

A skin test for latent tuberculosis

To the Editor: Penn-Nicholson *et al.*^[1] have suggested using a blood test for diagnosing early tuberculosis. It may be possible, however, to use a skin test to diagnose latent tuberculosis.^[2,3] An autoimmune model of tuberculoid leprosy has been developed, using peripheral nerve as antigen. Rabbits were injected with a homogenate of human sensory nerve plus adjuvant. Some of the rabbits developed a state of granulomatous hypersensitivity; i.e. skin testing with a dilute solution of nerve in saline produced an epithelioid cell granuloma, in which the cytoplasm contained dilated rough endoplasmic reticulum filled with an electron-dense product.^[4] The antigen is a non-myelin protein, active in doses of 1 µg. The ultrastructural appearances are similar to those in human tuberculoid leprosy.^[5] The epithelioid cells in human tuberculoid leprosy are CD123-positive, indicating that they are plasmacytoid dendritic cells.^[6] In other models of granulomatous hypersensitivity using beryllium and sensitivity to zirconium, the antigen is specific.^[7] Granulomatous hypersensitivity can be induced only in humans, and is unsuccessful even in non-human primates.^[8]

The epithelioid cells in both human tuberculosis and sarcoidosis are also 'primarily biosynthetic rather than phagocytic'.^[9] The Kveim reagent contains granulomatous tissue taken from the spleen of patients with sarcoidosis. Skin tests with this reagent produce secretory cells similar to those in sarcoidosis.^[10] Results of skin tests with this reagent in patients with sensitivity to zirconium are negative,^[7] suggesting that the antigen may be specific.

In human tuberculous lymph nodes, plasmacytoid monocytes are CD123-positive, indicating that they are plasmacytoid dendritic cells.^[11] In view of the high mortality from tuberculosis in South Africa,

it should be possible to obtain lymph nodes from dead patients and a Kveim-like reagent prepared that can be injected into rabbits, in an attempt to induce granulomatous hypersensitivity. If successful, the active antigen can be isolated according to the procedure adopted for sarcoidosis.^[12] Adding phenol to the preparation and heating it to 60°C should make it sterile without losing its activity. A skin test which may be specific could be used to detect latent tuberculosis.

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