Ninhydrin Sweat Test in the Early Detection of Leprosy

TO THE EDITOR:

In addition to sensory and motor deficits, which result from nerve involvement, autonomic dysfunction is also observed early in leprosy. Sweat function tests have been used as auxiliary diagnostic aids to assess autonomic function ([2]). The routinely used tests employ the injection of a cholinergic drug followed by the use of a color indicator. We used a simplified method wherein Ninhydrin was used to detect and grade thermal sweating.

A 44-year-old male presented with an asymptomatic ill-defined hypopigmented macule on his back of two months' duration (Fig. 1). Temperature sensation over the patch was impaired, i.e., he was unable to differentiate between hot and cold. His pain and touch sensations were unaltered, and there was no significant peripheral nerve thickening.

The autonomic function over the patch was assessed by the Ninhydrin sweat test as follows. An office punch was used to obtain punches of Schleicher & Schuell (S & S) filter paper/Whatman filter paper. The punches were placed in a dry bowl and a few drops of 1% ninhydrin in acetone were added to soak the filter paper, and these were then allowed to dry. The filter paper punches were transferred to the adhesive side of a piece of Scotch tape by using a non-touch technique and then applied to the patch (test site) and a corresponding normal site. The patient was asked to walk in the sun to induce thermal sweating and the sweat function was graded after half an hour as: 0—no color change; 1—just perceptible blue-purple color change; 2—color change in between 1 and 3; and 3—intense blue purple color change.

Our patient showed grade 1 sweating at the test site and grade 3 over the control site. Histopathological examination of the skin lesion revealed lymphohistiocytic infiltration involving the neurovascular bundles (Fig. 2). A diagnosis of Indeterminate Hansen's disease was made and the patient was started on paucibacillary-multidrug therapy (PB-MDT).

Where the cardinal signs of the disease are satisfied, a clinical diagnosis of early lesions of leprosy is possible with a high degree of concordance between clinicians ([3]). It is well-known that in leprosy unmyelinated fibers which are responsible for pain, thermal sensitivity, and sweat secretion are affected earlier than the myelinated fibers ([3]). We studied the sweat function using non-invasive thermal induced sweating with ninhydrin as a color indicator.

There was definite impairment of sweat-

FIG. 1. Hyperpigmented patch over the back.

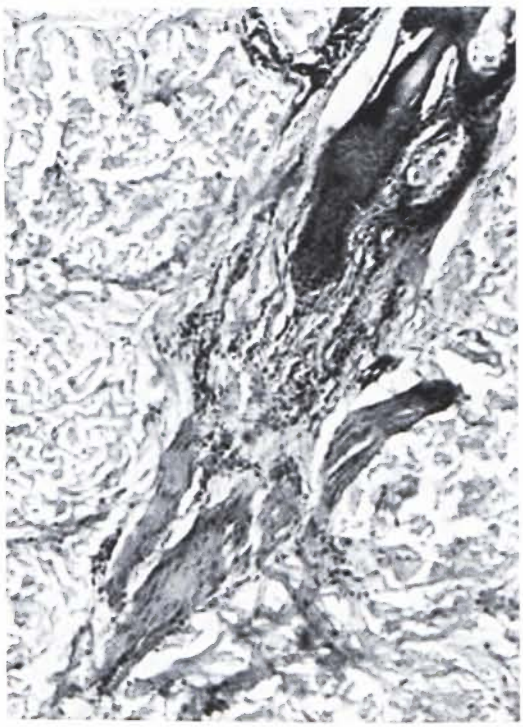

FIG. 2. Nerve infiltration.

ing in the suspected patch and histopathology revealed infiltration along the neurovascular bundles. With these findings, we were able to diagnose Hansen's disease and treat the patient.

The sweat response using different stimulating agents have been described by several authors, such as epinephrine injections by Wade (1940), pilocarpine by Muir (1938), Mecholyl by Arnold (1944) and acetylcholine by Parekh, *et al.* (1966), Sehgal (1976) and Matur, *et al.* (1971) ([1]). These tests are invasive, cumbersome and, therefore, not routinely used. The degree of sweat function impairment cannot be graded by the above tests. The modified procedure herein described is simple, can be undertaken at any place and the loss of sweat function can be graded, hence, this test may be useful in uncooperative patients, children and in lesions over the face, where it is difficult to elicit sensory impairment. We have undertaken this study at the field level to find out the utility value of this test in detecting and confirming the diagnosis of Hansen's disease.

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