

CORRESPONDENCE

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Increased Pigmentation of Skin Along Course of Superficial Veins of Lower Limbs in Chronic Plantar Ulceration of Leprosy Patients

TO THE EDITOR:

Increased pigmentation of the skin along the venous channels was found in approximately 5% of leprosy patients suffering from chronic plantar ulceration. In reviewing the literature on venous changes in leprosy patients, pigmentation of the skin was not mentioned. Hyperpigmentation may be local or general, and may result from an increased amount of melanin, deposition of heavy metals, extraneous pigmentation, and/or vascular disturbances⁽¹⁾.

Vascular disturbance is common in leprosy due to autonomic neuropathy. The control over the vasculature is lost, resulting in dilatation of vessels and venous stasis. Chronic ulceration of the foot due to anesthesia is common in leprosy patients, resulting in ascending infection and inflammation.

During 1982–1985 at the Central Leprosy Teaching and Research Institute, Chengalpattu, India, 20 cases of leprosy patients with chronic plantar ulceration and pigmentation along the superficial veins chosen randomly were studied. Patients with varicose veins were omitted from the study. Cases of diabetes with plantar ulceration and other nonleprosy patients with plantar ulceration were not included in the study since they are not treated at our Institute.

The following information was included on each patient's chart: name, age, sex, skin smear for acid-fast bacilli (AFB), type of leprosy, duration of leprosy, duration of pig-

mentation, condition of veins, such as consistency and direction of blood flow, neuritis, reactions, edema of the leg, eczema, sensations in the leg and pulsation of vessels. Stretch sign, which means persistence of pigmentation of the skin (Fig. 1) on drawing away the skin from the underlying vein, was tested. Those cases with a positive stretch sign were studied further. Biopsy was done taking the skin, subcutaneous tissue and vein enblock. Sections were stained with hematoxylin and eosin (H&E) and Fite's stain for AFB. Changes in the epidermis, dermis, subcutaneous tissue, and the vein were studied.

Of the 20 cases studied, duration of the disease varied from 4 to 25 years, an average of 19.3 years. The pigmentation was found more in lepromatous cases since plantar ulcers are more common in them. Only one lower limb was involved in 15 cases, and in five cases bilateral involvement was seen. The duration of plantar ulceration varied from 6 months to 20 years, an average of 9.3 years. Posterior tibial pulsation was felt in all cases. Sensations were diminished below the knee joint in nine cases. Dermatitis was a common finding in the lower third of the leg, and was found in 16 cases.

Under microscopy, the epidermis showed focal atrophy and mild hyperkeratotic changes. There was increased melanin pigment in the basal-cell layer of the epidermis (Fig. 2). There was lymphocytic and histiocytic infiltration around dermal append-

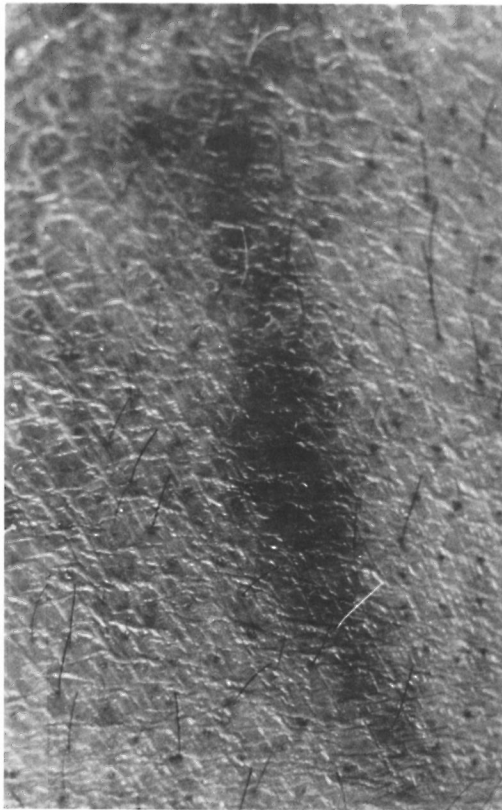


FIG. 1. Pigmentation of the skin along superficial leg vein.

ages. The vein showed tortuosity and a decrease in the size of the lumen. The intima and media were markedly thickened. In some cases, a thrombus was seen in the lumen with recanalization. Acid-fast fragmented bacilli were seen in the vessel in five cases.

Fite (²), Kaur, *et al.* (³), Coruh and McDougall (¹), and Mukherjee, *et al.* (^{5,6}) have reported changes in the subcutaneous veins of leprosy patients but have not reported pigmentation. Venous changes occur in leprosy due to autonomic neuropathy, direct involvement of vessels by *Mycobacterium leprae*, and ascending inflammation and infection in recurrent chronic plantar ulcers. Venous stasis is a common feature due to the above causes and gravity adds to the severity of the changes. These changes in the vein apparently can stimulate the melanin cells present in the overlying epidermis, leading to increased pigmentation of

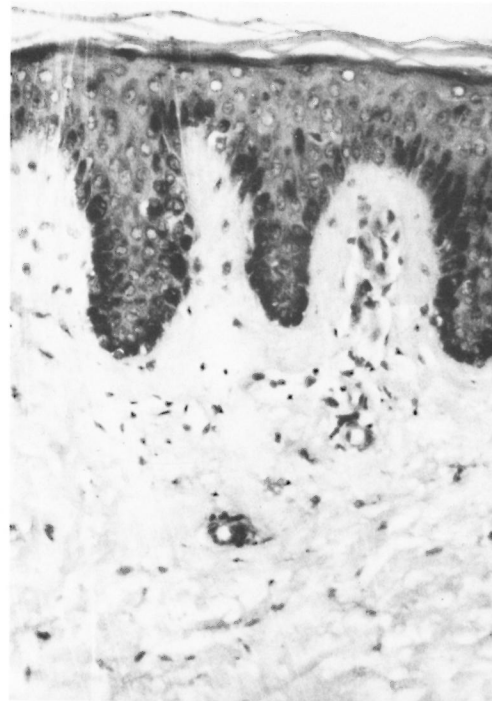


FIG. 2. Photomicrogram of skin and subcutaneous tissue showing increased melanin in the basal-cell layer (H&E $\times 160$).

the skin along the course of the superficial veins.

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Vibration Sensation in Leprosy Patches

TO THE EDITOR:

Demonstration of impaired sensation in a skin patch is a crucial step in the diagnosis of leprosy. In clinical practice, this normally relies on testing of light touch, pain, and possibly temperature sensations, usually in a qualitative manner. Efforts have been made to develop a more quantitative or objective method of assessment using tests of pressure sensation, temperature sensation, and autonomic function (^{1, 6, 9}), but these are not in widespread clinical use. Vibration sense is thought to contain components from superficial and deep sense organs (²). Quantitative assessment of vibration sense in leprosy using a biothesiometer has demonstrated that it is lost in parallel with touch sensation as determined by Semmes-Weinstein monofilaments (Hammond, C. and Klenerman, P., unpublished data). It was therefore postulated that it might be possible to record, in a quantitative manner, small changes in sensory function in leprosy patches. This study was designed to test this hypothesis.

METHODS

Eighteen subjects with leprosy were selected from patients at the Dr. Bandorawalla and Sassoon Hospitals, Pune, India. The biothesiometer (The Figure) was used to assess vibration sensory thresholds in three places: a) the patch itself, b) a portion of adjacent normal skin, and c) an identical unaffected point on the opposite side of the body. Testing was done by resting the probe of the instrument gently on the skin and increasing the amplitude of vibration until the patient first felt sensation. The process was repeated twice and the mean of the three values recorded. Ten patches (and their ad-

jacent and contralateral uninvolved areas) on patients with skin diseases other than leprosy (e.g., psoriasis, eczema, vasculitis) were assessed in a similar manner to act as controls.

RESULTS

Forty-two patches were measured on 18 patients (15 males, 3 females; average duration of disease, 4 years); their sensation thresholds are shown in The Table. Use of the paired *t* test demonstrated a significant increase in the threshold of patch sensation compared to that in adjacent skin ($p < 0.001$). A significant difference between patch threshold and that on the opposite side of the body was also found ($p < 0.001$). There was no significant difference in sensation between uninvolved skin adjacent to the patch and that on the contralateral side.

Controls without leprosy showed no significant differences between patches and normal adjacent or contralateral skin (average threshold difference = 0.01 microns).

DISCUSSION

Vibration sensation in the skin arises from excitation of Pacinian and Meissner's corpuscles (⁵), although it is thought to comprise a deep component (²). It is impaired in a number of diseases, and in common clinical practice is assessed by the use of a low-frequency tuning fork. The biothesiometer was invented in 1932 by Gray (³) and is an instrument capable of delivering a vibratory stimulus of variable amplitude. (A similar device of variable frequency rather than amplitude had been used by Tilney 3 years earlier in the investigation of Helen Keller.) Gregg (⁴) demonstrated that the biothesiometer would allow relative mea-