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The Nose in Lepromatous Leprosy; Bacteriological and Histopathological Studies of Patients Treated with Dapsone Monotherapy for Varying Periods of Time[1]

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At the 10th International Leprosy Congress in Bergen in 1973, Barton, *et al.* ([2]) described the results of a study, with particular reference to the nose, on 34 patients with untreated lepromatous leprosy who presented at The Victoria Hospital, Dichpalli, India, from which it was shown that the nose is affected, often severely, early in the disease. Subsequent publications ([1,3,5,6,7,8,14,15,18]) have given further emphasis to the significance of nasal involvement and the potential importance of nasal discharge in the transmission of leprosy. This paper analyzes the results of a follow-up examination that was carried out 5 years later on 12 of the patients of the original series as well as an investigation of the clinical, bacteriological, and histological status of an additional 50 lepromatous patients who had been treated for periods ranging from 3 months to 10 years. All the patients were prescribed dapsone (DDS) as monotherapy. The various criteria of disease activity were compared in the nose and skin, and possible relationships were sought between the regularity of outpatient attendance and estimates of drug compliance and response to treatment.

MATERIALS AND METHODS

From the original series of 34 patients, 12 attended Victoria Hospital, Dichpalli, India, in response to a letter which offered a small financial inducement. The additional group of 50 patients were either inpatients or outpatients, who happened to be attending at the time of our visit (RPEB). All were being treated with DDS alone, usually at a dose of 100 mg, prescribed for self-administration daily or on alternate days, the original group for 5 years and the new series for periods of between 3 months and 10 years.

All patients were examined clinically and the extent of nasal involvement determined by anterior and posterior rhinoscopy. Slit-skin smears, usually from six different sites, were examined by routine methods, and nasal mucus and/or scrapings of the nasal mucous membrane were examined bacteriologically in all but two patients. Nasal and skin biopsies were examined histologically in all 12 of the original follow-up group and in 35 out of 50 of the new series. Tissues were fixed in buffered formalin, stained with hematoxylin and eosin, and with the Fite-Faraco modification of Ziehl-Neelsen, mounted in paraffin and cut at 5 microns. The percentage of prescribed DDS actually received by the patients was assessed from the clinical records of attendance and supplemented by interviewing the patients. In an attempt to assess the extent to which the patients actually ingested the DDS they had received, urine samples were collected when the patients were questioned and the ratios of DDS plus its diazotizable metabolites to creatinine (DDS/creatinine ratios) determined ([12]).

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To aid the interpretation of these findings, the DDS/creatinine ratios were also determined on a series of control urines collected from ten staff members not receiving DDS and from ten inpatients 24 hr after receiving the last of a series of at least four consecutive supervised daily doses of 100 mg DDS.

RESULTS

1. Five year follow-up of patients with lepromatous leprosy, originally examined and started on dapsone in 1973.

Only 12 (35%) of the original 34 patients who had been seen 5 years previously could be contacted and persuaded to attend for the follow-up examination. The results of the clinical, histological, and bacteriological examinations carried out on these 12 patients together with details of their clinic attendances and urine test results are summarized in Table 1. Evidence of histological activity was primarily revealed by the demonstration of solidly staining acid-fast bacilli (AFB). Their absence or the finding of degenerate bacilli indicated inactivity.

Bacteriology and histopathology of the nasal smears and nasal mucus. A smear of the nasal mucous membrane was obtained from all but one patient (number 18), but only half were positive and in every case the bacilli were morphologically degenerate (Morphological Index [MI] zero). Nine of the 12 patients were able to produce a specimen of nasal mucus (nose-blow), but in only one patient (number 18) were bacilli present (Bacterial Index [BI] 4, Morphological Index zero). In the biopsies showing active disease, the histological findings were generally similar to those published in the original series ([14]). There was, however, a notable difference, namely that, with but one exception, leprosy bacilli were not found in the epithelium and did not appear to be spreading onto the surface of the nasal mucosa (Fig. 1). This is not only in marked contrast to the situation among these patients 5 years previously, but also to that generally found among untreated lepromatous patients. The majority of bacilli were in the cytoplasm of macrophages in the lamina propria, but they were also seen in nerves and in the endothelial cells lining various vessels. The numbers of eosinophils, mast and plasma cells present were similar to those usually encountered in nasal tissues, but no infiltrating cells were seen and no tissue showed evidence of a cell-mediated immune response. In the most active cases globi and solid-staining bacilli were much in evidence (Fig. 2).

Table 1. *Clinical and histological activity among 12 lepromatous patients treated for 5 years with dapsone monotherapy (original series).*

Patient no.	Skin		Nose		Bacterial Index Nasal smear		Clinic attendance (%)	Dapsone ingestion[d]
	Clin[a]	Hist[b]	Clin[a]	Hist[b]	Inf. turb.[c]	Septum		
1	−	−	−	−	6	0	100	+
4	−	−	−	−	0	0	< 25	−
7	+	+	+	±	6	5	95	−
11	−	−	−	−	0	0	60	±
13	−	±	−	+	3	3	100	−
18[e]	+	+	+	[f]	N.D.	N.D.	< 20	+
21	N.D.[f]	N.D.	+	+	6	5	< 10	−
26	±	−	−	−	0	0	< 10	−
29	+	+	±	+	4	5	< 10	−
32	+	+	−	+	0	0	< 50	−
34	−	+	−	−	0	0	80	−
37	−	−	−	−	N.D.	3	100	−

[a] Clin = clinical activity.
[b] Hist = histopathological activity.
[c] Inf. turb. = smears from the inferior nasal turbinate.
[d] Dapsone/creatinine ratios greater than 30 (+), 10 to 30 (±), less than 10 (−).
[e] Positive nose-blow.
[f] Not done.

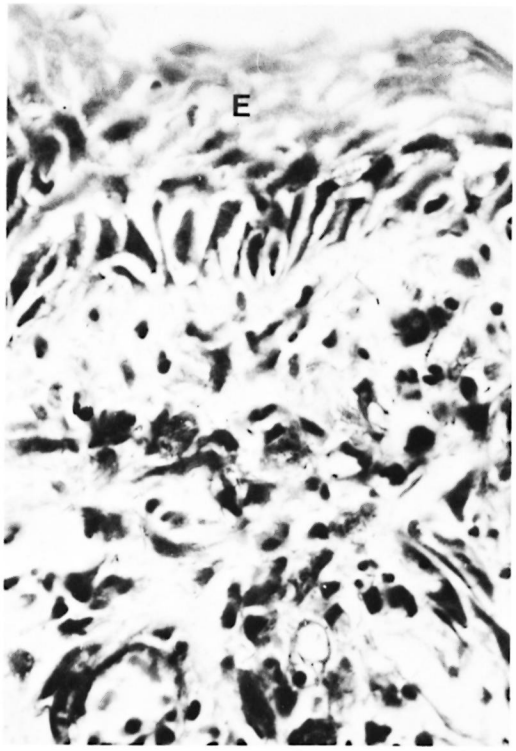

FIG. 1. Biopsy of inferior turbinate. The submucosa contains large numbers of macrophages with bacilli in their cytoplasm, the vast majority being non-solid staining, but the overlying squamous epithelium (E) is absolutely intact, and there are no bacilli in its substance. (Fite-Faraco modification of Ziehl-Neelsen. Original magnification ×250)

FIG. 2. Biopsy of septum from a patient in the original series. The submucosa contains many globi as well as a high proportion of solid-staining and separate acid-fast bacilli. (Fite-Faraco modification of Ziehl-Neelsen. Original magnification ×1000)

Disease status. Considering all the clinical, bacteriological, and histological findings in both the skin and nose, in only three patients (numbers 4, 11, and 26) did their disease appear to be quiescent. A notable example of active disease was seen in patient 18, whose septum had completely perforated (Fig. 3) with collapse of the nasal cartilage. Significantly, he was the only patient in this series in whom AFB, albeit non-solid staining, were found in the nasal mucus. Numerous leprosy bacilli were found in the nasal smears of half of the patients, but in every case the bacilli were morphologically degenerate (MI zero).

Compliance. The proportion of clinic sessions attended by the 12 patients is shown in the penultimate column of Table 1. When the pattern of clinic attendance had varied considerably over the past 5 years, the proportion of scheduled visits made during the past year has been shown. Only five of the patients had attended regularly during this period, and on the average the 12 patients had collected less than about a half of their prescribed treatment.

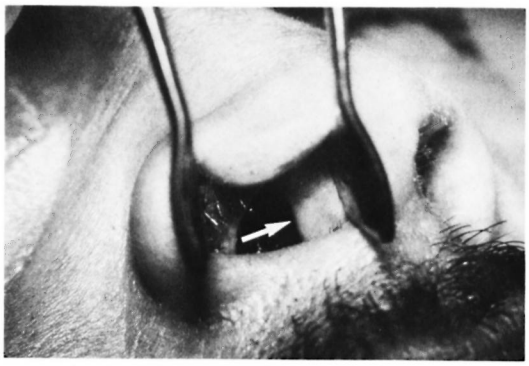

FIG. 3. Completely perforated septum (arrowed) of patient 18 from the original series.

TABLE 2. *DDS/creatinine ratios of urine samples from outpatients and controls.*

Subjects	Number	DDS/creatinine ratios[a]		Mean daily DDS intake (mg)
		Mean ± S.E.	(Range)	
Untreated controls	10	7.2 ± 1.1	(4.7–15.6)	0
Treated controls	10	106.6 ± 12.4	(76.3–191)	100
Outpatients				
Regular[b]	19	100.9 ± 12.9	(30.4–204)	94
Irregular[b]	10	14.9 ± 1.2	(11.0–22.0)	8
Grossly irregular[b]	26	6.9 ± 0.3	(4.3–9.5)	0

[a] μg DDS equivalents/mg creatinine.
[b] Regular = DDS/creatinine ratios greater than 30. Irregular = DDS/creatinine ratios 10–30. Grossly irregular = DDS/creatinine ratios less than 10.

The DDS/creatinine ratios of the urine samples collected from the untreated controls, the inpatients receiving daily supervised doses of 100 mg DDS, and from the outpatients are summarized in Table 2. The ratios of the samples from the untreated controls ranged from 4.7 to 15.6 μg DDS equivalents/mg creatinine (mean 7) and among those from the inpatients receiving daily doses of 100 mg DDS under strict supervision from 76.3 to 191 (mean 107). Patients were defined as "regular" in self-administering their treatment if their DDS/creatinine ratios exceeded 30, as "irregular" if these ratios ranged from 10 to 30, and as "grossly irregular" with ratios of less than 10. Evidence discussed elsewhere ([4, 10, 13]) indicated that regular patients had almost certainly ingested a 100 mg dose of DDS within 48 hr prior to their clinic attendance, irregular patients within the preceding 2–4 days, and grossly irregular patients had probably taken their last DDS dose at least 4 days previously. The last column of Table 2 shows the average daily consumption of DDS by these three categories of patients calculated by comparing their mean DDS/creatinine ratios with those of the treated and untreated controls ([11]) on the assumption that their DDS/creatinine ratios were typical of their general pattern of compliance. It will be seen that the patients classified as grossly irregular had DDS/creatinine ratios that were indistinguishable from those of the untreated controls indicating that, at least in the period prior to their clinic attendance, they had ingested negligible numbers of DDS tablets.

It is clear that self-administration of DDS by these patients who had been under treatment for 5 years was very inadequate (last column Table 1). Thus, on the basis of the DDS/creatinine ratios of the urine samples collected during their visit to the clinic, only 2 of the 12 patients could be considered to be taking their medication regularly.

2. Fifty patients with lepromatous leprosy, treated with dapsone for periods ranging from 3 months to 10 years.

The results from this series are summarized in Tables 3 and 4. Table 3 summarizes the findings among the 16 patients who had been under treatment for a year or less and Table 4 those for the remaining 34 patients who had been treated for periods of from 1.3 to 10 years.

a) Patients under treatment for 1 year or less.

Bacteriology of the nasal mucus and nasal smears. All of the 16 patients were able to produce a specimen of nasal mucus, among which four were found to be shedding *M. leprae* (mean BI 2). In every case, however, the bacilli were morphologically degenerate. Nasal smears were examined from 11 of the patients and AFB found in the specimens of all but two of the patients. In seven of these patients the bacilli were morphologically degenerate (mean BI 4.1), but in the other two patients (numbers 107 and 121) morphologically intact bacilli were seen (MI 1.0; mean BI 5.3). Finally, patient 113 had BI's of 2 and 1 in the nasal smears from the inferior turbinate and septum, respectively, with an MI of 100. Morphologically these AFB did not resemble *M. leprae*, and they were subsequently cultured

TABLE 3. *Clinical and histological activity among 16 lepromatous patients treated for 1 year or less with dapsone monotherapy (new series).*

Patient no.	Skin		Nose		Bacterial Index Nasal smear		Length of treatment (months)	Clinic attendance (%)	Dapsone ingestion[d]
	Clin[a]	Hist[b]	Clin[a]	Hist[b]	Inf. turb.[c]	Septum			
104	+	±	−	N.D.[e]	N.D.	N.D.	6	50	N.D.
105[f]	+	−	+	+	4	6	6	60	±
107	±	−	+	+	6[g]	5[g]	8	35	−
108[f]	+	N.D.	−	N.D.	4	4	9	30	−
109[f]	+	N.D.	±	N.D.	0	0	4	100	+
110	−	−	−	−	N.D.	N.D.	12	100	+
111	+	N.D.	−	N.D.	5	0	12	100	N.D.
112	−	+	−	+	N.D.	N.D.	8	100	+
113	−	−	−	−	*M. smegmatis*[h]		12	100	+
115	+	+	+	+	3	5	3	100	+
119	+	+	+	+	0	0	3	100	+
120	+	N.D.	+	N.D.	N.D.	3	7	100	+
121	+	+	+	+	5[g]	5[g]	3	100	+
123	+	−	−	−	5	5	9	60	±
135	−	N.D.	−	N.D.	N.D.	N.D.	12	60	N.D.
138[f]	+	−	−	−	4	5	6	100	+

[a] Clin = clinical activity.
[b] Hist = histopathologic activity.
[c] Inf. turb. = smears from the inferior nasal turbinate.
[d] Dapsone/creatinine ratios greater than 30 (+), 10 to 30 (±), less than 10 (−).
[e] Not done.
[f] Positive nose-blow.
[g] Morphologically intact *M. leprae* (Positive MI).
[h] See text.

and identified as *M. smegmatis*. This emphasizes the importance of checking for contamination with saprophytic mycobacteria when Morphological Indices are exceptionally high.

Disease status. Considering all the clinical, bacteriological, and histological findings in the skin and nose, definite signs of activity were seen in all but three of the 16 patients. It is probable that the disease was quiescent in patients 110 and 113. Patient 135 might also have responded satisfactorily to treatment, but neither nasal smears nor the histology of the skin and nose were examined.

Compliance. Among the 16 patients in this group who had been treated for 12 months or less (mean 7.5 months), 10 had collected all their prescribed dapsone and only two had missed more than 50% of their scheduled clinic attendances. The general level of dapsone self-administration also appeared to be good in that two-thirds of the urine samples collected at the time of the patients' clinical examination had DDS/creatinine ratios of greater than 30, and only 2 of the 13 samples had ratios of less than 10, indicating grossly irregular compliance.

b) PATIENTS TREATED FOR MORE THAN 1 YEAR.

Bacteriology of the nasal mucus and nasal smears. Twenty-seven of the 34 patients were able to produce a nose-blow, among which six contained significant numbers of AFB (mean BI 3.7). In only one patient, however, (number 141) were morphologically intact bacilli found in the nose-blow (MI 2). Nasal smears were taken from 27 of the patients. No AFB were found in the smears from eight of the patients; morphologically degenerate AFB were found in those from 15 patients (mean BI 3.0), while intact bacilli (MI 1–10) were present in the smears of the remaining four patients (mean BI 4.9).

Histopathological findings. Where the nose was seen to be definitely involved clinically, the histopathology confirmed this in all except two cases (numbers 122 and 146), biopsies of the nasal septum or inferior turbinate revealing an active lepromatous infiltrate with numerous bacilli in macro-

TABLE 4. *Clinical and histopathological activity among 34 lepromatous patients treated for more than 1 year with dapsone monotherapy (new series).*

Patient no.	Skin		Nose		Bacterial Index Nasal smear		Length of treatment (years)	Clinic attendance (%)	Dapsone ingestion[d]
	Clin[a]	Hist[b]	Clin[a]	Hist[b]	Inf. turb.[c]	Septum			
101	−	−	−	−	N.D.[e]	N.D.	7	<50	±
102	−	−	−	−	0	0	8	100	−
103	−	−	−	−	0	N.D.	4	60	+
106	−	−	−	−	0	0	3	<60	−
114	−	N.D.	−	N.D.	1	3	1.3	85	±
116	+	−	+	+	6	3	2	<10	−
117	+	N.D.	±	N.D.	5	5	1.8	75	−
118	−	−	−	−	2	N.D.	2	90	±
122	±	−	+	−	0	6	1.5	90	−
124	−	+	−	−	0	0	8	50	−
125	±	+	+	+	5[g]	6[g]	3	<10	−
126	±	−	−	−	0	5	7	15	−
127[f]	−	−	±	−	0	0	2	50	−
128	−	N.D.	−	N.D.	N.D.	N.D.	5.5	100	+
129	+	+	+	+	4	0	8	<10	−
130	−	−	−	−	0	0	6	85	±
131	−	−	−	−	N.D.	N.D.	2	90	+
132	−	N.D.	−	N.D.	N.D.	N.D.	3.3	80	N.D.
133	±	+	−	+	2	3	1.5	30	±
134	+	−	−	−	0	5	1.3	90	+
136	+	−	±	−	4	0	10	10	+
137	+	−	−	−	0	3	3	90	+
139	−	N.D.	−	N.D.	N.D.	N.D.	2	90	N.D.
140	+	+	+	+	6[g]	5[g]	3.5	<10	−
141[f]	+	N.D.	+	N.D.	5[g]	6[g]	4.5	<10	−
142	−	N.D.	−	N.D.	N.D.	N.D.	3.8	75	−
143	−	−	−	−	3	2	8	<10	±

[a] Clin = clinical activity.
[b] Hist = histopathologic activity.
[c] Inf. turb. = smears from the inferior nasal turbinate.
[d] Dapsone/creatinine ratios greater than 30 (+), 10 to 30 (±), less than 10 (−).
[e] Not done.
[f] Positive nose-blow.
[g] Morphologically intact *M. leprae* (Positive MI).

phages, blood vessel walls (Fig. 4), and tiny branches of the trigeminal nerves. Here again, however, invasion of the surface epithelium, with escape of bacilli onto the surface, was distinctly uncommon, in contrast to the untreated patients in our original series. It was, in fact, seen clearly in only one biopsy (patient 29).

Disease status. Definite signs of clinical, bacteriological, or histological activity were seen in 23 of the 34 patients, and it is probable that the disease was only quiescent in seven patients (numbers 101, 102, 103, 106, 130, 131, and 145). Patients 128, 132, 139, and 142 may also have responded adequately to treatment, but the histology of the skin and nose was not examined nor were nasal smears taken.

Compliance. Clinic attendance among these patients who had been on treatment for over 1 year (mean 4.4 years) was much less satisfactory. About a third of the patients had missed more than half of their scheduled clinic attendances, and it was estimated that less than 60% of the prescribed DDS treatment had actually been collected by the 34 patients. Furthermore, the DDS/creatinine ratios of the urine samples suggested that only about a quarter of the group were self-administering their treatment regularly and that half of the patients were probably taking totally inadequate amounts of DDS.

DISCUSSION

It is disappointing to note that from the original group of 34 patients, now followed up for 5 years at a well-staffed and

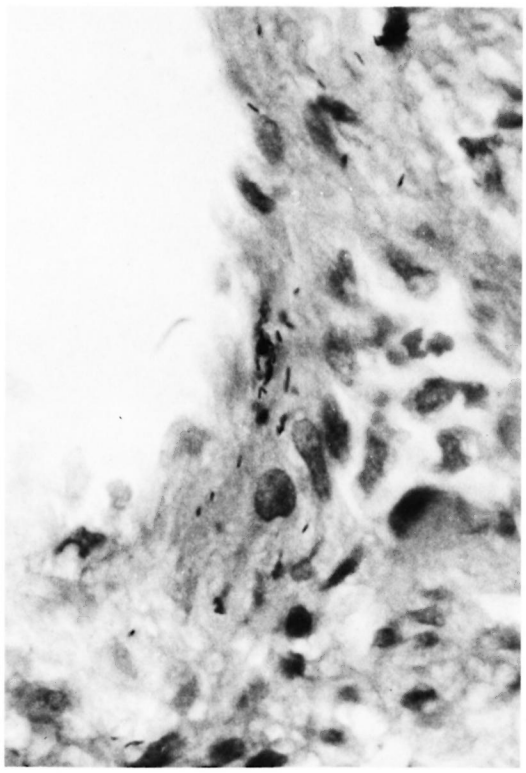

FIG. 4. Biopsy of inferior turbinate in a patient with clinically active disease, from the new series of 50. The sub-endothelial layer and the smooth muscle of the wall of an erectile sinus contain considerable numbers of bacilli, some of which were solid-staining. (Fite-Faraco modification of Ziehl-Neelsen. Original magnification ×1000)

equipped hospital, only a third could be contacted and persuaded to reattend. Furthermore, only 3 of these 12 patients appeared to have progressed to clinical and histological quiescence. The proportion of patients who had apparently been treated successfully was similar to that seen in the other series who had been treated for periods of from 1–10 years where the outcome appeared to be satisfactory also in only about a quarter of the patients. No evidence was obtained concerning the DDS sensitivity of the strains of *M. leprae* from these patients since biopsied material was not inoculated into mice. However, it was unlikely that the failure of such a large proportion of patients to achieve quiescence was due to the emergence of DDS-resistant strains of *M. leprae* since such a phenomenon normally occurs only after more than 10 years' treatment ([17]).

Although three-quarters of the patients had failed to achieve quiescence as judged by clinical and histological criteria, in only one of the patients treated for 1 year or more were leprosy bacilli found in a nose-blow specimen. This finding is novel. The absence of leprosy bacilli in the nose-blows of the patients examined in this study is in marked contrast to the huge numbers of organisms discharged by this route among all the 5-year follow-up patients when they were first examined ([14]). This indicates that the infectivity of DDS-treated lepromatous patients for their contacts is greatly diminished within about a year and that this reduced infectiousness persists in the great majority of patients for up to 10 years despite convincing evidence of continuing disease activity. The continued absence of bacillary discharge could be understood from histological evidence of the integrity of the nasal mucosa. Thus, among the treated patients, biopsies only revealed bacilli in the nasal epithelium spreading onto the surface in a single instance.

A consideration of the findings of clinical, histological, and bacterial activity summarized in Tables 1, 3, and 4 reveals that there was general agreement between histological and clinical evidence of active disease. Furthermore, the general level of involvement of the skin and nose, judged by clinical and histological criteria, was similar. Previously there was a suggestion that the examination of nasal smears might be a more sensitive indicator of disease activity than similar investigations in the skin ([8]). However, although large numbers of leprosy bacilli were found in the nasal smears of six patients in the absence of clinical or histological evidence of disease activity in the skin and nose (patients 1, 37, 114, 118, 143, and 150), in a similar number of patients (numbers 34, 109, 119, 124, and 144) no such bacilli were found despite clinical or histological evidence of active disease in the two tissues.

It is apparent that fairly soon after commencing treatment, patient compliance began to deteriorate. Thus, whereas patients collected about 80% of their prescribed DDS during the first year and self-ingested it well, thereafter clinic attendances fell to

less than 60% of those scheduled, and only about a quarter of the patients were judged to be ingesting their treatment regularly. It seems likely that poor compliance was a major factor responsible for the failure of many of the patients (some three-quarters of the total) who had been treated for periods of over a year to achieve a satisfactory therapeutic response. Thus inability to achieve quiescent disease could be accounted for in all but 4 of the 32 patients (numbers 1, 134, 137, and 147) by poor clinic attendances (less than 50% of those scheduled) or grossly irregular DDS ingestion or a combination of both, whereas only 2 of the 14 patients (numbers 4 and 26) achieved quiescence, despite evidence of their collecting only a small proportion of their prescribed DDS and poor self-medication.

When this study was carried out, it was current practice to treat all leprosy patients with DDS monotherapy. Such treatment carries with it a substantial risk that patients will ultimately relapse due to the selection of DDS-resistant strains of *M. leprae*. Previous studies have shown that this risk is likely to be greater when treatment is irregular ([16, 20]). The irregularity of attendance and DDS self-administration of many of the patients in this study was such that there was an increased likelihood of their eventually relapsing with DDS-resistant leprosy. These findings therefore emphasize the importance of initiating the treatment of lepromatous patients with combinations of antileprosy drugs ([21]) and of supplementing self-administered DDS with supervised doses of rifampin given once monthly and acedapsone once every three months ([9, 19]).

SUMMARY

A clinical, bacteriological and histopathological investigation of 62 patients with lepromatous leprosy attending a hospital in South India is reported, with particular emphasis on the activity of the disease in the nose. Twelve of the patients were from a group of 34 new patients who had been originally examined 5 years previously, and subsequently treated with dapsone (DDS) monotherapy. A further 50 lepromatous patients were also examined, who had been treated for periods ranging from 3 months to 10 years.

With a few exceptions, there was good correlation between the clinical and histopathological findings in the skin and nose. Evidence of disease activity was demonstrated among three-quarters of the patients who had been treated for over a year. Failure to achieve quiescence was explained in most of the patients by failure to collect their dapsone treatment or to ingest it regularly as demonstrated by the determination of DDS/creatinine ratios on urine samples collected at the time of their visit to the clinic. Although the compliance of most patients was relatively satisfactory during the first 12 months of treatment, thereafter it deteriorated markedly. In contrast to the clinical, bacteriological, and histopathological evidence of disease activity in the skin and nose of most patients, in only one of the patients treated for more than a year was a positive nose-blow encountered. This suggests that the infectivity of DDS-treated lepromatous patients for their contacts is greatly diminished within this time and this diminished infectivity often persists despite poor drug compliance and continuing disease activity.

RESUMEN

Se realizó un estudio clínico, bacteriológico e histopatológico, con particular énfasis en la actividad de la enfermedad en la naríz, en 62 pacientes con lepra lepromatosa de un hospital del Sur de la India. Doce de los pacientes correspondieron originalmente a un grupo de 34 nuevos pacientes que habían sido examinados 5 años antes y subsecuentemente tratados sólo con dapsona (DDS). Los otros 50 pacientes lepromatosos del estudio habían sido tratados por periodos variables de tiempo (3 meses a 10 años).

Con unas cuantas exepciones, hubo una buena correlación entre los hallazgos clínicos e histopatológicos en la piel y en la naríz. En las tres cuartas partes de los pacientes que habían sido tratados durante más de un año se encontraron evidencias de enfermedad activa. Esto se trató de explicar considerando que la mayoría de los pacientes tuvieron problemas para recoger su medicamento (dapsona), o que simplemente no lo ingirieron en forma regular, como se demostró al determinar la relación DDS/creatinina en muestras de orina colectadas de los pacientes en alguna de sus visitas a la clínica. Aunque la cooperación de la mayoría de los pacientes fue relativamente buena durante los primeros 12 meses de tratamiento, ésta se deterioró considerablemente después. En contraste con las evidencias clínicas, bacteriológicas e histopatológicas de

enfermedad activa en la piel y en la naríz de la mayoría de los pacientes, sólo en uno de estos pacientes tratados por más de un año se encontró un estornudo bacteriológicamente positivo. Esto sugiere que la infectividad de los pacientes lepromatosos tratados con DDS, para sus contactos, se disminuye grandemente en este tiempo y que ésta disminuída infectividad a menudo persiste no obstante lo irregular del tratamiento y la continuada actividad de la enfermedad.

RÉSUMÉ

On relate ici les recherches cliniques, bactériologiques, et histopathologiques menées chez 62 malades atteints de lèpre lépromateuse, fréquentant un hôpital du Sud de l'Inde. L'accent est particulièrement mis sur l'activité de la maladie au niveau du nez. Douze de ces malades appartenaient à un groupe de 34 nouveaux malades qui avaient été initialement examinés cinq années auparavant, et traités ensuite par la monothérapie à la dapsone (DDS). Cinquante autres malades lépromateux ont également été examinés, mais ils avaient été traités pour des périodes allant de 3 mois à 10 ans.

A quelques exceptions près, on a relevé une bonne corrélation entre les observations cliniques et histopathologiques au niveau de la peau et du nez. Des signes de maladie active ont été démontrés chez trois quarts des malades qui avaient été traités pour plus d'un an. L'explication du fait que la maladie n'a pu être stabilisée réside, pour la plupart des malades, dans le fait qu'ils ne se sont pas présentés pour recevoir leur traitement à la dapsone, ou qu'ils ne l'ont pas ingéré régulièrement, ainsi qu'on a pu le démontrer par la détermination des rapports DDS/créatinine dans des échantillons d'urine récoltés au moment de leur visite à la clinique. La régularité de la plupart des malades a été relativement satisfaisante au cours des 12 premiers mois de traitement, mais elle s'est détériorée de manière notable ensuite. Alors que des signes d'une activité de la maladie sur les plans clinique, bactériologique et histopathologique pouvaient être démontrées au niveau de la peau et du nez chez la plupart des patients, un seul d'entre eux seulement parmi ceux traités pendant plus d'un an, révélait des bacilles à la suite d'un éternuement. Ceci suggère que l'infectivité à l'égard de leur contact des malades lépromateux traités par la DDS est fortement diminuée, dans l'année, et que cette infectivité diminuée persiste souvent malgré une régularité très peu satisfaisante pour l'administration du médicament et malgré la persistance d'une maladie active.

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