

## Leprotic Nerve Abscesses in Northern India<sup>1</sup>

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Nerve abscess has long been recognized as a rare complication of leprotic involvement of a major superficial nerve trunk or a principal branch (1, 4, 7). Muir (5) was the first to report it. Wade (8), however, pointed out that leprotic nerve abscesses, although rare, are frequent enough in India to constitute one of the regional peculiarities of the disease. In the light of these observations, we were prompted to make a survey of leprosy patients in Varanasi, Uttar Pradesh, India, to determine the incidence of nerve abscess.

### OBSERVATIONS

A total of 4,000 leprosy patients attending different leprosaria as outpatients in Varanasi and the Sir Sunder Lal (S.S.L.) Hospital, Banaras Hindu University, were screened for the presence of nerve abscess. Ten of these patients were found to have this complication, and all of them were subjected to thorough clinical check-up. Nine patients had the clinical features of tuberculoid leprosy; the other had the dimorphous (borderline) type of leprosy. A skin biopsy of the lesion was made in eight of these cases to confirm the clinical diagnosis. Five patients were subjected to the operative procedure of nerve decapsulation. Ziehl-Neelsen stains for demonstration of *Mycobacterium leprae* were made on direct smears from the abscess material and biopsy material from the abscess walls in all five instances. In none of

these cases, however, could leprosy bacilli be demonstrated.

Brief clinical histories of all of these patients are presented below. Three cases have been described previously, which are designated Case 1 (7) and Cases 2 and 3 (6).

**Case 4.** (R.P.) A 25 year old male, had a well defined erythematous, raised patch on the medial aspect of the right forearm, with impaired sensations of temperature, touch and pain of six months' duration, and a progressively increasing swelling measuring 1.5 x 1 inch in the region of the elbow along the course of the ulnar nerve (Fig. 1) of four months' duration. On examination, the latter was found to be a fluctuant nerve abscess. The ulnar and the median nerves were thickened and tender. There was no wasting of the muscles, however. The abscess was opened by a vertical incision, about 3 inches in length along the ulnar nerve. On exposure a swelling was seen along this nerve, which was thickened at its proximal and distal ends. The nerve sheath was opened and the pus drained.

**Case 5.** (M.H.) A 19 year old male, had a hypopigmented erythematous patch on the dorsum of the right hand with impairment of sensation of two years' duration. Immediately after his original examination he developed a painful swelling, the size of an almond, in the region of the elbow, which proved progressive. He developed also weakness and wasting of the muscles of the right hand. The ulnar nerve was thickened and tender along the swelling. Decapsulation of the nerve was performed.

**Case 6.** (R.A.) A 50 year old male, entered the leprosy clinic with a well defined, erythematous, scaly, raised patch on the dorsum of the left hand. The patient had been aware of this for the last ten years.

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FIG. 1. A nerve abscess in the region of the elbow.

About six months before attending the hospital, he experienced a painful and progressively increasing swelling, an inch in diameter, in the region of the elbow. The ulnar nerve proximal and distal to the swelling was thickened and tender. A diagnosis of tuberculoid leprosy with nerve abscess was made. Diaminodiphenylsulfone therapy was instituted, as the patient refused to undergo surgical intervention.

**Case 7.** (R.P.) A 20 year old male, reported to the S.S.L. Hospital with the complaint of bilateral hypopigmented and infiltrated erythematous patches on the dorsa of the hands, of six months' duration. Simultaneously he noticed a few swellings on each extremity. Some of these swellings burst open, leaving discharging sinuses. The ulnar, median and radial nerves on both sides were thickened and tender. A few scar marks also were seen, which represented healed sinuses. These lesions have been progressing since then, in spite of various types of treatment. The discharge, on smear examination, did not show any acid-fast bacilli. The diagnosis of lep-

rosy was made on the basis of the clinical features of the case.

**Case 8.** (K.L.) A 50 year old male, had suffered from dimorphous (borderline) leprosy since 1962. He had experienced repeated exacerbations while on diaminodiphenylsulfone. This time, when he was again put on DDS, he developed nodular eruptions on the extensor surfaces of the extremities. Simultaneously he noted painful nodular swellings in the region of the elbows, which were proven to represent abscess, along the ulnar nerves, which were found to be thickened and tender. He was put on corticosteroids, to which he responded favorably. The skin lesions disappeared, and the pain and swelling lessened. The patient is still under follow-up.

**Case 9.** (A.S.) A 35 year old male, presented with a swelling and discharging sinus in the region of the left elbow (Fig. 2) of six months' duration. On examination an infiltrated lesion two inches in diameter was found on the extensor aspect of the forearm, with loss of sensation. The ulnar and the median nerves were thick-



FIG. 2. Sinus formation in a nerve abscess.

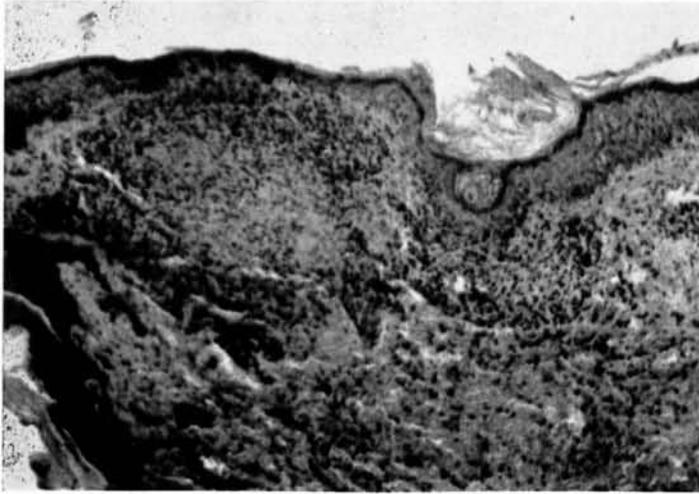


FIG. 3. Skin section showing tuberculoid reaction in the dermis. H & E stain. X103.

ened and tender. A smear from discharging pus revealed degenerated polymorphonuclear leucocytes; no acid-fast bacilli, however, could be demonstrated. The patient was put on diaminodiphenylsulfone, as he did not agree to decapsulation of the nerve.

**Case 10.** (R.P.S.) A 22 year old male, reported with multiple infiltrated patches on each upper extremity, of six months' duration. Immediately afterward he developed multiple painful swellings of various size, which appeared one after another. Some of these swellings, which proved to be abscesses, opened up, leaving discharging sinuses. The nerves in the vicinity of the abscesses were very tender. The patient was on DDS therapy when he experi-

enced these eruptions. No operative procedure could be undertaken, as the patient did not report again.

#### HISTOPATHOLOGIC OBSERVATIONS

Skin biopsy in eight cases, including those previously reported<sup>(6,7)</sup>, showed a characteristic granulomatous tuberculoid response in the dermis (Fig. 3). The follicles were observed particularly in close vicinity to skin adnexa. The epidermis showed a variable degree of atrophy in all the instances.

Biopsy specimens were taken from the walls of nerve abscesses in all the five operated cases. Sections revealed the abscess

FIG. 4. Three nerve bundles showing epithelioid reaction surrounded by chronic inflammatory cells. H & E stain. X103.

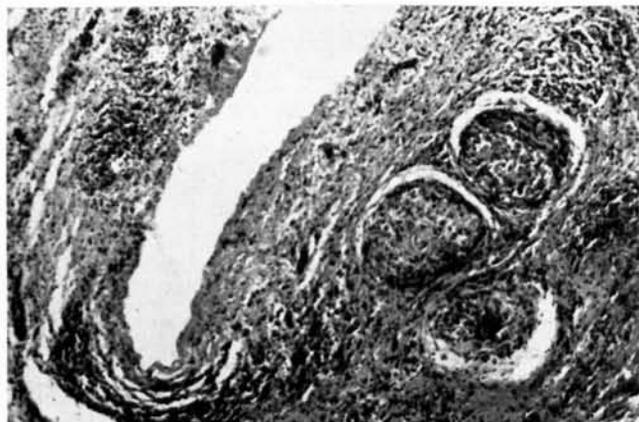


TABLE 1. Incidence of leprotic nerve abscesses reported by different workers.

Author	Ref.	Place	No. cases screened	Total no. abscesses	Cases/1,000
Lowe (4)	3, 4	Dichpali, India	5,000	100	20
Browne (1)	1	Belgian Congo, Africa	10,000	2	0.2
Browne (2)	2	Nigeria, Africa	8,000	3	0.37
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\*Present series

wall to be rimmed by an area of coagulation necrosis entangling numerous neutrophil leucocytes. A diffuse infiltrate below this was seen to be composed mainly of plasma cells and lymphocytes overlying typical epithelioid follicles. A number of nerve bundles showing this characteristic tuberculoid response were observed in all the cases (Fig. 4).

#### DISCUSSION

It is evident from Table 1 that nerve abscess is a rare manifestation of leprosy. In our experience it is not as common in India as has previously been thought to be the case and emphasized by some authors (3, 4, 8, 9). It is significant that about half of Lowe's (4) patients developed nerve abscess while under treatment with potassium iodide. Lowe (4) himself pointed out that "since they would probably not have occurred without this treatment, the natural incidence in that region is probably not more than one per cent."

It is remarkable that this complication occurred exclusively in males in our ten cases, an observation that is quite in line with that of Lowe (4), although the exact explanation of this limitation is not clear. In nine out of a total of ten cases, the nerve abscess developed in cases of tuberculoid type, a fact substantiating the observations of Wade (8) and Lowe (4), who stated that nerve abscess occurs invariably in the neural type of leprosy.

The nerve abscess formation, as a rule, is not an acute process, but rather a chronic one, requiring several weeks or months to develop. Lowe (4) believed that this chronicity indicated a good prognosis, for it seemed to represent marked immunity and a means of localizing the disease, with

subsequent healing. On this basis, many lesions in such patients may be expected to undergo spontaneous arrest. It is imperative, however, to undertake operative procedure, as the pressure exerted by the abscess may result in permanent damage to the nerve fibers, which is an irreversible phenomenon. If operation is performed early, before the inflammation and pressure have permanently damaged or destroyed nerve fibers, and before trophic lesions have developed, these changes may be prevented.

#### SUMMARY

The clinical features of ten cases of leprotic nerve abscess seen among 4,000 leprosy patients in Varanasi, Uttar Pradesh, India, are reviewed. The incidence of this manifestation, as observed by different workers has been compared, and the rarity of the condition is emphasized. The role of operative procedure in the prevention of deformities is noted.

#### RESUMEN

Las características clínicas de diez casos de abscesos lepróticos de los nervios vistos entre 4,000 enfermos de lepra en Varanasi, Uttar Pradesh, India, son revisados. La incidencia de esta manifestación, como fué observada por diferentes trabajadores se ha comparado, y se destaca la rareza de la condición. Se hace notar el rol del método operativo en la prevención de las deformidades.

#### RÉSUMÉ

On a passé en revue les caractéristiques cliniques de dix cas d'abcès léprotiques des

nerfs observés parmi 4,000 malades de la lèpre à Varanasi (Uttar Pradesh) dans l'Inde. On a comparé l'incidence de cette manifestation telle qu'elle a été relevée par différents observateurs. On a souligné la rareté de cette condition. On mentionne le rôle de certaines procédures de opération dans la prévention des difformités.

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