Table II.

1. Number of cases treated ... ... ... ... ... 24
2. Types of cases treated:
   Acute ... ... ... ... ... ... 12
   Sub-acute ... ... ... ... ... ... 3
   Chronic ... ... ... ... ... ... 9
3. Number of nerves thickened either slightly or moderately ... 21
4. Number of nerves without thickening ... ... ... ... ... ... 3
5. Number of cases in which thickening of nerve is reduced
   slightly or moderately ... ... ... ... ... ... 12
6. The average dose of drug injected each time ... ... ... ... ... ... 2 c.c.
7. The total number of cases free from symptoms of pain
   and tenderness ... ... ... ... ... ... 24

Conclusion:

1. Intradermal injections of hydnocarpus oil or its
   esters will give more beneficial and satisfactory results in
   relieving pain and tenderness in nerve reaction than other
   drugs and local applications in any stage.
2. The thickening of the nerve may or may not be
   reduced.
3. The length and course of treatment is less.
4. The recurrence of reaction is so far nil in all cases
   and the average time of interval without recurrence is so
   far roughly three months on average up-to-date.

A Further Note on Nerve Abscess
in Leprosy.

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(Reprinted from "International Journal of Leprosy," Vol. 2,
No. 3, 1934.)

The following notes have been prepared in response to
an inquiry regarding certain cases of nerve abscess
demonstrated to Wade when visiting the Dichpali
Leprosy Hospital, from one of which was taken the material
which he describes in a separate paper. The present note
serves to supplement my previous report on the subject.

Incidence.—During the eight years that I was at Dichpali
I saw about 5,000 cases of leprosy, and operated on roughly
100 cases of nerve abscess. The incidence thus works out
at about 2 per cent. However, about half of these abscesses
developed under treatment by potassium iodide. Since
they would probably not have occurred without this treat-
ment, the natural incidence in that region is probably not
more than 1 per cent. A rather curious fact in this con-
nection is that I do not remember ever seeing a case in a
female.
Type of Case.—This condition is seen almost exclusively in pure nerve-type cases. Occasionally an abscess will be found in a N2-C1 case, but practically never in cases with marked cutaneous lesions, even if there are co-existing nerve lesions.

Nerves affected.—The ulnar nerve above the elbow is the commonest site of this lesion. However, I have seen abscesses in the median nerve at the wrist and also higher up, in the radial in the arm and forearm, in the common peroneal and superficial peroneal, in almost all the cutaneous nerves of the forearm and leg, and also in the great auricular. Multiple abscesses in the same cutaneous nerve are commonly seen, but the condition is not as frequently multiple in the nerve trunks. It is also a fairly common occurrence to find abscesses in more than one nerve in the same patient. I had under observation for several years a patient who during the time developed fourteen abscesses, situated in the following nerves: both ulnars, both common peroneals, both posterior cutaneous nerves of the legs, and both superficial peroneals; there were also three abscesses in cutaneous nerves of one forearm, two in those of the other, and one in a cutaneous nerve in an upper arm.

Relation to the Nerve.—The process of necrosis and liquefaction starts inside the nerve sheath. At this stage there is often pain, which is sometimes excruciating. This occurs particularly when nerve trunks like the ulnar are involved, for abscesses in cutaneous nerves are frequently quite painless. Often the abscess bursts through the sheath and forms a swelling outside it, connected with the nerve by a pedicle. When this happens there is much less pain because of diminished tension within the sheath. The abscess outside the nerve may attain the size of a hen’s egg, but it is usually smaller. Sometimes where there are multiple abscesses in one nerve, caseation between the abscesses is detected at operation, and inside the nerve sheath there may be a sinus which joins up the different abscesses.

Content of Abscess.—Usually the abscess contains a fluid or semi-fluid material centrally, while in the outer parts the content is grumous and cheesy. I have found Mycobacterium leprae in smears from about 50 per cent. of the abscesses, always in small numbers. In practically every case smears made at the time of operation from the thickened nerve near the abscess have shown some—not many—bacilli.

Progress and Significance.—Abscess formation is, as a rule, not an acute process but rather a chronic one, requiring
several weeks or months. There is first inflammation and thickening of the nerve, followed later by caseation and the formation of a cold abscess. This condition, being inside the sheath, causes a fusiform swelling that may not be detected as an abscess except at operation. However, as has been said, the abscess often bursts through the sheath and burrows in the neighbouring tissues, frequently becoming adherent to the skin or other structures. It may even perforate the skin; the sinus thus formed discharges for several weeks or months, healing and breaking down again, and this may continue for years before final healing takes place.

Frequently a single nerve abscess is the only sign of active leprosy in the patient. I consider that this condition indicates a good prognosis, for it seems to be associated with marked immunity and to be method of localising the disease and of healing. In many such patients the disease undergoes spontaneous arrest, and in no case have I observed the subsequent development of marked cutaneous lesions. Unfortunately, abscess formation is frequently followed by trophic lesions in the distribution of the affected nerve.

Treatment of Nerve Abscess.—The occurrence of definite nerve abscess in a nerve trunk, such as the ulnar, I regard as indicating the necessity of surgical treatment. Even if there is merely painful fusiform swelling of the nerve, which may or may not be an abscess, operation is advisable. The affected nerve is exposed under general anaesthesia. If the abscess has burst through the sheath, the entire mass, including the surrounding capsule can be excised. At the same time the nerve should be carefully dissected out or stripped over the area of marked thickening. If removal of the sheath is impossible owing to dense adhesions, multiple longitudinal incisions through it should be made in order to relieve the pressure. Frequently caseous material is found inside the sheath; this should be removed as far as possible, with care to avoid damage to the nerve fibres. Drainage is usually unnecessary.

This operative procedure greatly accelerates the healing of nerve abscess, and in cases in which the abscess is inside the sheath, the removal of the sheath relieves the pressure and the resulting pain which may be very severe. If operation is performed early, before the inflammation and pressure have permanently damaged or destroyed the nerve fibre and before trophic lesions have developed, these developments may be prevented. With abscesses in cutaneous
nerves surgical treatment is not so essential since severe pain is not usually present, and such abscesses of course do not cause trophic lesions. However, though not essential, operation is often advisable.

_Nerve Abscess in Calcutta._—This condition is quite as common in Calcutta as it is in Dichpali, but there are differences. In the latter place they are seen most commonly in the nerve trunks; in the former they are most common in cutaneous nerves supplying (tuberculous) macules. This corresponds to the differences in the clinical manifestations of nerve leprosy as it is seen in these two centres. In Dichpali glove and stocking anesthesia, etc., are the commonest manifestations of this type of the disease, whereas in Calcutta macular (tuberculoid) lesions predominate.

**REFERENCES.**


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The Irritant Constituent of Anti-Leprotic Oils.


_Observations_ made in these laboratories and elsewhere during the last few years have shown that chaulmoogric and hydnocarpic acids and their derivatives deteriorate on long exposure to air. For instance, aqueous solutions of the sodium salts of the acids _hydnocarpus wightiana_ oil become darker in colour and cloudy, with a lowering of the pH and the optical rotation. The chaulmoogric ester of hydroxymercuri-m-hydroxybenzaldehyde (1), which is completely soluble in oils when freshly made, loses this property on long keeping. Muir (2) and others have pointed out that oil expressed from stale seeds or which has been exposed unduly to light and air is more irritant on injection than a fresh sample.

Pain caused on injection of these preparations may be due to two factors. First, there is the irreducible minimum caused on injection of fresh neutral oil, or of carefully prepared ethyl chaulmoograte or hydnocarpate. This is to be regarded as inherent, and bound up with the chemical