

Chaulmoogra Oil in the Treatment of Leprosy.

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I WAS prompted to undertake this investigation by the fact that out of a batch of 21 patients discharged from the Asylum in May, 1932, nine were classed as cases of spontaneous arrest, and some of the remaining did not appear to have accepted adequate treatment.

Of the nine spontaneously arrested cases, two were what is usually called "burnt out," and seven were early cases in fair condition for useful citizenship.

From time to time it has been stated, if not in scientific publications, at least in popular journals, that these treatments bring about arrest in every case of leprosy, provided that the treatment be begun at an early stage of the disease, and that the outlook of untreated patients is hopeless.

During the past ten years I have been puzzled by the fact that many cases after treatment, inadequate or nil, underwent arrest; that in many cases large amounts of treatment failed; and that in many others treatment appeared to be successful.

In some diseases, such as syphilis, malaria and diphtheria the evidences of benefit from the specific treatment are so

overwhelming that one would hardly think it necessary to bring forward statistical proofs. In pulmonary tuberculosis, on the other hand, although various special remedies, beginning with tuberculin more than forty years ago, have been vaunted by some, the general opinion seems to be that there is no reliable specific remedy, but a large proportion of early-stage cases recover when the patients are placed in a favourable environment, and the apparent results of special treatment have to be discounted by that fact.

The present investigation is concerned with all patients who were inmates of the Asylum at any time between the beginning of 1921 and the end of 1930. Those admitted since the end of 1930 are excluded, because they are still potential cases of treatment and arrest.

It must be stated at the outset that during the period under review special treatment on a large scale never had a fair chance, so that any case which these statistics can make out for the treatment could probably be greatly bettered in institutions where all the patients accept fully adequate treatment at an early stage of the disease. Up to the beginning of 1929 the sending of leprosy to the medical officers for certification, was left entirely in the hands of the chiefs and headmen, with the result that the majority of the patients were admitted to the Asylum in a deplorably advanced stage of leprosy.

In 1929 two native inspectors trained in the diagnosis of leprosy were appointed to search for patients throughout the territory on horseback. Two inspectors having been found to be quite inadequate for the area and population, four more were appointed in April, 1930.

When Dr. Cochrane, Secretary of the B.E. Leprosy Relief Association, visited the Asylum in June, 1930, Dr. Slack showed him the patients admitted during the preceding three months—a shocking exhibition, which led Dr. Cochrane to report that leprosy was not being controlled in Basutoland. Since the beginning of 1931 there has been a great change for the better. When Dr. Wade, editor of the *International Journal of Leprosy*, visited us in October, 1931, he was surprised at the favourable condition of patients admitted during the preceding three months, and said that the native inspectors must be well up to their work when they could diagnose such early cases.

Again, the treatment accepted by the majority of the patients has been very inadequate, more through irregularity of attendance than through deficiency in amount. From

year to year injection treatment has been becoming more and more unpopular, for the following reasons:—

1. In its earliest form it seems to have been irritating and painful.

2. In many hopelessly advanced cases much treatment was accepted without apparent benefit, and certainly without cure. Those of these patients that have survived are still here, and they poison the minds of the newcomers against the treatment. Those in whom the disease became arrested have left, and their good influence here is lost.

3. The patients observe that many cases became spontaneously arrested, and it is a fact that 61 per cent. of early nerve cases, after nil or trivial treatment, became arrested through the effects of good nourishment and good hygiene alone. As the number of patients submitting to special treatment becomes less, the existence of cases of spontaneous arrest becomes unmasked. On one occasion, when Dr. R. Germond, acting for Dr. E. Slack, was lecturing the whole male compound on the advisability of submitting to injections, a healthy visitor who had been discharged from the Asylum some years earlier, presented himself as an object-lesson and added his testimony in favour of "the medicines." After the *pitso* was over, Dr. Germond asked this man how many injections he had had. He replied: "None; I just got medicine at the dispensary." If he imparted the same information to the patients, this object-lesson must have done more harm than good.

The total number of patients under consideration is 1,436. Fearing that a division into five or six groups would lead to numbers too small for statistical purposes, I first decided to place all C.'s (cutaneous) and C.-N.'s (mixed cutaneous and nerve) in one group, because it seemed certain that the results of treatment in these would be poor, and to put the N.1 and N.2 cases together in one group, as most of the successes seemed to occur among them.

The N.3's (advanced nerve cases) are of little interest for the evaluation of treatment, for those of them that survived usually became crippled, burnt-out cases, whether treated or not.

Basing the calculation on the percentages found in Dr. Slack's short-hand classification of 650 cases, I found the probable composition of the total to be, before commencement of treatment, as follows:—

All C.'s and mixed	...	...	...	826
N.1's + N.2's	...	...	...	520
N.3's	...	...	...	90
Total	...	...	...	<u>1,436</u>

Among all the C.'s and mixed :—

<i>Treated.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
461	61	13.24
<i>Treatment Nil or Trivial</i>		
<i>(under 10 injections).</i>		
365	14	3.83

Although there is here shown a positive association between treatment and arrest, the result is poor.

Taking into consideration the fact that strong claims for the effects of treatment of advanced cutaneous cases have never been made, I separated the small group of treated C.1 cases, and found as follows :—

<i>Treated more or less</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
<i>adequately.</i>		
168	36	21.43

Of 64 so-called burnt-out cases discharged from the asylum, nearly all N.3's, there were treated, 36 ; no specific treatment, 28.

For treatment evaluation the burnt-out cases are of no interest. In most cases treatment had ceased years before discharge, and, indeed, quite as large a number of burnt-out cases remains in the asylum, because no means of support can be found for them elsewhere.

Before discussing the N. + N.2 group, I have to make the following remarks :—At the outset, in 1921, an attempt was made to give each patient an injection twice weekly, but after little more than a year nearly all the patients refused to submit to more than one injection per week, because, they said, they suffered too much pain at the sites of injections. At that time the ethyl esters were used with sodium morrhuate as an adjunct. Roughly, it may be said that this was the staple treatment until 1925. From 1925 until October, 1927, hydnocreol (hydnocarpus oil with creosote) was the staple form of treatment, and was better borne.

Since 1927 sodium hydnocarpate (alepol), best tolerated of all, has been used in increasing proportion, and at present it is the only form used, except the iodized esters intradermally, recently put on trial.

From the point of view of ready acceptance, the last-mentioned method has an advantage. The patients have little faith in general injection treatment which does not produce the magically rapid effects they have observed in tertiary syphilis. The most popular treatment consists in the attacking of local lesions, whether with trichloroacetic acid, carbonic acid snow or high-frequency sparking (so-called surgical diathermy). Perhaps the treatment of local

lesions has a general effect, and may turn out the best of all in cutaneous leprosy.

For the purpose of grouping the N.1's + N.2's according to adequacy of treatment, I made a detailed scrutiny of all their injection record cards, and divided the patients into three groups, as follows :—

(1) Treatment nil or trivial (trivial means under 10 injections).

(2) Treatment inadequate, *i.e.*, under 20 injections, or, if over 20, less than 20 in a continuous period of six months

(3) Treatment adequate, 20 or more injections, of which at least 20 were given in one continuous period of six months.

The items were detailed in a table, of which the columns were headed as follows :—No. of Injections, No. of Patients, Adequate, Arrests, Inadequate, Arrests.

The number of those who received 52 or more injections was 93 ; of these, 55 were classed as inadequately and 38 as adequately treated. The highest number of injections accepted by a single individual was 183 ; although classed as adequately treated, he failed to recover—a matter of no statistical importance, however.

The following are the summed results :—

<i>Treatment Nil or Trivial.</i>	<i>Arrests</i>	<i>Percentage of Arrests.</i>
112 Patients	59	52.7
Inadequate, 307	128	41.7
Adequate, 101	49	48.5

Disappointed with the result, which shows a negative association between treatment and arrest, I separated the small number of N.1's only, and tabulated the treated cases in the same way. The total number of treated N.1's was 143.

	RESULT.	
<i>Treatment Trivial.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
39 Patients	24	61.5
Inadequate, 75	59	78.7
Adequate, 29	23	79.25

The smallness of the difference between the two latter percentages is probably due to the fact that both the adequates and the inadequates are densely grouped in the neighbourhood of the dividing-line between the two.

The standard of adequacy adopted, admittedly low, is the best that could be adopted here for grouping purposes without calling the treatment inadequate in nearly all cases.

Nothing can be said against the administration of the treatment. Dr. E. Slack's ability, keenness and devotion

are well-known. He has studied leprosy profoundly, making two world tours to observe American and British methods.

TABLE OF COLLECTED RESULTS.

Number of Patients under consideration, 1,436.

All Cutaneous and Mixed.

<i>Cases Treated.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
461	61	13.24
	<i>Not Treated.</i>	
365	14	3.84
<i>Early Cutaneous Treated.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
168	36	21.43
Burnt-out (mostly N.3), discharged.	64	

(Many more remain in the Asylum.)

N.1 + N.2 Cases, *i.e.*, Early and Moderately Advanced Nerve Cases.

<i>Treatment Nil or Trivial.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
112 Patients	59	52.7
Inadequate, 307	128	41.7
Adequate, 101	49	48.5
Total Arrests ...	<u>375</u>	

N.1 Cases Only.

<i>Treatment Trivial.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
39 Patients	24	61.5
Inadequate, 75	59	78.7
Adequate, 29	23	79.25

The categories " Nil or Trivial " and " Trivial " are not identical, but from the two last tables we find for the N.2's only.

<i>Treatment Inadequate.</i>	<i>Arrests.</i>	<i>Percentage of Arrests.</i>
232 Patients	69	29.74
Adequate, 72	26	36.1

CONCLUSION.

It would be well if some institutions where large numbers of the earliest cutaneous and nerve cases accept really adequate treatment would publish statistics on these lines covering a long period of time. It is possible that nearly 100 per cent. of successes in early nerve cases might be recorded. On the other hand, quite another interpretation might be put upon the higher percentage of arrests among the treated N.1's (79.25), compared with 61.5 per cent. among the trivially treated. A patient who is spontaneously recovering under improved nutritional and hygienic conditions, if he accepts treatment, will attribute his increasing

sense of well-being to the treatment, and will continue to accept it. His continued acceptance of treatment may be an indication that he is recovering, but the treatment is not necessarily the cause of the improvement, except in so far as it may act as a faith cure. Having seen early arrest after adequate treatment in individual cases, one hesitates to advocate such extreme scepticism. Very few of the papers published in the periodical literature of leprosy are of statistical value.

Dr. John Lowe makes a short but important statement, based on several years' experience, showing that, after treatment, the nasal mucous membrane of 221 out of 309 patients, *i.e.*, in more than two-thirds of them, became negative. (*Leprosy Review*, vol. iii, No. 3, July, 1932; abstracted from *Indian Medical Gazette*, April, 1932.)

Many of the statistics of arrest are given on an annual basis, which is hardly fair to the treatment, for unarrested cases remaining in the institution are counted over and over again, while the arrested are counted only once.

Too often, where the actual arrests make a poor showing, a more favourable appearance is effected by lumping together under the general term "improved" such categories as "arrested," "greatly improved," "improved," etc. Certainly the treatment should be credited with any amelioration it makes in the patient's lot, but the estimation of degrees of improvement is too arbitrary for statistical purposes.

At treatment centres nothing is known of the fate of the untreated or of those patients (in India, the great majority) who cease to attend before they have received a full course of treatment. Most sweeping statements regarding the fate of the untreated have been made on very slight grounds, the number of untreated patients in each class cited being often less than ten.

My statistics, being based on the sequelæ of treatment largely inadequate, cannot be said to prove much for or against the injection treatment, but one thing they seem to prove is that more than 50 per cent. of N.1 patients undergo arrest spontaneously when placed under proper conditions.

A fact which should not be lost sight of when comparing the fate of untreated cases in the past with that of treated cases to-day is that at the present day the signs of arrest are far more liberally interpreted than they were 15 or 20 years ago.

On other grounds, the morbidity indices of various age-groups, Dr. P. H. J. Lampe has brought forward cogent

reasons for the belief that leprosy is frequently a self-healing disease. (*Het Geneeskundig Tijdschrift voor Nederlandsch Indie*, reprinted in vol. iv, No. 1, *Leprosy Review* of January, 1933).

That great care is here exercised in selecting patients for discharge is evidenced by the fact that out of 375 patients discharged, only 12 have been returned to the asylum as genuine cases of recurrence of activity. Besides having to report themselves to a medical officer twice yearly for seven years, the discharged patients are visited by the leprosy inspectors about once every eighteen months.

However good a treatment may be therapeutically, to be satisfactory it must be acceptable to the patients. The following are extracts from Dr. John Lowe's review of the present position of leprosy in India (*Indian Medical Gazette*, April, 1932): "The disease shows a marked natural tendency towards healing, and cases healed without treatment are now found to be quite common." "Our opinion is that special treatment is of very considerable value, but it is far from being completely satisfactory. It is painful," etc. "The finding that on the average 70 per cent. of cases cease attendance in the first six months, and that a still larger number fail to attend for one year, is a serious one."

"The reasons for this state of things are numerous, but one of the principal reasons is that, from the patient's point of view, our treatment is not good enough, and does not give the results they hope for. We should not shut our eyes to this fact."

I regret that I have not had direct access to much American statistical literature, which appears to be of great importance.

From the paper by Dr. H. W. Wade and Dr. C. B. Lara (*Proceedings of the Royal Society of Medicine*, 1927, vol. xx, Section of Tropical Diseases, etc., pp. 121-149), it appears that, of all cases treated from 1921 to 1927 (about 6,000), 10.5 per cent. became cases of arrest. At that time at Culion weekly intramuscular injection was the almost universal rule, and the patients coming under treatment were at least as unsuitable for treatment as ours.

The following passages I have translated from "La Lepre," by Dr. Etienne Burnet, pp. 132-133:—

"At Culion, from January, 1923, to June, 1929, 4,000 new cases were brought under treatment; from 1914 to June, 1929, a total of 8,520 were treated, of whom 6,800 received treatment lasting from 6 to 100 months. From 1st January, 1922, to 31st December, 1929, 1,400 of these 6,800

were set free, on parole or unconditionally. (Since 1914, 2,013.) "What becomes of the liberated? One would like to follow them and continue to treat them. Too large a number (about the half) disappear."

Those statistics are on a much larger scale than mine; they cover a similar period of time, and deal with similarly advanced cases, but the treatment accepted seems to have been much more adequate. Nevertheless the percentage of arrests is somewhat smaller, viz., 23.6 per cent. out of 8,520 treated.

Here we had 375 arrests among 1,436 patients, *i. e.*, 26.1 per cent., and of the patients only about 900 accepted treatment, mostly inadequate.

It would not be far from the truth to say that one-quarter of the patients here became cases of arrest; that three-sixteenths of them would have become arrested by means of general treatment and the treatment of concurrent diseases alone, and one-sixteenth of the total number of cases became arrested through general and special treatment combined.

I have to thank Professor J. P. Dalton, of Johannesburg for valuable hints on the methods of conducting this investigation.

SUMMARY.

1. So much of the treatment accepted has been inadequate that little can be said for or against it.

2. Of 168 early cutaneous cases treated, 21.43 per cent. became arrested.

3. Early Nerve Cases :—	<i>Arrests.</i>	<i>Per cent.</i>
Treatment Trivial	61.5
„ Inadequate	78.7
„ Approaching Adequacy		79.25

4. Early and moderately Advanced Nerve Cases together :—

	<i>Arrests.</i>	<i>Per cent.</i>
Treatment Nil or Trivial	52.7
„ Inadequate	41.7
„ Approaching Adequacy		48.5

5. Over 50 per cent. of early nerve cases recover without special or *ad hoc* treatment of leprosy, provided that the patients be brought into a favourable environment, good nutrition, good hygiene, physical exercise, and the special treatment of predisposing and concurrent diseases, such as syphilis, being of prime importance.

After a time the patients ceased to have much faith in the injection treatment, because its effects were too slow and erratic in making their appearance.