **67** (1996) 230–231.
4. PEARSON, J. M. H. and ROSS, W. F. Nerve involvement in leprosy: pathology, differential diagnosis and principles of management. *Lepr. Rev.* **46** (1975) 199–212.
5. ROOK, G. A. W. and STANFORD, J. L. Slow bacterial infections or autoimmunity? *Immunol. Today* **13** (1992) 160–164.
6. RYAN, T. J. and MCDUGALL, A. C. (eds.). *Essays on Leprosy*. Oxford. Alden Press, 1988, p. 119.
7. WELLER, R. O. and CERVOS-NAVARO, J. *Pathology of Peripheral Nerves*. London: Butterworth & Co., Ltd., 1977, pp. 133, 134.
8. YOUNGER, D. S., ROSOKLIJA, G., HAYS, A. P., TROJABORG, W. and LATOV, N. Diabetic peripheral neuropathy: a clinico-pathologic and immunohistochemical analysis of sural nerve biopsies. *Muscle Nerve* **19** (1996) 722–727.

## Detection of Antibodies Toward Secreted Mycobacterial Antigen 85 in Untreated Leprosy Patients' Sera

TO THE EDITOR

Leprosy is an insidious disease that affects two million persons worldwide (1993) and continues to present a public health problem in various parts of the world. The efforts carried out by the World Health Organization (WHO) to eliminate leprosy by the year 2000 have been based mainly on monitored multidrug treatment<sup>(3)</sup>, which includes the use of new diagnostic, prevention and disease classification methods.

*Mycobacterium leprae* is one of the first

human pathogens to have been described, but the impossibility of its cultivation *in vitro* has impeded the isolation and characterization of its various antigenic components. It would be extremely important to determine the role these antigens may play in the immunopathology of the disease, both in humoral and cellular responses.

The chemical structure of *M. leprae* is complex. Considering the high degree of homology between this bacterium and *M. bovis*<sup>(1)</sup>, in this study we analyze the humoral response to *M. bovis* secreted anti-

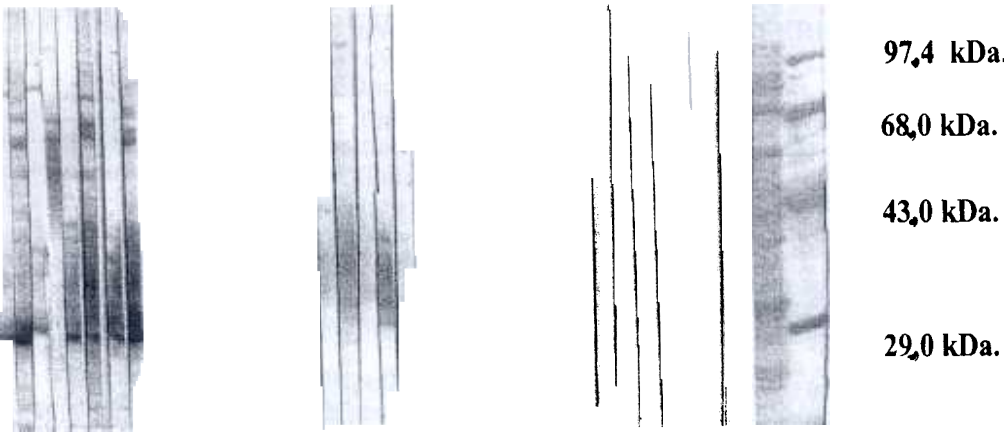


FIGURE Immunoblotting of BCG excreted proteins in the presence of sera from Hansen's disease

and they suggest that there might be immune complexes associated to free antigens. This study does not correlate with the bacterial index or ELISA positivity.

Since *M. bovis* excreted proteins possess homology with *M. leprae*, these results could be measuring bacterial viability; they suggest that these proteins could be candidates for serological follow up of multidrug therapy in leprosy.

—Elsa Rada-Schlaefli, M.Sc.  
Carlos Santaella, M.Sc.  
Nacarid Aranzazu, M.D.  
Jacinto Convit, M.D.

Instituto de Biomedicina  
Carruptado 4043  
Caracas 1010A, Venezuela

## REFERENCES

HARBOE, M. and WIKER, H. G. Secreted proteins of *Mycobacterium leprae*. *Scand. J. Immunol.* **48** (1998) 577–584.  
MISTRY, N. F., IYER, A., HARBOE, M. and ANTIA, N. H. Low rates of detection of mycobacterial secretory antigen 85 in sera of untreated leprosy patients. *Int. J. Lepr.* **64** (1996) 451–453.

3. NOORDEEN, S. K. Elimination of leprosy as a public health problem and prospects. *Bull. WHO* **73** (1995) 1–6.  
4. PESOLANI, M. C. V. and BRENNAN, P. J. *Mycobacterium leprae* produced extracellular homologs of the antigen 85 complex. *Infect. Immun.* **60** (1992) 4452–4459.  
5. RADA, E., ARANZAZU, N. and CONVIT, J. Immunological reactions to mycobacterial proteins in the spectrum of leprosy. *Int. J. Lepr.* **65** (1997) 497–500.  
6. RADA, E., SANTAELLA, C., ARANZAZU, N. and CONVIT, J. Preliminary study of cellular immunity to *M. leprae* protein in contacts and leprosy patients. *Int. J. Lepr.* **60** (1992) 189–194.  
7. SADAMU, N., NAGASUGA, T., MATSUMOTO, J. and KOHDA, K. Isolation of tuberculin skin reactive proteins from heated culture filtrate of *Mycobacterium tuberculosis* H37Rv. *Am. Rev. Res. Dis.* **109** (1974) 17–27.  
8. SMITH, P. K. Measurement of protein using bicinchoninic acid. *Anal. Biochem.* **150** (1985) 76–85.  
9. TOWBIN, H., STAEBELIN, T. and GORDON, J. Electrophoretic transfer of proteins from polyacrylamide gels to nitrocellulose sheets: procedures and some applications. *Proc. Natl. Acad. Sci. U.S.A.* **76** (1979) 4350–4354.