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Leprosy and the Community

THE GANDHI MEMORIAL LEPROSY FOUNDATION: REPORT FOR 1972-3

The Gandhi Memorial Leprosy Foundation is an astonishing multi-faceted organization which, inspired by the spirit of Gandhiji, spreads from its centre in the heart of India its beneficient influence in all directions. In his report for 1972-3, the Director, Dr Nilakanta Rao, covers the following activities of the Foundation.

(1) *Control units*

These, the first activity of the Foundation, were started in 1951 to test the efficacy of DDS by S.E.T. methods in a rural area. Out of 10 original units, six have either closed or been handed over to other organizations. Efficient work, and a high population coverage in repeated surveys at the remaining four units, have after 21 years produced a situation where out of 2986 registered patients, 2104 are now cured or inactive. New cases detected during the year totalled 181, of which only 14 were of lepromatous type.

(2) *Health education units*

A novel feature of the Foundation is the establishment of seven health education units, each located in populous areas of India, and staffed by a trained paramedical officer, whose one and only task is to educate the general public at all levels in the facts about leprosy and encourage rational attitudes. Doctors and teachers are a special objective, and great experience has now been gathered in effective ways of approach to people. During 1972-3, over 2000 private interviews, 221 group meetings, 20 public meetings, lectures to over 12,000 teacher training students and over 10,000 college students, refresher courses for 311 doctors, exhibitions and film shows complete this very interesting aspect.

(3) *Training*

The Foundation is one of the leading leprosy training centres in India, with regular substantial courses for paramedical workers and courses in health education.

(4) *Chemoprophylaxis project*

In 1962, the Foundation, supported by the Indian Council for Medical Research, started an experiment to study the effect on prevalence of intensive prophylactic treatment of entire healthy population groups below 25 years of age. A population of 40,000 was selected, one half of which was retained as a control group. After 10 years, and nine post-prophylaxis surveys, a marked reduction in leprosy incidence in the age group selected has been consistently found as compared with control groups.

(5) *Work among doctors*

In addition to lectures and refresher courses attended by 311 doctors, a novel feature of the Foundation is the orientation courses in leprosy arranged for Professors of medical colleges, and attended by 12 Professors from various disciplines during three week-end courses in 1972-73.

(6) The central hospital and laboratory, orientation courses for Gandhian workers, coordination work among various agencies in Maharashtra, and the organization of a large Seminar on Leprosy sponsored by the Indian Association of Leprologists, all add up to an outstanding contribution to leprosy control.

ELEP LEPROSY CONTROL PROJECT, DHARMAPURI, S. INDIA 6TH ANNUAL REPORT, 1973

This major project consists of three control units covering five out of six Taluks in the Dharmapuri District of Tamil Nadu, and out of a population of 1,493,084 (1971 census), 853,009 have been covered by a survey, education and treatment programme following the lines of the National Leprosy Control Programme. The project, based at Dharmapuri, has a total staff of 112, including four doctors and 76 supervisory and paramedical workers. At the end of 1973, out of 14,893 known leprosy patients, 12,663 were registered for treatment, with 8346 actually attending during December 1973. 2502 new cases were detected during 1973, 37% by survey, 47% by voluntary reporting of patients, 8% by the detection of cases among healthy contacts. No falling off is taking place in cases detected. 6.6% of new cases were of lepromatous type, 88.8% non-lepromatous, and 4.6% N?L. Physiotherapists and laboratory technicians are attached to each control unit, and hospital facilities are operating at two of them. The entire cost of the project works out at Rs.62 *per annum* per patient. The progress of the project owes much to the dynamism of Dr V Ekambaram.

TANZANIA: NATIONAL REPORT ON LEPROSY FOR 1972

The Report on Leprosy in 1972, issued by the National Leprosy Advisory and Coordinating Committee of Tanzania indicates that leprosy control schemes are in progress in about 38 out of 61 Districts, with 45,500 patients on treatment at the end of 1972 out of an estimated total of 138,000 sufferers from leprosy in the country. Only 2000 patients are living at leprosy centres. The programme may be regarded as yet in its early stages, and is based on mobile teams with "Health Home Visitors" responsible for case finding and routine treatment. A notable feature of the national leprosy control programme in Tanzania is the excellent coordination between Government and Voluntary Agencies. Responsibility for all medical services is borne by the Regional Medical Officers. In ten Regions the leprosy duties have been delegated to a Regional Leprosy Officer. The majority of leprosy control schemes and centres are cared for by voluntary agencies, but in many of them the government shares in the cost, while the whole programme comes under the purview of the National Leprosy Advisory and Coordinating Committee, on which both government and voluntary agencies are represented.

Field Worker's Forum

DRUG RESISTANCE IN LEPROSY

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The publicity that has recently been given to the fact that dapsone-resistant leprosy bacilli are appearing with disturbing frequency in several countries has raised many questions in the minds of those involved in leprosy work, including the staff of The Leprosy Mission and its aided centres. It is therefore hoped that a considered statement, representing a consensus of present-day medical opinion, will help to allay fears and anxieties and to ensure that the patients for whom we are clinically and therapeutically responsible receive the best and the safest treatment.

The somewhat alarmist reports that sulphone-resistance is becoming very common must be viewed in the light of our knowledge of the development of drug-resistance in other chronic infections, such as tuberculosis. It would be surprising if a mycobacteriostatic drug like dapsone did not—when given to millions of people for long periods—provoke the appearance of resistant strains of leprosy bacilli. What is more surprising is that the appearance on a world scale of such cases has been so long delayed.

To judge from other infections, potentially drug-resistant mutants arise in any large bacterial population. The greater the numbers of leprosy bacilli, and the longer the infection remains virtually uncontrolled in the patient, the greater the likelihood of resistant bacilli arising and multiplying in the tissues. Eventually, these resistant bacilli multiply to such a degree that the majority of bacilli present may be drug-resistant. The rest have been prevented from multiplying by the bacteriostatic property of the drug.

Laboratory confirmation of the clinical suspicion of the occurrence of drug-resistance had to await the availability of the mouse footpad inoculation technique. And now that instances of proven drug-resistance have occurred in many countries—and the numbers are in direct relation to the awareness of clinicians and the availability of facilities for experimental investigation—we do well to appraise the situation and formulate practical and practicable recommendations.

To resume:

(1) Drug-resistant leprosy bacilli have been demonstrated in about half of the patients in the U.S.A. who took sulphones more than 20 years ago and in about 200 patients in Malaysia among a total of probably 4000 patients.
(2) Slow clinical and bacteriological response to the sulphones must not be confused with drug resistance.
(3) It is more than probable, to judge from analogy with other infections, that irregular and intermittent treatment, especially when associated with low doses of sulphones, is the commonest factor involved in the development of drug resistance in leprosy.

(4) Crossed resistance between the sulphones and the sulphonamides does occur.
(5) So far, no case of leprosy caused by sulphone-resistant bacilli has been reported, but the possibility exists.
(6) All patients with sulphone-resistant bacilli have responded to either clofazimine or rifampicin, and so far no case of resistance to either of those drugs has been reported.
(7) Sulphone-resistance occurs in those patients who have little or no resistance to leprosy infection; that is, in those with lepromatous or near-lepromatous (BL) leprosy. It has not occurred in those patients who have a well-developed cell-mediated immunity, that is, in those with tuberculoid or near-tuberculoid leprosy.
(8) When sulphone-resistance does occur in leprosy, it develops in a stepwise fashion, so that bacilli that multiply when a daily dose of, say, 10 mg of dapsone is given, will be inhibited when the dose in increased to 50 or 100 mg a day.

The typical history of the development of drug resistance would be as follows: a patient who has been taking a sulphone (dapsone, DDS, would be the commonest) for a variable period and with good clinical and bacteriological results, develops new lesions for no obvious reason. He is usually still taking the drug. The more irregular he has been in taking treatment, and the lower the dose of drug he has been taking, the more likely it is for drug-resistant bacilli to make their appearance. Usually, bacteriological changes precede obvious changes in the skin, and that by several months or even years. Hence the importance of regularly taking smears from every patient who has had lepromatous leprosy, after clinical and bacteriological quiescence has been attained. The material should be taken from a new lesion (if there is one) and from the ear lobe. Such patients should be seen every three months for the first two years, then every six months for the next two years, then every year, and smears should be taken on each occasion. Ideally, these patients should continue to take treatment—at half the therapeutic dose—"for life".

The new skin lesions may resemble the old ones, or may be in the nature of rapidly-developing papules, or a maculo-erythematous eruption reminiscent of a drug rash.

These lesions are sometimes mistaken for those of *erythema nodosum leprosum,* but it should be noted that they are persistent, they are not tender to the touch, and they are not accompanied by any of the systemic signs of acute exacerbation. Furthermore, a slit-smear examination reveals numerous typical acid-fast organisms, many of which are morphologically normal. When corticosteroids are given (as they often are, unfortunately) and anti-leprosy treatment suppressed, the lesions do not tend to diminish or disappear—on the contrary.

The smears which have not shown any morphologically normal bacilli for a variable period—months or years—may show numerous solid-staining and deeply-staining organisms. The most likely site to obtain such bacilli is the small pinkish fleshy papules that may arise on the skin anywhere in the body. If in a patient who has been bacteriologically negative for a variable period, or in whom solid-staining rods have not been found for many months, such organisms begin to be found despite the fact that he is still taking dapsone, then the presumption is that dapsone-resistance has already occurred.

If such a patient is taking a low dose of dapsone (say, for this purpose, 50 mg a

day or less), the bacilli may be resistant to low concentrations of dapsone in the serum, but would be sensitive to higher concentrations. Therefore, increase the dose to 100 mg a day, and examine the smears every two to four weeks. If morphologically normal bacilli disappear from the smears, it is probable that the bacilli were resistant to low dapsone concentrations but sensitive to higher concentrations. However, experience suggests that once resistance does develop, it will increase so that eventually the bacilli will become resistant to the higher serum concentrations corresponding to a daily dose of dapsone of the order of 100 mg.

It has been assumed that the patient is actually taking the drug at the dose suspected, and that the drug is being absorbed from the intestine. Supervision of the actual swallowing of the tablet, and the demonstration that the tablet will readily disintegrate when placed in a glass of water—these are necessary precautions to be taken before concluding that the patient is harbouring sulphone-resistant bacilli.

Since sulphone-resistance does not, for all practical purposes, occur in patients who are suffering from tuberculoid or near-tuberculoid leprosy, and since it is common knowledge that such patients are liable to develop severe peripheral nerve damage—particularly in the case of tuberculoid-borderline leprosy if the dapsone is given in too high a dose at the beginning of treatment, or if a high dose is attained too rapidly—the usual practice of prescribing dapsone at a maximum weekly amount of 200 to 300 mg given in divided doses, has much to commend it.

The dangers of severe, widespread and permanent nerve damage must always be borne in mind when dapsone is given. In some patients, nerve trunks will become enlarged and painful whenever dapsone is given and whatever the dose. Most patients with intermediate forms of leprosy, however, will experience this distressing complication only when the dose of dapsone given is too high.

On the other hand, the more bacilli there are in the routine smears, the greater the need to give as high a dose of dapsone as the patient can tolerate, and this will mean a dose of 100 mg every other day, or even (in the case of patients weighing over 75 kg) of 100 mg a day. Since even 1 mg of dapsone daily will prevent the multiplication of leprosy bacilli, it is evident that doses of this order are considerably above those necessary to produce a minimal inhibitory concentration in the serum.

In the case of suspected sulphone resistance, recourse should be had to clofazimine, to be given at a dose of 100 mg every other day.