

Volume 67, Number 3, September 1996

LEPROSY REVIEW

Published Quarterly for the
British Leprosy Relief Association

ISSN 0305-7518

Leprosy Review
**A journal contributing to the better
understanding of leprosy and its control**
LEPRA

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Leprosy Review is published by LEPRA with the main objective of contributing towards the better understanding of leprosy and its control. Original papers on all aspects of leprosy, including research, are welcomed. In addition, *Leprosy Review* seeks to publish information of educational value which is of direct benefit to the control of leprosy under field conditions, and hence to the individual patient. The Journal aims to interpret what is being done in other disciplines, particularly for field workers.

From time to time the Editorial Board invites special articles or editorials from experts in various parts of the world, and gives consideration to the production of a supplement or special number devoted to a particular subject or theme of major importance.

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Registered Offices: Fairfax House, Causton Road, Colchester CO1 1PU

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Editorial

THE INCOMING EDITOR'S VIEWPOINT

It is a great privilege to be taking over the editorship of *Leprosy Review* from Professor J. L. Turk. In the eight years of his editorship he has guided the Journal through some difficult periods while maintaining its position as one of the major English language leprosy journals. One of the pleasures of *Leprosy Review* is its wide dissemination and it always pleases me to see copies in remote clinics. I am aware that for many people working in remote areas it may be the only specialist journal that they receive. For these reasons *Leprosy Review* has a wide remit; keeping people abreast of new developments in leprosy, informing readers about leprosy elsewhere as well as discussing management issues. I am keen that the Journal should present the range of research and development from all over the world so keeping readers in touch with developments outside their own areas. I also feel that the Journal should reflect the breadth of research activity in leprosy, from peptides to plantar ulcers.

Continuing education is part of everybody's medical practise and one of the areas that I would like to develop is the educational part of the Journal. We have already started this theme with a series of four wall posters which we hope will be useful to readers in their practice and as educational tools. We are also starting a series of review articles on different aspects of disease management in leprosy. Reader's suggestions on these ideas are most welcome. It would also be helpful to know what topics you would like covered, would a series on prevention of disability be useful? In view of the global flavour of the Journal I would also like to pick up topical issues in contemporary medicine such as evidence-based medicine and how it might be practised in developing countries.

Another suggestion has been that we should have themed issues, perhaps an issue on women and leprosy, these would need to be planned well in advance in order to encourage people to submit data appropriate for such issues.

As the millennium approaches there are new challenges for leprosy workers. The success of multidrug therapy has resulted in declining active caseloads for many workers and there is much debate about how to ensure the best provision of early diagnosis, good management and prevention of disability in leprosy patients. These are complex issues and no single solution will be appropriate the world over. I hope that *Leprosy Review* will provide a forum for discussion and constructive debate on this important and topical issue with readers sharing their experiences.

One of the paradoxes of medical journals is that the editors ask their readership to be both writers who submit papers and readers who enjoy the journal. In a recent editorial

Cairns Smith documented the decline in leprosy publications but also highlighted numerous areas that still needed researching¹. A continuing decline should be averted by leprosy workers responding to these new challenges. I hope that you will all continue to be both readers and writers for *Leprosy Review*.

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Health information systems for leprosy control programmes: a case for quality assessment

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Accepted for publication 13 February 1996

Summary A qualitative study was carried out aimed at checking the level of understanding and the actual use of the indicators recommended in leprosy control programmes by either the World Health Organization or the International Federation of Anti-Leprosy Associations. Two successive questionnaires were sent to 268 leprosy control programme managers. The first one concerned information about the main characteristics of the programme, the information system in operation, and the data regarded as indispensable or useful for programme monitoring. The respondents to the first questionnaire ($n = 64$) proposed an extraordinarily wide range of indicators, mainly ill-defined. The respondents to the second questionnaire ($n = 37$) to whom a limited list of precisely defined indicators was submitted did not succeed in reaching a complete agreement on any of these indicators. Although the question of programme monitoring has been dealt with at an international level for years, there is an urgent need for a real agreement of international agencies and managers of leprosy control programmes on the indicators to be used. Programme managers in the field are obviously open to the idea of greater intervention by international organizations to improve data collection and to encourage standardization of computerized information systems.

Introduction

In 1991, the 44th World Health Assembly adopted a resolution on the elimination of leprosy as a public health problem by the year 2000.^{1,2} Elimination was defined as a level of prevalence below 1 case per 10,000 population. One important issue of the elimination goal is the strengthening of resource management in leprosy control programmes. This includes the promotion of an adequate use of the internationally recommended indicators for programme evaluation. The World Health Organization (WHO) and the International Federation of Anti-leprosy Associations (ILEP) have been tackling this question for a long time.^{3–6} The International Meeting on Epidemiology of Leprosy

in Relation to Control, held in Jakarta in June 1991, also dealt with this problem.⁷⁻⁹ Yet, the 14th International Congress on Leprosy, held in Orlando (USA) in August-September 1993, hardly addressed the question.¹⁰

While international organizations usually deal with programme monitoring in a normative way, in the search for the 'best set' of indicators to be recommended, it seems that little attention is paid to the question of whether and how far these indicators are used and understood by health workers and health programme managers in the field. If programme monitoring and evaluation as well as epidemiological surveillance have to be carried out using information collected routinely,¹¹ it should not be overlooked that no statistical manipulation can compensate for the poor quality of primary data.

We report here on a qualitative study designed to measure the understanding and actual use of the indicators recommended by either WHO or ILEP. This analysis is part of a larger study on health information systems for leprosy control, including more specifically the OMSLEP system.¹² By information system we mean an integrated set of files, procedures and equipment aimed at storing, processing and retrieving relevant health information. The specific objectives of the present study were as follows: to check which indicators are considered by the programme managers as indispensable, useful, or pointless for leprosy control; to verify whether a consensus is reached in the field on the recommended set of basic indicators; and to describe the expectations of the programme managers with regard to standardization of information systems for leprosy control at an international level.

Methods

The study base was made up of the managers of leprosy control programmes throughout the world. As there was no exhaustive list of these programmes, the study population could not be randomly sampled. We therefore included in the study the 202 leprosy control programmes or projects which were in contact with our team as a WHO collaborating centre for the epidemiology of leprosy within the last 10 years. Three ILEP member associations* provided us with 66 additional addresses of correspondents who were not previously in contact with us.

In the first round, we sent a questionnaire to these 268 programme managers. It concentrated on information about the main characteristics of their programmes, the information systems in operation and the data regarded as indispensable or useful for programme monitoring. In the second round, another questionnaire collected information on additional project characteristics, the number of patients under MDT, the estimate of the real number of leprosy patients in the target population, the existence of any external supervision, and the need that was felt for a standardization of information systems at an international level. Nonetheless, the main part of the second questionnaire was aimed at reaching a consensus on the definition and the importance of the 12 indicators most frequently mentioned by the respondents to the first questionnaire. These 12 indicators were thus presented to programme managers with a strict definition,

* ILEP projects accounted for 27% of world figures of registered patients in 1993. All ILEP member associations ($n = 20$) were requested to provide the list of their projects or programmes, but only the American Leprosy Mission, the Leprosy Mission International (Divisions for Africa and Southern India) and the Nederlandse Stichting voor Leprabestrijding complied with our request.

Table 1. Baseline characteristics of the respondents

Characteristics		Respondents to the 1st questionnaire <i>n</i> = 64 (%)	Respondents to both questionnaires <i>n</i> = 37 (%)
Type of programme	public	22 (34)	11 (30)
	private	24 (38)	15 (41)
	mixed	18 (28)	11 (30)
International assistance (multiple answers allowed)	financing	55 (86)	33 (89)
	personnel	23 (36)	15 (41)
	drugs, materials	46 (72)	27 (73)
	supervision	26 (41)	13 (35)
Use of a computer	yes	28 (44)	15 (40)
	no	36 (66)	22 (60)
Scope of the programme	national	NA*	10 (27)
	regional or local	NA	27 (73)
Type of external supervision (multiple answers allowed)	local health authorities	NA	18 (49)
	OMS/PAHO	NA	4 (11)
	ILEP member associations	NA	12 (32)
	other organizations	NA	7 (19)
	not identified	NA	7 (19)
Regular use of ILEP B form	yes	NA	33 (89)
	no	NA	4 (11)
Use of ILEP B form indicators	yes	NA	33 (89)
	no	NA	4 (11)
Reported MDT coverage	from 50 to 100%	NA	33 (89)
	below 50%	NA	4 (11)

*NA, question not asked

given by us but still open to criticism. Our correspondents were requested to inform us whether they considered each of the 12 indicators as indispensable, useful or pointless for leprosy control. If they disagreed with the definition, they were invited to propose another one.

The study began in 1993. Replies sent back after 30 September, 1994 were not taken into account in the final analysis.

Results

Out of the 268 programme managers recruited for the study, 64 (24%) and 37 (15%) gave answers to the first and the second questionnaires, respectively. Replies to these two questionnaires came from 56 and 23 countries, respectively (Appendix 1). The 37 respondents to both questionnaires corresponded to a covered population of 346 666 387 people including 52 949 registered leprosy patients. Out of these 37 respondents, 10 were the managers of national programmes (Benin, Congo, French Guyana, Malaŵi, Morocco, Mexico, Pakistan, French Polynesia, Sierra Leone, and Trinidad and Tobago) adding up to a total of 248 139 290 inhabitants.

Baseline characteristics of our correspondents are shown in Table 1. There was a very slight predominance of private projects. A large majority of respondents were beneficiaries of international assistance from 16 out of the 20 ILEP member associations. Direct supervision by international agencies, most of them being ILEP member associations, was frequently mentioned. An important minority of the respondents had introduced computerized management of their programmes.

In the first round, more than 200 indicators of programme monitoring were proposed by the respondents. The definitions of these indicators were extraordinarily numerous and disparate. Even after grouping the indicators that showed similarities or concerned the same items (taking into account the most obvious synonyms and being very aware of the different wordings used by the respondents) we found 20 different terms for prevalence and 24 different terms for incidence (Appendix 2), 13 different terms for the proportion of children among leprosy patients, 14 different terms for the degree of disability, 10 different terms for MDT coverage, and 15 different terms for regularity or completion of treatment.

Among the indicators that the respondents to the first questionnaire spontaneously considered as indispensable, only the detection rate was mentioned by a majority of 39 respondents out of 64 (61%). None of the other indicators were mentioned by such a high proportion of respondents. The indicators mentioned by at least 20% of them are the 'prevalence' (in fact the absolute or relative number of cases recorded) (26/64), the proportion of disabled people among the new cases (25/64), the proportion of patients under MDT at the end of the year (19/64), the proportion of 0–14 year-old children among the new cases (18/64), the proportion of cases recorded (or new cases) per form of leprosy (18/64), and the global proportion of disabled patients among newly-detected cases (13/64). As to the last indicator, the criteria 'WHO grade 2 disability' was explicitly mentioned by only 4 respondents. The cure rate was rarely mentioned (6/64). Other minority proposals highlighted the need for indicators of regularity of treatment or treatment completion.

As to the indicators considered useful, the respondents highlighted the importance of the proportion of children or disabled people among new cases (when these criteria had not been regarded as indispensable), the regularity of treatment, the frequency of relapse, the frequency of lepra reactions, and the incidence of other diseases during treatment.

Another list of 64 indispensable or useful indicators, different from those recommended by WHO or ILEP, has also been proposed. Most of these were not epidemiological or operational indicators suited to programme evaluation, but addressed problems such as case-holding (names, addresses, etc.), clinical assessment (number of skin lesions, state of nerves, etc.), programme setting (population, etc.), daily management (appointment timetable, etc.), or others ('spiritual data', etc.).

The following criteria did not make any difference between the respondents about the indicators regarded as indispensable or useful: using OMSLEP as an information system; benefitting from international assistance, or being a public, private or mixed leprosy control programme.

The extent of agreement of the 64 respondents to the first questionnaire and the 37 respondents to the second with the recommendations of international agencies such as WHO or ILEP is shown in Table 2. It is worth noting a progression towards a consensus on the main indicators after the second round. Only 4 out of 64 respondents (6%)

Table 2. Opinions of the respondents to the first and second questionnaires on the pertinence of the main indicators

Indicator	Recommendation	First round	Second round			
		<i>n</i> = 64	<i>n</i> = 37	<i>n</i> = 37	<i>n</i> = 37	<i>n</i> = 37
		Regarded as indispensable	Regarded as indispensable	Regarded as useful	Regarded as pointless	No answer
Prevalence	WHO/ILEP/Q1	26 (41%)	27 (73%)	9	1	
Detection	WHO/ILEP/Q1	39 (61%)	31 (84%)	4	1	1
Proportion of patients with grade 2 disabilities among new cases	WHO/ILEP/Q1	25 (39%)	21 (57%)	13	1	2
MDT coverage	WHO/ILEP/Q1	22 (34%)	18 (49%)	18		1
Cure rate; Regularity MDT among PB and/or MB patients; or MDT completion	WHO/ILEP/Q1	19 (30%)	20 (54%)	14	2	1
Relapse rate	WHO/ILEP/Q1	10 (16%)	13 (35%)	22	2	
Proportion of new MB leprosy cases among new cases	ILEP/Q1	6 (9%)	12 (32%)	21	4	
Proportion of children (0–14) among new cases	ILEP/Q1	18 (28%)	18 (49%)	18		1
Surveillance after treatment	Q1	4 (6%)	8 (22%)	16	13	
Care after treatment	Q1	2 (3%)	8 (22%)	24	4	1
Frequency of leprosy reactions	Q1	2 (3%)	6 (16%)	27	4	

WHO, indicators recommended by WHO Global Elimination Strategy; ILEP, indicators requested by ILEP B form; Q1, indicators most frequently mentioned in the first questionnaire (for the sake of simplification, we grouped together 'regularity MDT among PB patients' and 'regularity MDT among MB patients', regarded as two separate indicators by our respondents, and 'cure rate').

regarded the set of the 6 indicators considered by OMSLEP to be 'within the capabilities of most health services' as indispensable: prevalence rate, incidence or detection rate, proportion of multibacillary forms among newly-detected cases, proportion of children 0–14 years among newly-detected cases, proportion of disabled patients among newly-detected cases and one of the indicators proposed for monitoring multidrug therapy or relapse rate.^{2,11} Many criticisms, comments or alternative proposals about the 12 indicators presented and defined in the second questionnaire were put forward by almost all the respondents. Only a minority of these reflections were really relevant. The vast majority of them expressed some lack of understanding of what operational or epidemiological indicators are, and a tendency to increase the number of indicators or to unnecessarily make them more sophisticated.

Twenty-nine out of the 37 respondents to the second questionnaire (78%) thought that leprosy control programmes should be free to devise the indicators considered appropriate to their activities, but they also agreed on providing the international organizations with a minimum set of identical basic indicators in order to allow international comparisons. In reply to the question of whether the international organizations (WHO, ILEP, etc.) should propose and recommend a standardized computerized information system, encompassing software and data base, 25 out of the 37 respondents (68%) agreed with this proposal. Only 3 respondents (8%) thought that leprosy control programmes should remain free to computerize their management tools according to their own preferences. Another 5 respondents (15%) agreed with both proposals.

The second questionnaire also tried to explore programme managers' opinions about a controversial matter not directly related to the main topic of the study: the 'real' number of leprosy patients. The estimated number of hidden leprosy patients, expressed as a percentage of registered patients, varied greatly according to the programme. Nine out of the 37 respondents to the second questionnaire did not answer the question, and 6 claimed there were no unknown leprosy patient in their zones (those respondents were responsible for programmes practising mass surveys). As to the 22 respondents proposing an estimate, the proportion of unknown patients ranged from 9% to 143% (Sierra Leone), 246% (Zaire, Kapolowe), 256% (Barabanki District, Uttar Pradesh), 338% (Nigeria, Kogi State), 500% (Kwara State, Nigeria) and even 881% (Bangladesh). Seventeen of those 22 respondents gave some explanation about the calculations underlying their estimates. These explanations were very diverse, subjective, and lacking in any sound epidemiological basis.

Discussion

METHODOLOGICAL ISSUES OF THE STUDY

In designing and carrying out the study we were faced with three important concerns.

First, despite extensive mailing we failed to achieve a satisfying collaboration of programme managers contacted. Searching support from WHO, ILEP or other agencies would probably have improved the response rate. Nevertheless, such a low completion rate deserves serious attention because it could reflect some programme managers' lack of interest in, or understanding of interventions aimed at improving the quality of care.

Second, as we were unable to propose any convenient random sampling frame our results were likely to be distorted by subject selection. While the information necessary

to assess or correct this source of bias is unavailable, it is worth noting that our study population encompasses at least one leprosy control programme in 20 out of the 'top 25 endemic countries'—as classified by WHO in 1993¹³—in the first round. Moreover, the 12 respondents to the second questionnaire who were from these 'top endemic countries' were in charge of 2.2% of the total number of registered leprosy patients in these countries (Appendix 3). Accordingly, we think our results merit attention, whatever the potential for selection bias.

Third, because of the relatively low proportion of response achieved in the first round and the high occurrence of drop-outs registered in the meantime, we decided to stop the study after the second round. Such a shortcoming could well be explained by the apparent complexity of the qualitative method we tried to use for reaching a consensus among respondents. For instance, a response to the second questionnaire implied an in-depth understanding of the contents of an interim report based on the replies to the first questionnaire. Although we cannot rule out a self-selection of the respondents, an assessment of the direction of this bias is feasible. As the second questionnaire required that PB and MB be distinguished and that MDT coverage be assessed, it appears to have selected the respondents who were most advanced in MDT, most often linked up with ILEP and receiving external supervision. However, it did not select the 'best students', i.e. those respondents to the first questionnaire who mentioned the basic WHO or ILEP indicators as indispensable, and rigorously defined them.

PROGRAMME MANAGERS' OPINIONS AND INTERNATIONAL RECOMMENDATIONS

The main finding of the study is the great diversity of answers to the question: what information is, in your view, indispensable for controlling leprosy and monitoring your programme? As some of the numerous definitions of, say, prevalence given in Appendix 1, might overlap, it could be argued that we are exaggerating the real discrepancies between the respondents. But even so, there is still a confusion between the absolute number of cases, point prevalence, period prevalence on the one hand, and registered cases, treated cases and cases needing care on the other hand. Let alone all the definitions which are definitely unorthodox.

The indicators requested by the well-known ILEP B form, which is mandatory to be completed by projects or programmes in order to keep on getting funds from ILEP member associations, did not spontaneously arouse a great interest from the respondents to the first questionnaire. The WHO latest recommendations were not available at the time of this study¹⁴ but most of them had been internationally recommended for a long time, and used by OMSLEP. With the exception of detection rate, none of the WHO/ILEP indicators were mentioned as indispensable by a majority of the respondents. Moreover, while some have recently proposed to restrict the basic information for leprosy control to only two indicators, i.e. the rate of newly-detected cases and the proportion of patients cured,¹⁰ only 61% of the respondents to this study would have agreed with the first indicator and less than 20% with the second one.

Though proposed in the second round of the study, none of the indicators most often regarded as indispensable by the respondents to the first questionnaire succeeded in achieving a complete consensus, even detection rate or prevalence rate. MDT coverage, MDT being the core of the current strategy against leprosy, is accepted as an indispensable indicator by only half of the second round of respondents.

How can these results be explained? We think it is not merely a problem of inadequate wording. It can be feared that, behind the wide disparities in the responses and the lack of precision of most proposals, different understandings of the phenomena to be measured are at play. One must wonder whether the real meaning of programme monitoring is in any case rightly understood. First, in spite (or because ?) of numerous international meetings and WHO expert committee recommendations, there is still no general agreement on the set of indicators to be systematically collected in leprosy control programmes. Recommendations from ILEP are not exactly the same as those from OMSLEP, they differ still from the many and sometimes changing recommendations from WHO successive technical reports on leprosy. If experts' opinions do not converge, we cannot expect programme managers in the field to comply with contradictory or overlapping requirements. Second, there is a problem of education and training. Even when they have to use a clearly defined set of indicators, such as in ILEP B form, not all programme managers seem to understand correctly the fundamental requirements of data collection. They still keep on proposing numerous, inadequate indicators and definitions, and they do not reach full consensus on essential indicators in the second phase of the study. Third, there is a tendency for the central levels of leprosy control administration or donor agencies to request far too many data and calculations from field managers. Most of these indicators are just useless in decision making, as pointed out by Feenstra,⁷ but keep on clouding the issues in leprosy control management.

An additional concern is with the number of hidden cases of leprosy. The figures reported are only minimally informative and most of the explanations underlying the calculation of the real number of leprosy patients are not sound. It is likely that many programme managers are not sufficiently familiar with the basic concepts and methods of descriptive epidemiology. When, in particular, the 6 respondents responsible for programmes practising intensive mass surveys declared that all leprosy patients are known to them, it led us to doubt whether these mass surveys are really capable of detecting all leprosy patients. We think that, if those surveys were to be carried out, which is questionable, they would create a false sense of security as to a complete coverage of the population.

NEEDS OF PROGRAMME MANAGERS

The surprising agreement of the respondents on the necessary degree of standardization of data collection and computerization offers an opportunity for WHO, ILEP and other international agencies to make new, limited, decision-making oriented and well-defined proposals about leprosy control indicators. An up-dating of OMSLEP system, or any other system like EPI-Info-based software, compatible with ILEP requirements and with future perspectives in integration of leprosy control into general health services, as well as openness to a synergy with tuberculosis control, could be a very interesting issue.

Conclusion

With this study we conclude that the accuracy and validity of the information collected from leprosy control programmes are not satisfactory. Yet this information is used to

support the implementation of the elimination strategy, i.e. to determine priorities, follow-up progress, and make recommendations. These results underscore the need for putting some effort into the building of an agreement between WHO, international agencies and national leprosy control programmes on the indicators to be effectively and systematically used. Programme managers in the field are obviously open to greater intervention by international organizations to enhance the cohesion of data collection and to promote a minimal standardization in computerized programme management. International aid agencies in leprosy control should pay more attention to the need expressed by programme managers for support and training in dealing with health information systems. It also seems to be important that programme operators be given the material and operational possibilities to carry out surveys on prevalence based on sound methodology and to discourage the unscientific use of 'mass surveys' as a way of estimating prevalence.

In addition, we think that the conclusions of this study could equally apply to activities other than leprosy control programmes and prove relevant for any health information system in developing countries.

Acknowledgments

This work was supported in parts by grants from the following ILEP member associations: Association Française Raoul Follereau, Damien Foundation Belgium, and Secours aux Lépreux Canada.

We kindly acknowledge the advice of Professor Michel Lechat, former head of the Department of Epidemiology, Faculty of Medicine, Catholic University of Louvain, and the support received from all respondents who participated in the study.

We thank Catherine Gelin for her assistance with data collection and analysis.

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Appendix 1—Geographic distribution of the respondents

Country	Number of answers to questionnaire 1	Number of answers to questionnaire 2
Angola	2	
Argentina	1	1
Bangladesh	1	1
Benin	1	1
Brazil	2	1
Cameroon	1	
Caribbean Epidemiology Centre (PAHO) = 19 countries	1	
Chad	1	
China	1	
Congo	1	1
Ethiopia	1	
French Guyana	1	1
Guinea	1	1
India	14	8
Indonesia	2	1
Ivory Coast	1	
Madagascar	1	
Malawi	1	1
Malaysia	1	
Maldives	1	
Martinique	1	
Morocco	1	1
Myanmar	1	1
South Africa	1	1
Mexico	1	1
Mozambique	2	
Nepal	1	1
Niger	1	1
Nigeria	5	5
Pakistan	1	1
Papua New-Guinea	1	
Paraguay	1	1
French Polynesia	1	1
Sierra Leone	1	1
Tanzania	1	
Trinidad and Tobago	1	1
Vietnam	1	1
Zaire	5	4
Zambia	1	
Total questionnaire 1: 56 countries	64 respondents	
Total questionnaire 2: 23 countries		37 respondents

Appendix 2—List of 20 different groups of terms for prevalence and 24 groups of terms for incidence proposed by the 64 respondents to the first questionnaire

Prevalence	Incidence
Global prevalence	Global incidence
Active prevalence	Incidence of new cases
Prevalence rate	Incidence rate
Prevalence rate per year	Incidence rate per year
Prevalence rate of recorded cases	Detection
Prevalence rate of recorded cases at the end of the year	Detection rate
Number of cases recorded	Detection per year/10,000 inhabitants
Number of cases recorded at a certain date	Detection rate of new cases
Number of cases recorded during a particular period	Number of patients never treated before
Number of cases recorded during the year	Number of new cases
Number of cases being treated	Number of new cases discovered
Number of cases being treated or that need treatment	Number of new cases recorded every year
Number of cases being treated at a certain date	Number of new cases reported annually
Number of cases being treated during the year	Number of new cases detected within a year
Number of cases of leprosy patients recorded/population	Number of new cases/year
Prevalence rate of cases needing chemotherapy at the end of the year par 10,000 inhabitants	Number of new cases detected/year/1,000 inhabitants
Prevalence rate of cases registered for chemotherapy	Number of new cases of leprosy discovered during the month, quarter, year (PB + MB)
Number of cases registered for chemotherapy every year	Number of new cases per quarter/1,000 inhabitants
Requirement in terms of medicines (= cases needing chemotherapy?)	Number of new cases/population
	Number of new cases/type of leprosy
	Coefficient of annual registration of new cases
	Detection activities for all methods
	Detection rate for all patients

Appendix 3—Estimated number of leprosy patients in the top 25 endemic countries and participation of programmes from these countries in the study

The top 25 endemic countries in 1993 (WHO) (1)	Countries represented in responses to questionnaire 1 and (number of responses) (2)	Countries represented in responses to questionnaire 2 and (number of responses) (3)	Number of estimated cases in 1993 (WHO) (4)	Number of registered cases (WHO) (reference years: 1989–92) (5)	Number of registered cases as declared by respondents to questionnaire 2 (6)	Proportion (6/5)%
India	India (14)	India (8)	1,677,000	1,459,338	5,457	
Brazil	Brazil (2)	Brazil (1)	283,800	250,066	2,247	
Indonesia	Indonesia (2)	Indonesia (1)	170,000	74,683	3,202	
Bangladesh	Bangladesh (1)	Bangladesh (1)	136,000	19,932	836	
Myanmar	Myanmar (1)		120,000	57,389		
Nigeria	Nigeria (5)	Nigeria (5)	63,000	62,080	2,972	
Sudan			32,000	31,028		
Philippines			30,000	14,925		
Iran			30,000	10,487		
Vietnam	Vietnam (1)	Vietnam (1)	30,000	18,342	3,762	
Madagascar	Madagascar (1)		30,000	5,290		
Egypt			30,000	8,696		
Nepal	Nepal (1)	Nepal (1)	29,000	22,812	4,651	
China	China (1)		25,000	20,003		
Zaire	Zaire (5)	Zaire (4)	25,000	7,736	7,053	
Mozambique	Mozambique (2)		25,000	19,216		
Colombia	(PAHO) (1)		20,000	18,983		
Mexico	Mexico (1)	Mexico (1)	20,000	16,732	9,532	
Ethiopia	Ethiopia (1)		20,000	12,041		
Guinea	Guinea (1)	Guinea (1)	15,000	6,942	1,678	
Ivory Coast	Ivory Coast (1)		15,000	6,483		
Mali			15,000	12,710		
Chad	Chad (1)		11,000	6,952		
Niger	Niger (1)	Niger (1)	10,000	6,468	305	
Pakistan	Pakistan (1)	Pakistan (1)	10,000	9,611	5,708	
Total 25	Total 20	Total 12	2,871,800	2,178,945	47,403	2.2%

Origin of new leprosy cases during general surveys in relation to previous survey findings

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Accepted for publication 26 January 1996

Summary As part of the leprosy control activities in the area of Gudiyatham Thaluk, general surveys are done once every three to five years. The percentage of examination is about 90%. An analysis of all new cases registered for treatment between 1990–94 was done to study whether these cases had been examined in the previous general survey. Of the new cases detected and registered, 566 cases (32.6%) were not examined during the previous survey. The significance of these findings in relationship to cost-effectiveness of general surveys, case-detection methodology and possible continuing of transmission of leprosy are discussed.

Introduction

In the Schieffelin Leprosy Research and Training Centre's leprosy control area of Gudiyatham Thaluk, case detection is done by general surveys, which have on average been done once every 3–5 years since 1962. School surveys and contact surveys are done annually and voluntary reporting of cases occurs as a result of the impact of the leprosy awareness campaigns conducted in the area on a regular basis.^{1,2}

A paper in 1985³ by the first author, justified the use of general surveys for case detection on data then available.

During the last 14 years, whenever a new case is diagnosed from the leprosy control area, the general survey record of the household is checked to see what the last survey findings were. The new case would occur in populations previously examined or populations not seen during the previous general survey.

This paper analyses the records of 2201 new cases registered between 1990 and 1994. The general survey findings were obtained from the patients' charts. This information is collected at the time of registration of the new cases.

Table 1. Mode of detection

	General surveys	Contact surveys	School surveys	Voluntary reporting	Not known	Total
No.	923	126	314	833	5	2201
%	41.9	5.7	14.3	37.9	0.2	100.0

Materials and methods

When a patient is detected during a general survey a body chart is completed by the paramedical worker (PMW) and the previous general survey findings are noted. If the patient is detected by a school survey, during a contact survey or if he/she presents voluntarily, the PMW checks the general survey register and records whether the person was examined during the previous survey. Records of 2201 patients were checked and the information analysed using statistical packages.

Age was age at detection. Classification used was paucibacillary (PB) and multi-bacillary (MB).

Results

Of the 2201 patients, the mode of detection was not known in 5 cases. The mode of detection of the remaining cases is given in Table 1. It is seen that 42% of the cases were detected by general surveys and another 38% reported voluntarily. The previous general survey findings were not known in 401 cases. The variation in the totals are due to the sub-categorization of the 401 'not known' group.

PATIENTS BY PREVIOUS SURVEY FINDINGS

There were 401 cases in which the previous survey findings (Table 2) were not recorded. There were also 34 cases which were already diagnosed as leprosy in the previous survey and 29 suspects and so 464 cases were excluded from the analysis. For the rest, their previous survey findings in relation to their mode of detection were analysed.

Table 2. Mode of detection in relation to survey findings

	General survey	Contact survey	School survey	Voluntary reporting	Total
Examined in previous survey Yes	498 (42.5%) 71.7	73 (6.2%) 67.6	174 (14.9%) 67.4	426 (36.4%) 63.0	1171
Examined in previous survey No	197 (34.8%) 28.3	35 (6.2%) 32.4	84 (14.8%) 32.6	250 (44.2%) 37.0	566
Total	695 (40.0%)	108 (6.2%)	258 (14.9%)	676 (38.9%)	1737

Table 3. Sex and age in relationship to previous survey findings

	Male			Female			Grand total
	Child*	Adult	Total	Child	Adult	Total	
Examined in previous survey %	207 (17.7%) 69.7	385 (32.95) 61.7	592 (50.5%)	185 (15.8%) 70.0	394 (33.6%) 71.4	579 (49.5%)	1171
Not exam. in previous survey %	90 (15.9%) 30.3	239 (42.2%) 38.3	329 (58.0%)	79 (14.0%) 30.0	158 (27.9%) 28.6	237 (42.0%)	566
Total	297 (17.1%)	624 (35.9%)	921 (53.0%)	264 (15.2%)	552 (31.8%)	816 (47.0%)	1737

* Age 14 years and below.

Table 4. Percentage of population enumerated and examined

Population	M	MC	F	FC	Total
Enumeration	173,905	86,048	183,231	83,473	526,657
Examined	132,677	82,091	170,502	80,578	465,848
% examined	76.3	95.4	93	96.5	88.5

Of the 1737 patients studied, 566 patients (32.6%) were not examined during the previous survey; 197 (34.8%) of the 566 patients, detected during the current general survey; 35 (6.2%) were detected by contact surveys; and 84 (14.8%) by school surveys and 250 (44.2%) reported voluntarily. Thus even when the current general survey was going on, 369 cases (65.2%) were detected by methods of case detection other than the general survey.

It was seen that of the 1171 patients who were examined and found healthy in the previous survey: only 498 (42.5%) were actually detected by the subsequent general surveys; 247 cases (21.1%) were detected by other surveys; and in fact 426 cases (36.4%) reported voluntarily.

The risk of being missed in the previous survey was higher in those who voluntarily reported, than those who were detected in general or contact surveys ($p < 0.01$).

ANALYSIS BY AGE AND SEX (TABLE 3)

Of the new cases that were registered who were examined in the previous survey and found healthy, 592 patients were male (50.6%). Of the new cases detected, who were not examined during the previous survey 329 were male (58.1%). Thus a statistically significantly higher proportion of males were from the non examined population from the previous survey ($p < 0.01$). Table 4 shows the percentage of examination during the last survey. It is seen that though the overall percentage of examination was 88.5%, the percentage of examination among adult males was the lowest, 76.3%.

DISTRIBUTION BY TYPE OF LEPROSY (TABLE 5)

It was seen that 90% of the patients registered were paucibacillary (PB). Of them 60% were examined and found healthy in the previous survey. Among the 10% who were

Table 5. Previous survey finding by type of leprosy

	PB	%	MB	%	Total
Examined in previous survey					
Yes	1041	88.9	130	11.1	1171
Examined in previous survey					
No	695	91.1	68	8.9	763
Total	1736	90	198	10	1934

PB, paucibacillary; MB, multibacillary.

Table 6. Deformity grade by previous survey findings

	Deformity grade*								Total
	0	%	1	%	2	%	3	%	
Examined in previous survey	986	84.2	84	7.2	100	8.5	1	0.1	1171
Not examined in previous survey	459	81.5	40	7.1	63	11.2	1	0.2	563
Total	1445	83.3	124	7.2	163	9.4	2	0.2	1734

* Deformity grade 0–3⁸

classified as multibacillary (MB), 65.7% were also seen during the previous survey. There was statistically no significant difference between the proportion of MB and PB cases in reference to the previous survey findings.

DEFORMITY OF THE PATIENTS BY SURVEY FINDINGS (TABLE 6)

The deformity grade of the patients was examined according to whether they were seen during the previous survey. It was seen that 84.2% of those seen in the previous survey and 81.5% of those from the missed population in the previous survey had no deformity; 7.2% of the patients had a deformity of grade 1; and another 8.5% of the patients had a deformity of grade 2 or more (only 2 patients had a deformity of grade 3). The risk to those not seen in the previous survey of developing a deformity was reaching a statistical significance ($p < 0.08$).

Discussion

When a general survey is done for the purposes of case detection, paramedical workers examine about 90% of the population in 2 to 3 revisits. As the costs of each re-visit escalates, usually 5–10% of the population remains unexamined.

On preliminary analysis of the data of the recently completed Sixth General Survey (1995), one was surprised that among the new cases registered for treatment during the years 1990–94, only 41.9% of the new cases detected and registered for treatment were detected (Table 1) through the general survey. The remaining 58.1% of the cases arose from the 10% of the population not seen. They were detected through contact or school surveys, but 37.9% reported voluntarily.

One would expect that the cases arising from the missed population would be more advanced with greater deformities, a greater number of patches, and of the MB type. Analysis of the data showed that a significant higher proportion of the males were from the un-examined population. This could be partly explained by the overall lower percentage of examination among adult males. The proportion of patients with no deformity was higher in the population, but did not reach statistical significance at the 5% level. There was no statistical significant difference in the age or type in the two groups.

Thus the presumption that general surveys help in the detection of early leprosy cases was only partly substantiated. The fact that in 401 cases the previous survey findings were not recorded could also bias the results. Efforts are being made to check the actual

survey registers to verify the survey findings. These should be routinely entered by the paramedical worker. The procedure has been tightened now and the completeness of records is being checked in the office, as all the charts of newly registered cases are now sent to the office from the field.

During the recent general survey a population of 575,001 was enumerated and 510,950 were examined (89%). The paramedical worker, on average examines 100 people during a working day. Thus to complete the survey, approximately 5110 man days were required. This was about 284 working months excluding leave. With an average monthly salary and survey allowance of Rs. 3,328.00, the cost of the survey was approximately Rs. 945,152.00. The cost per case (695 cases) was thus Rs. 1,360.00. This was excluding costs of travel etc.

The cost of detection of a new case by means of contact surveys is approximately Rs. 1,024.00 and by school survey was Rs. 666.00 (the cost used excludes overheads like supervisory visits, stationary and overall programme costs). The case-detection rate for the year 1994–95 in the control area was 1.29 per 1000 examined for general surveys, 2.9/1000 for contact surveys and for school surveys it was 3.3/1000 in elementary schools; 1.03/1000 in higher elementary schools; 0.6/1000 in high schools and all schools put together 0.54/1000. However the case-detection rate among patients attending a skin clinic conducted in Gudiyatham town¹ was 13.4/1000.

The data presented in this report suggests that general surveys as they are currently done are an ineffective and expensive way of case detection. The problem of variation in the new case detection has already been pointed out.^{5,6} The fact that surveys were an ineffective means of case detection was also published as early as 1948.⁷ The conducting of general surveys using predominantly male workers, examination in the streets, and subjecting the population to this de-humanizing procedure should be seriously reviewed. The assumption that knowledge of early skin lesions and the need to have them checked, conveyed through health education, will not result in them reporting voluntarily; it also discredits the intelligence of the population. On the other hand, voluntary reporting of a high proportion of new cases, suggests that populations made aware of leprosy will seek treatment.

It is difficult to explain why so many cases came from the unexamined population. The most probable answer is the way that surveys are conducted, exposes them to recognition by the community and possible stigmatization, thus patients may hide their disease during surveys, though they are quite willing to come with their doubts to the clinics. Some of the early cases could have also evolved in the intersurvey period. The issue of undetected cases continuing to be a source of infection and transmission of leprosy also needs to be studied.

Thus analysis of this data suggests that the usefulness of surveys in general should be reviewed. Alternate methods of case detection with greater community involvement, involvement of women and youth groups, incentives for case detection, involvement of the primary health care workers, rapid surveys, skin clinics and planned health education are alternatives that should be explored. This is especially relevant as the prevalence and subsequently the incidence falls.

Acknowledgments

We wish to thank all the staff of the Branch of Epidemiology and Leprosy Control, whose work has been used in this analysis; Mr Lewis Kumar and Miss Jothy Jeyaraj for

the secretarial help and Mr James the office supervisor whose responsibility has been to maintain careful records over three decades. We wish to also express our gratitude to our funding agencies especially The Leprosy Mission International and the American Leprosy Mission who have supported our work from its inception.

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Gender differentials in the social impact of leprosy

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Accepted for publication 22 April 1996

Summary Prevalence rates of leprosy have reduced considerably in many states where multidrug therapy is in operation. However, reduction in prevalence alone is not sufficient as the social consequences of the diseases on the life of the patient are often severe and persist even after its cure. The present paper, therefore, investigates social impact with special reference to gender differentials. Data obtained from structured questionnaires ($n = 606$) is analysed for this purpose. It was observed that the initial delay in identifying the skin changes as the symptoms of the disease were higher for females (29 months) than males (24 months). Even after identifying the symptoms, women were observed to depend exclusively on nonmedical treatment for a longer period (10 months) than males (6 months). Upon starting the medical treatment females were observed to be more compliant than males, but the benefits of regularity appeared to be outweighed by the initial delay in starting medical treatment. The social impact on daily life was more severe for females than males as revealed by the isolation from daily activities, such as, restrictions on participation in familial functions, restrictions on touching children. The paper highlights implications of gender bias on detection and treatment, and suggests modifications for control programmes.

Introduction

The leprosy control programme in India aims to bring down the prevalence of leprosy to below 1/10,000. This is in accordance with the WHO declaration of the global elimination of leprosy by the year 2000 AD.¹ With the introduction of multidrug therapy (MDT), profound changes in the epidemiology of the disease have occurred,^{1,2} with a significant reduction in the prevalence rates in many states, where MDT is in operation.² However, reduction in prevalence alone is not sufficient as the social consequences of the diseases on the life of the patient are often severe and persist even after its cure. The social aspects associated with this disease are therefore as important, if not more important than the biological ones.

Leprosy is a highly-stigmatized disease. Misconceptions about leprosy including beliefs that it is contagious, incurable, hereditary or a consequence of a divine punishment, all contribute to stigma in many, though not all societies. The initial acceptance of the disease by an individual and his family is often difficult leading to delay in treatment. Treatment compliance too is affected by several social factors. It is therefore necessary to study the social impact of leprosy in the context of its implications for control programmes.

The social impact of the disease has been described by previous researchers³⁻⁵ but those investigating gender differentials (gender differences or gender bias) on the social impact of leprosy are scant.¹¹ The issue is of considerable significance for women, who are accorded a low social status in many communities in India and receive different treatment from the members in the family and the wider society. In North India it was found⁶ that due to traditional customs, females did not readily come forward for clinical examination and diagnosis, and when they did come the disease was well advanced. Women form a socially vulnerable group. Lack of time, money and mobility are more often causes for poor treatment compliance among female patients. The understanding of gender difference on the social impact of the disease is thus essential in attempting its elimination. In this paper, we highlight the role of gender on the impact of leprosy and hope to demonstrate that the potential for improved disease control could be greatly strengthened by closer attention to gender differences.

Material and methods

The study was carried out in four districts of Maharashtra and from each district four urban and four tribal or rural sectors were selected. For each sector, a complete list of current and released from treatment (RFT) patients was obtained. Patients marked as left area permanently (LAP), not traceable (NT) and released from control (RFC) were not included in the sampling frame. A stratified random sample was then selected using age, gender and deformity status as the main strata. Patients above the age of 18 were included in the study as younger patients are unlikely to experience any significant social impact on issues like marriage or job.

Data was collected using a structured questionnaire which included questions seeking information on personal demographic variables (age, gender, type of family, native place, educational status, marital status, etc.); the details of disease status at detection; reactions of self, family members and others on detection; treatments sought for treating the disease with reasons; treatment given by family members in day-to-day life, participation in social life, etc. The questionnaires, after appropriate field testing, were used for data collection and were filled in by interviewing the patients.

Each interview was carried out over 2 to 3 visits, i.e. initial visit often sought information on personal demographic variables and disease status at detection, while more sensitive questions were tackled in subsequent visits, once a rapport was established. Tape recorders were used with the full consent of respondents and were useful for the collection of everything said by the patient during his/her interview. The interview was carried out maintaining privacy and confidentiality. Data obtained from 606 questionnaires were analysed for the purpose of the present study.

Some of the operational definitions need to be mentioned before proceeding for

analysis of data. The joint family is considered as one in which married sons along with their wives are also staying with the parents who are heads of households. Whereas a nuclear family is one in which only the married couple and their children are staying. The sample consists of 'old' patients and 'new' patients. While old patients are from colonies and homes; detected on an average 10 years previously, the 'new' patients are those currently on treatment or under surveillance and detected during the last 5 years. All treatments other than medical, sought by the patient are referred to as 'nonformal' treatment. This includes religious treatments, fasting, offerings and the treatment given by the traditional healers. Deformity grades are as per WHO norms, i.e. zero (no anaesthesia, no visible deformity or damage), grade I (anaesthesia present but no visible deformity or damage), and grade II (visible deformity or damage present). Irregularity in treatment is considered when treatment of a patient is not completed even within the maximum stipulated time span, i.e. 9 months for paucibacillary (PB) patients and 36 months for multibacillary (MB) patients.

Results

Age-gender distribution of patients in the study is given in Table 1. The current patient in the study sample are about 77%, while the remaining 23% were old patients, mostly from colonies and leprosy homes. The comparison of the two groups is useful in examining the changes that may have occurred over the years with regard to social impact of the disease.

SOCIOECONOMIC STATUS

The lower social status of females in India and typical of many cultures, may result in greater suffering among women. It is also likely that the lower social status in itself may contribute to gender differences in the detection and treatment of this disease. The socioeconomic characteristics of the study population are, described separately for males and females (Table 2). It can be observed that the proportion of illiterate female patients is significantly higher, while the proportion of employed females is significantly lower compared to males, indicating a low social status of many female patients. We also observe in the same table, that family type at detection and at present shows considerable change. It appears that after the detection, patients perhaps come out of the joint

Table 1. Age-gender distribution of patients in the study

Age (yr)	Male	Female	Total
18-30	71 (24.5)	76 (24.0)	147 (24.3)
30-50	133 (45.9)	174 (55.1)	307 (50.6)
50+	86 (29.6)	66 (20.9)	152 (25.1)
Total	290	316	606
Current patients	242 (83.4)	224 (70.9)	466 (76.9)

Figures in parentheses represent percentages.

Table 2. Socioeconomic profile of patients in the study

Variable	Males (<i>n</i> = 279)	Females (<i>n</i> = 311)
Area		
Rural	41.4	56.0
Urban	16.9	18.4
Tribal	41.7	25.6
Family type		
at detection		
Joint	42.6	37.0
Nuclear	49.7	60.5
at present		
Joint	25.4	20.1
Nuclear	66.7	64.3
Family position as Head		
at detection	57.6	4.8
at present	69.9	6.4
% illiterate	44.1	74.3
% married	78.5	70.1
% employed	75.3	49.5
% deformed	13.4	9.0

families and stay in nuclear families as shown by a reduction in the proportion of joint family status at present, compared to that at detection.

In a study from South India, it has been reported that a diagnosis of leprosy has resulted in the break-up of joint families.³ The position of the patient in the family, however, shows significant gender differences. Thus only a negligible proportion of females in contrast to males happen to be head of a family, indicating that most women are likely to be deprived of decision-making power.

KNOWLEDGE AND TREATMENT SEEKING

One of the major factors that adversely affects the control programme is the delay in treatment. Lack of knowledge about disease causation and its treatment influences the course of the disease. Gender differences with regard to knowledge and health-seeking behaviour are thus important and are brought out in Table 3. It can be observed that fewer new patients considered 'sin' as a cause of their disease compared to old patients suggesting that knowledge about disease causation has improved over the years. It is interesting to note that this change is seen more among females (reduction from 43% to 24%) than males.

The knowledge gained about the causation of the disease, however, has not necessarily helped females in reducing the delay in seeking the treatment. It can be seen that the delay in detecting the changes occurring on the skin as initial symptoms of disease is significantly higher for females (31 months) than that for males (16.8 months) in the case of old patients. Although this delay has dropped considerably among new patients, it is still higher for females (by about 5 months) compared to male patients. Thus even today a considerable time elapses in identifying the initial symptoms of the disease and this is detrimental to early detection. Clearly, imparting knowledge about identifying the initial symptoms of the disease is needed.

Table 3. Knowledge and health seeking behaviour of male and female patients

Variable	Patients*	Males	Females
Cause of disease as sin (%)	Old	30.5	43.1
	New	29.2	24.7
Gap 1 (months)†	Old	16.8	30.9
	New	13.8	18.5
Gap 2 (months)‡	Old	24.4	32.9
	New	10.8	13.5
Total delay in treatment (months)	Old	41.2	63.8
	New	24.6	32.0
Irregularity in treatment (months)	Old	30.0	16.4
	New	16.7	5.0
Exclusive dependence on traditional treatment (months)	Old	21.5	25.5
	New	6.4	9.7

* Sample size for M F
old patients 28 56
new patients 151 129

† Gap 1 indicates delay in identifying the changes on skin as symptoms of disease.

‡ Gap 2 indicates delay between the diagnosis of leprosy and initiating the treatment.

Even after identifying the symptoms of the disease there is likely to be a further delay in receiving the formal treatment owing to differences in the health-seeking behaviours of male and female patients. Very often women delayed taking treatment until they had undertaken measures such as fastings and offerings to God. Gap 2 in Table 3 gives the estimates of this delay and it can be seen that for female patients (old as well as new) these values are higher than those for males. The total delay in initiating the formal treatment was thus as high as 32 months even for new female patients compared to 24 months for male patients. One of the major reasons was observed to be the exclusive dependence of female patients on nonformal treatments, i.e. religious approaches or the treatment given by traditional healers, in the initial stage of the disease.

In a study⁷ among Pakistani patients it was observed that many patients had lost years of effective treatment as a result of opting for nonformal treatments. Second, it was also observed that relatively more women (26%) compared to men (21%) tend to hide the disease, mainly because of the fear of social stigma or the fear of debilitation (9% vs 6.4%). Thus delays in treatment could be higher in illiterate women of poor communities from less urbanized areas where the disease prevails. The understanding of gender differences in health seeking is therefore, critical in the context of control programme.

On initiation of the treatment however, more females appeared to be regular than males in both the groups of old and new patients. Higher compliance among females is likely to be due to the known fact that they are socialized to conform to prescribed behaviour. It is, however, feared that benefits of regularity in treatment are perhaps outweighed by the considerable delay in initiating the formal treatment soon after detection.

IMPACT ON DAILY LIFE

Women with leprosy face definite social and psychological problems irrespective of their socioeconomic status. The degree to which men and women leprosy patients were isolated from their family activities and events is shown in Table 4. Among those who openly responded to the question on isolation/restriction imposed by family members, it was observed that by and large women were more isolated from all activities than men. Most women (80%) were isolated from their major daily task of cooking food for everyone. It was probably the fear of contaminating others that isolated them from their daily activities. In fact one study⁵ found that discriminative attitudes and fear of spreading infection are more common in joint families. Isolation from touching others was again a strong reaction that many women (84%) faced, unlike men (17.7%). Loss of freedom to touch and to be touched, especially with their children, symbolized rejection. Similarly, they were isolated from sleeping in the same room along with the other family members (if unmarried) or with their spouses (if married). Finally, more women suffered from isolation in attending the festival celebrations in their own family among women than men. Such isolation from vital domestic roles develops among women a self-image of being a useless member of the family.⁸

It has been previously observed⁹ that prejudice is shown not only by neighbours and relatives but by the immediate family as well. Strained intrafamilial relationships have also been observed.⁴ However, in describing the social impact of the disease neither of these commented on the gender differences.

Table 4. Impact of disease affliction* on day-to-day life

Variable	Males (%)	Females (%)
Isolated from:		
cooking	29.0	80.0
touching others	17.7	84.0
eating together	48.0	63.0
sleeping together	20.0	85.8
sex	22.0	71.0
attending festivals	9.6	21.0

* Trends for old and new patients were almost similar and hence given as pooled data.

INTERACTION WITH COMMUNITY

Family influence and pressures are known to act as a powerful force determining a significant portion of observed and reported behaviours of patients.⁷ The disease not only affects day-to-day functioning in the family, but considerable restrictions are enforced on patients due to the fear of social stigma. As can be seen from Table 5, more women seem to have these restrictions than men. For example, 30% of women reported constraints on social outings with the family and travelling. Attending festival

Table 5. Impact of leprosy on social life

Variable	Males (%)	Females (%)
Refrained from:		
going out	10.5	27.8
travelling	10.5	30.8
attending festivals	10.0	17.9
going to the temple	33.3	13.3
attending marriages	15.4	13.0

celebrations in the neighbourhood was also prohibited for women (17.9%) but only 10% for men. Male and female patients experienced somewhat similar restrictions regarding participation in marriages in the community. Thus, although men and women were both affected in terms of their social life, women suffered more isolation and rejection from family and society. Such restrictions clearly reduce the mobility of women patients even more, and affect their treatment.

PERCEIVED GENDER DIFFERENCES

Men and women patients were asked about their own perception of gender differences with regard to several important issues which have exerted a strong impact on the treatment of their disease and in turn on their lives. Almost all women (85%) felt that gender was definitely responsible for the delay in the detection of their disease and a significant proportion of men (67%) agreed to this opinion. Similar was the perception with regard to access to medical treatment. While 67% of females felt that gender bias affected their access to treatment only 54% males felt so. The familial support too was felt to be biased by 67% women while only 46% consented to this opinion. The disadvantages of gender bias to women on daily life were perceived in fact by more men (72%) than women (68%) themselves. In most instances, such as humiliation or insulting treatment, the impact on social life and sharing familial property the majority of patients agreed that gender differences do significantly affect women's lives and hence the course of disease. In case of marriage too, more men (82.5%) than women

Table 6. Perception of patients about gender bias

Perceived gender differences in	Males (%)	Females (%)
Delay in detection	67.1	85.0
Access to medical treatment	54.3	67.2
Support of family	46.6	67.4
Impact on daily life	72.3	68.3
Impact on social life	61.2	65.0
Marriage prospects	82.5	58.6
Difficulty in going to clinic	51.4	58.6
Insulting treatment by family members	75.6	73.9
Share in familial property	83.7	95.6

(58.6%) recognized the disadvantages to females. Thus although relatively few patients responded to their perceptions and observations about gender bias, most agreed to its existence as well as its influence on various facets of life.

Discussion

While women bear more social and cultural responsibilities for maintaining the family in communities of many developing countries, their real situation is often characterized by extreme dependency and discrimination in every aspect of their lives. The empirical evidence presented in this study demonstrates the importance of analysing the situation of leprosy patients from the gender perspective as it has significant implications for disease control.

Important gender differences were apparent on the social impact of the disease. While both men and women were negatively affected in most situations, the extent of the impact was more in case of women than men.

Delay in initiating the formal treatment was longer in the case of women than men. This was partly due to the lack of knowledge about identifying the initial symptoms of the disease, but a more important factor was the dependence on religious or traditional treatment. The suggestion is that the educational component needs to be strengthened in order to reach masses of women in India. Religious beliefs need to be taken into account while imparting knowledge about the medical treatment of the disease. Perhaps groups such as Women's Clubs (which exist in every village), women school teachers or women members of Panchayat (local village government) can be involved for educating women as well as community.

The personal interaction of the leprosy worker with the patient while delivering the drugs can play an important role. He could explain the benefits of early treatment and also encourage regular treatment and if appropriate mention the consequences of incomplete treatment, delayed treatment, and irregularity. Additionally, in the case of women patients a dialogue with a family member often accompanying her would help to reduce the familial stigma. Counselling, especially with the spouse would be beneficial.

Inadequate knowledge on the part of physicians has been observed to result in misdiagnosis or mismanagement leading to loss of years of potentially effective therapy.⁷ Education of traditional healers by trained physicians would make an additional vital impact. Short-term courses could be planned to train local traditional healers to identify early symptoms of the disease and subsequent referral, so that early detection of women patients is feasible. Involving females as leprosy workers or as counsellors would also be of great help. Similarly, educating health personnel in other programmes such as maternal child health (MCH) or those in primary health care (PHC) in fact would prove beneficial.

One study¹⁰ reported that women experienced problems if they had Grade II deformity and that the situation has improved in recent years. Their study, however, lacks comparable data on male patients and it therefore does not highlight gender differences. It was observed in this study that although men and women both experienced the social impact of the disease, women suffered more isolation and rejection from family and society. The need to reduce social stigma is again emphasized, as it is the root

cause of hiding the disease and this results in delayed treatment. The educational programme will highlight the effectiveness of MDT and give confidence to patients and their families that the disease is curable if diagnosed early and treated regularly. This message about effectiveness of MDT can reach the masses by using a variety of media and methods.

The patient's perception about gender bias was studied in a small sample of men and women. It was interesting to note that women tend to suffer in silence and were conservative in agreeing to the disadvantages due to gender bias. In contrast, men agreed more openly to the existence of gender bias and its disadvantages to women patients.

Conclusion

Gender bias has important implications for detection, treatment and hence control of the disease. This bias needs to be brought to the attention of programme managers, medical doctors, technicians and others in control programmes. The control programme could be suitably modified with regard to various activities, i.e. survey, education and treatment with due consideration to gender bias. The evidence from this study strongly suggests that attention to the disadvantaged situation of women with leprosy will greatly increase case detection or presentation, treatment and case management, not only in India but also in other countries.

Acknowledgments

This investigation received financial support from the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR). We duly acknowledge this financial support of TDR. We are also thankful to Dr A. D. Agate, Director, Agharkar Research Institute, Pune for providing necessary facilities to carry out these investigations. Finally, thanks are also due to health personnel, especially leprosy technicians and our field investigators Mr Uday Gaikwad and Mr Vijay Suryagan for data collection.

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Surgical reconstruction of leprotic foot-drop

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Accepted for publication 14 November 1995

Summary We have operated on 25 patients for correction of foot-drop due to leprosy from March 1992 to July 1994. The method used was circumtibial transfer of the tibialis posterior to the tendons of extensor hallucis longus and the extensor digitorum longus in the foot together with lengthening of the Achilles tendon. The results were satisfactory in 20 of these cases as judged by adequate restoration of heel-toe gait and of active dorsiflexion. The follow-up period ranged from 6 months to 2 years. Inadequate post-operative physiotherapy was the reason for unsatisfactory results in five cases.

Introduction

It is well recognized that correction of foot-drop deformity in leprosy is essential to ensure normal walking and to prevent plantar ulcerations. This paper describes the procedure adopted and the results of surgical correction of foot-drop due to leprosy in 25 patients at the Leprosy Control Institute and Hospital, Mohakhali, Dhaka in Bangladesh. The procedure adopted was the transfer of the tendon of the tibialis posterior muscle to the extensor tendons of the toes in the foot so as to ensure active dorsiflexion of the foot.¹⁻³

Material and methods

In the Institute between March 1992 and July 1994 we saw 34 patients with foot-drop due to leprosy. Nine of these were treated conservatively and 25 were treated surgically. Of these 25 patients 20 were male and 5 female. Their ages ranged from 12 to 45 years. Contracture of the Achilles tendon was present in all cases. The follow-up period was 6 months to 2 years.

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PRE-OPERATIVE FINDINGS

The duration of foot-drop because of paralysis of the lateral popliteal nerve was at least one year in all cases. Contracture of the Achilles tendon was present in all cases. The foot-at-rest angle ranged from 103 to 122 degrees the average being 111.5 degrees.

PRE-OPERATIVE PHYSIOTHERAPY

It is essential to isolate the action of the muscle to be transferred and to ensure that its strength is adequate. This was done by teaching the patient to first learn isolated action of the tibialis posterior muscle and then to exercise against resistance.

OPERATION PROCEDURE

Lengthening of the Achilles tendon was done in all cases as a first step. The tibialis posterior tendon was severed near its distal attachment to the navicular bone, withdrawn into the leg, split longitudinally into two slips and both slips transferred circumtibially to the front of the foot. Keeping the ankle in 70 degrees of dorsiflexion and the foot in neutral version, one slip was sutured to the tendon of extensor hallucis longus and the other to the tendons of the extensor digitorum longus. After closure of wounds the limb was immobilized in a Plaster of Paris (POP) boot for 6 weeks.

POST-OPERATIVE PHYSICAL THERAPY

Initially the lower limb was elevated using a Bohler-Braun frame. Weight-bearing was allowed after 4 days and the patient discharged. Six weeks after the operation the patient was readmitted, POP and sutures removed and a strong posterior slab was given to rest the limb with ankle in full dorsiflexion except during therapy. Isolated contraction of the transferred muscle by exercises similar to the pre-operative ones was now started in reclining position. Exercises in dependent-foot position were started as soon as the patient could learn to contract the transferred muscle.

Partial weight-bearing was started in the second week. This is the crucial period when the patient progresses from active contraction of the transfer without weight-bearing on the foot to gradually increased weight-bearing and relearning the heel-toe walking pattern. Initially walking is done between parallel bars. This training is continued till the 4th week, by then the patient is able to achieve a good heel-toe gait with full weight being borne on the foot. Except for the therapy period the limb is immobilized in the posterior slab for the rest of the day. Without proper physiotherapy the operation fails.

Results

In 20 out of 25 patients active dorsiflexion of 77.6 degrees on average was achieved as well as a satisfactory heel-toe gait. The result was hence considered satisfactory. The range of active dorsiflexion was found to be 80 to 72 degrees (10 to 18 degrees above 90 degrees) while the range of active movement at the ankle was 15 to 20 degrees in these 20 cases. In 5 cases the result was poor because of inadequate physiotherapy post-operatively. The active dorsiflexion in these cases was nil in one case and inadequate

in others, while none could walk with a heel-toe gait. They were advised to repeat the operation.

Discussion

The aims in correction of foot-drop are attainment of active dorsiflexion of the foot above 90 degrees and restoration of the heel-toe gait. We have used the transfer of the tibialis posterior to the toe tendons as our method of choice. In 20 of 25 cases we have obtained good results, adequate dorsiflexion of the foot and restoration of the heel-toe gait. In our opinion when the foot can be dorsiflexed above the neutral position a good result is obtained. Adequate training by physiotherapy before and after surgery is essential for success. We have found this method of treatment of foot-drop to be excellent. Self-care and proper protective foot-wear is essential to keep the foot free of ulcers.

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Pseudoepitheliomatous hyperplasia in trophic ulcers in leprosy patients. A 28-case study

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Accepted for publication 13 February 1996

Summary Between 1984 and 1993, pseudoepitheliomatous hyperplasia developing in chronic ulcers were observed in 28 former Senegalese leprosy patients, which amounts to an annual frequency of 1·9 per 1000 ulcers. Correct diagnosis could only be made by histopathological examination of specimens taken from the depth of the lesion. Amputation was carried out on 17 patients and local excision on the other 10. Recurrence of growth was observed in 8 of the 10 patients treated by excision; in all of these 8 cases below knee amputation had to be subsequently performed. From our experience, it may be assumed that local excision should be carried out only in the case of small tumours. Since the aim of surgical procedure is to allow the patient to have physical autonomy, below knee amputation, followed by adaptation of prosthesis, should be the procedure chosen in the other cases.

Introduction

Several papers have shown that malignant tumour may develop in plantar ulcers with an annual frequency of about 2 per 1000 ulcers.^{1–4} Nonmalignant proliferative lesions, with the appearance of fungating growths, may also develop in chronic ulcers. The diagnosis of these tumours, which are pseudoepitheliomatous hyperplasia (often called cauliflower growths), is not easy since, clinically, it is not possible to distinguish them from squamous-cell carcinoma. Moreover, the results of histopathological examination may differ according to the site in the lesion where the biopsy specimen is taken. The aim of the present paper is to report on our experience in Senegal where 28 cases of pseudoepitheliomatous hyperplasia developing in plantar ulcers in leprosy patients were diagnosed and treated between 1984 and 1993.

Material and methods

In Senegal, a country in West Africa with about 8 million inhabitants, the leprosy control programme is under the supervision of the medical doctor responsible for the

public health activities in each of the 10 administrative regions of the country. The medical coordinator of the programme is based at the Direction of Public Health Services in Dakar, the capital of Senegal. The Institut de Léprologie Appliquée (ILAD), where all the study patients were hospitalized and treated, is also located in Dakar. The Institute is responsible for the development of field-applied research programmes on leprosy, and also for the training of the physicians, the specialized nurses and the other technicians involved in the leprosy programme. It is also in charge of the specialized care of the leprosy patients hospitalized because they suffer reaction, neuritis or other consequences of the leprosy. Several physicians, including a surgeon, work full-time at the Institute.

In 1994, all the patients who had been hospitalized and treated at the Institute between 1984 and 1993 because they were suffering a pseudoepitheliomatous hyperplasia developed in plantar ulcers or in trophic ulcers of the leg were brought in for re-examination. At the moment of the initial hospitalization, the growths were examined for site, size, bleeding on palpation, signs of inflammation and involvement of regional lymph nodes. In all cases a biopsy specimen was taken from the growth before a surgical procedure. All biopsies were sent to the Institut Pasteur in Dakar for histopathological examination. Different surgical procedures were adopted depending on the result of the histopathological examination, and the site and extent of the growth.

Results

During the 10-year study period (1984–93), 66 patients were examined at ILAD because they presented a proliferative lesion developing, either in plantar ulcers or in trophic ulcers of the leg or the hand. The diagnosis of pseudoepitheliomatous hyperplasia was made for 31 of the 66 patients. There were 22 males and 9 females with a median age of 53 years; the lesion was observed in plantar ulcers in 29 of them and in chronic ulcers of the leg in the remaining 2. The period of time elapsed between the onset of ulcer and the appearance of growth ranged from 1 to 37 years (average 11.5 years).

The 32 tumours (one patient had two plantar ulcers, each with one tumour) presented a similar macroscopic aspect with several or all the following signs: proliferative lesion located in the fore-foot (14 cases), mid-foot (7 cases), heel (9 cases) and ankle (2 cases), size ranging from 5 to 12 cm, slight bleeding, infection, enlargement of inguinal lymph nodes. All the patients complained of pain at the site of the lesion. In all 32 cases, the result of the histopathological examination made on the biopsy specimen showed pseudoepitheliomatous hyperplasia, without signs of malignancy: hyperkeratosis of the epidermis slight or absent, no malignant mitotic figures and intact basement membrane. A second histopathological examination was performed in tissues taken from the depth of the lesion at the moment of the surgical procedure: in 3 cases the diagnosis was squamous cell carcinoma. The study population is therefore of 28 patients.

One patient died of gangrene before surgery. The following surgical procedures were carried out on the 27 remaining patients with pseudoepitheliomatous hyperplasia: above knee amputation in 2 cases, below knee amputation in 15 cases, fore-foot amputation in 1 case and local excision in 10 cases. Recurrence of the growth was observed in 8 of the 10 (80%) patients treated by local excision after a delay ranging from 2 months to 3 years

Table 1. Follow-up of 26 patients with pseudoepitheliomatous hyperplasia treated at ILAD between 1984 and 1993

Case	Age	Sex	Duration of ulcer	1st treatment	Follow-up (years)	2nd treatment	Follow-up (years)
1	50	M	10	AK amputation*	dead 0-10		
2	60	F	20	Excision	3		
3‡	54	M	5	BK amputation†	2-3		
			3	Excision	2-3		
4	60	F	37	BK amputation	17		
5	45	M	2	AK amputation	3-4		
6	35	F	5	Excision	Recurrence PEH 2-3	BK amputation	3
7	55	M	2	BK amputation	5-9		
8	64	M	10	BK amputation	dead 4		
9	68	M	7	Excision	Recurrence PEH 0-7	BK amputation	6-8
10	38	F	—	BK amputation	6		
11	55	M	20	BK amputation	5-10		
12	35	M	6	Excision	Recurrence PEH 3-1	BK amputation	4-8
13	60	M	10	BK amputation	7-9		
14	67	M	2	Excision	Recurrence PEH 0-5	BK amputation	2-2
15	58	M	4	BK amputation	8-11		
16	59	F	20	BK amputation	8-3		
17	51	M	—	BK amputation	10-1		
18	58	F	13	BK amputation	1-6		
19	46	F	3	Excision	Recurrence PEH 0-2	BK amputation	7-8
20	40	M	3	BK amputation	1		
21	46	M	3	BK amputation	dead 0-9		
22	72	M	1	Lisfranc amputation	7-6		
23	60	F	20	Excision	Recurrence PEH 0-5	BK amputation	5-8
24	57	M	32	Excision	Recurrence PEH 0-2	BK amputation	5-10
25	62	M	30	Excision	Recurrence PEH 0-4	BK amputation	6-11
26	66	M	20	BK amputation	5-2		

* above knee amputation;

† below knee amputation;

‡ patient with pseudoepitheliomatous hyperplasia (PEH) in each foot.

(average 11 months). In all of the 8 cases of recurrence, below knee amputation was then carried out.

By the end of 1994, data were available for 26 of the 27 patients (Table 1). Three of them had died. In one case the death was related neither to leprosy nor to a possible evolution of the tumour. The remaining two patients had died 9 and 10 months respectively after the surgical procedure (above knee amputation for one and below knee amputation for the other). In these two cases, the clinical picture, at the moment of death, was that of extensive cancer with pulmonary and inguinal and crural metastasis.

Discussion

The first point arising from our data is that the development of proliferative lesions, and, more especially, of pseudoepitheliomatous hyperplasia, in plantar ulcers does not occur as rarely as has been previously reported. It has been estimated that, in Senegal

during the study period of 1984–93, the annual population of former leprosy patients with trophic ulcers was about 1500, therefore, the annual frequency of pseudoepitheliomatous hyperplasia developing in plantar ulcers may be estimated at 1.9 per 1000 ulcers.

Regarding diagnosis, it must be emphasized that the 28 patients of the present study were part of a larger series of 66 elderly leprosy patients who were hospitalized and examined at ILAD because they presented a proliferative lesion, developing in a pre-existing trophic ulcer and suspected to be a malignant transformation. The diagnosis of pseudoepitheliomatous hyperplasia could be made only by histopathological examination. This statement is in agreement with the observation made by other authors,^{5,6} that it is impossible to distinguish clinically these malignant-looking tumours from carcinoma, which also develop in pre-existing ulcers. In our study, two patients died of an obvious consequence of their tumour, less than one year after the surgical procedure (amputation in both cases). Since the evolution was that of a malignant tumour, these were very probably two cases of squamous cell carcinoma misdiagnosed at histopathological examination. Such a result, together with the fact that in 3 other cases the answer of histopathological examination was pseudoepitheliomatous hyperplasia when made on a biopsy taken from the edge of the lesion, and squamous cell carcinoma when made on tissues from the depth of the lesion, clearly shows that correct diagnosis is not easy to ensure. It is essential, therefore, that the histopathological examination should be performed on several specimens of the lesion and, most importantly, that the diagnosis should not rely upon the results of histopathological examination of a peripheral biopsy.

Regarding the evolution of these tumours, our results are not essentially different from those presented by Srinivasan *et al.* or Swamy *et al.*^{5,6} but, regarding the line of treatment, we do not draw the same conclusion. These authors reported on series of 9 and 71 cases of pseudoepitheliomatous hyperplasia, respectively, in whom overall recurrence of the tumour was of about 20%; in our series, it was of 28%. However, the recurrence of growth was high in the patients treated by local excision, both in the series reported by Swamy (7 out of 18 patients, 39%) or in ours (8 out of 10 patients, 80%). These figures raise the question of the management of such tumours and, also, raise the question of the best surgical procedure to be adopted. A conservative approach in the treatment of cauliflower growths has been advocated in order to avoid mutilative surgery for the patient who is already handicapped by leprosy.⁵ But this recommendation was made mainly because it was assumed that malignancy is uncommon in cauliflower growths. From our data, it is clear that pseudoepitheliomatous hyperplasia represent only 40% of proliferative lesions arising in plantar ulcers, while carcinoma represent the remaining 60%. It should be kept in mind that the aim of the surgical procedure is, in the case of pseudoepitheliomatous hyperplasia, to allow the patient to have physical autonomy. Deep and wide excision often results in such anatomical damage to the footbone that walking is impossible; moreover the adaptation of prosthesis is also impossible. On the other hand, local excision is followed by amputation because of the recurrence of growth in a large number of cases (80% in our series). Therefore, the choice of conservative surgical procedure is questionable. In fact, from our experience, one may assume that local excision should be carried out only in the case of small tumours (less than 3 cm) and that below knee amputation, followed by adaptation of prosthesis, should be the procedure chosen in the other cases.

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Cost-effective footwear for leprosy control programmes: a study in rural Ethiopia

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Accepted for publication 13 February 1996

Summary A randomized, controlled trial of commercially available canvas shoes was carried out in a rural area of Ethiopia. Subjects with deformed and anaesthetic feet, most with ulceration, were given either canvas shoes or plastazote/moulded shoes and followed up for one year. Seventy-five percent of subjects with ulcers who used canvas shoes had no ulcer at the end of the study, while no significant change was noted in the plastazote group. The durability and acceptability of the shoes were also examined. Clients in remote areas who have no access to an orthopaedic workshop, but who have anaesthetic feet, with or without deformity, should have access to canvas shoes with an MCR insole. Two pairs are needed per year at a cost of US\$6·7 per pair.

Introduction

Plantar ulceration is a major complication of leprosy, which can lead to chronic infection, bone destruction, deformity and eventually amputation, often with prolonged periods of hospitalization.¹

The cause is repeated trauma to a foot rendered anaesthetic by leprosy neuritis,² while deformity may exacerbate the problem by causing an abnormal distribution of pressure during normal activities.³

It is well known that immobilization alone, which breaks the cycle of repeated trauma, leads to healing of most simple ulcers;^{4,5} this process may be augmented by simple wound care.¹ Many programmes, however, find that it is difficult in the long-term to assist people affected by leprosy in keeping themselves ulcer-free.⁶ This may be due to lack of knowledge in the care of feet, but is more likely to be due to their socioeconomic status which precludes rest for prolonged or even short periods.

The provision of special footwear can help to overcome this problem by spreading the pressure more evenly over a wider area of the foot, reducing the trauma to specific pressure points. The person can then effect a compromise between normal activity and complete rest, by reduced activity, the use of protective footwear and wound care.⁷ While the provision of footwear should be an integral part of any leprosy control programme,⁸ it may be very difficult for financial and logistic reasons to make this service available in practice, on a continuing basis.^{9,10}

Many leprosy control programmes have developed, or have access to, orthopaedic workshops which produce a range of special shoes, including plastazote shoes and boots, open MCR sandals and more sophisticated custom-made boots. However, there are major problems with special footwear, including:^{6,9}

Cosmetic: clients are easily identified as leprosy patients; this means that many do not wear the special shoes much, if at all.

Custom: e.g. shoes may never be worn inside the house (mentioned from Asia).

Occupation: e.g. working in paddy fields (also mentioned from Asia).

Maintenance and repair: most shoes only last 6 months if worn regularly and repairs are difficult to organize efficiently.

Provision in adequate numbers: this is impossible for most programmes, and often only hospitalized patients are served. In other words, the shoes are not used as a preventive measure, until severe damage has already occurred.

Recent studies in China^{11,12} using canvas shoes with an MCR insole showed an impressive record of ulcer healing and ulcer prevention. At ALERT, we have used the Chinese canvas shoes but found them to be of very poor durability.

More recently, the Ethiopian Canvas Shoe Factory has been able to produce a shoe deep enough to take an additional MCR insole (shore 15°, thickness 8 mm) and we have started to provide these in our control programme. The major advantages are the high acceptability to clients and the possibility of providing adequate numbers of shoes at short notice.

This study addresses certain important questions regarding the provision of footwear on a routine basis to people affected by leprosy:

- 1 Given the difficulty in supplying moulded sandals in the required numbers, would the provision of canvas shoes to people with deformed feet give acceptable results?
- 2 Can the provision of canvas shoes lead to the healing of existing ulceration, and the prevention of further ulceration, in people with anaesthetic feet (and even deformed feet)?
- 3 How acceptable and durable are the canvas shoes under field conditions?
- 4 How cost-effective are canvas shoes as compared to other methods of managing plantar ulceration in the long-term?

Methods

STUDY DESIGN

A prospective, randomized controlled trial was carried out near Sheshemane, Ethiopia from November 1994 to November 1995.

SUBJECTS

Seventy people affected by leprosy with deformed and anaesthetic feet, who were regularly attending a foot-care clinic, were randomly allocated to receive either canvas shoes or plastazote/moulded sandals; all had been using moulded sandals in the recent past and most had ulcers; verbal consent to take part in the study was obtained.

Randomization was by day of attendance at the clinic. Subjects were examined at the start and subsequently at 2, 4, 6 and 12 months by one of us (GS), together with one of two local supervisors. The majority were farmers living in and around the village of Kuyera.

Health education had been given in the past to these people, but no additional educational measures were taken during this study.

There were two exclusions from the plastazote group (one was admitted to hospital and the other refused to attend for follow-up). Results are reported for 68 subjects.

OUTCOME MEASURES

Ulcer size was measured at each visit and the area of ulceration was calculated according to the following formula: $0.785 \times \text{length} \times \text{width}$.^{13,14} At all follow-up visits, the shoes were examined for wear and tear and the subjects were asked a series of questions concerning the acceptability of the footwear and how helpful they found the shoes in assisting with their foot care.

COSTS

The cost of providing both types of footwear was also examined in order to provide a cost-effectiveness analysis (CEA). The canvas shoes were sold at the wholesale price to us, namely US\$6.7 per pair. The true cost of manufacturing the moulded sandals could not be ascertained, but is likely to be more than US\$20 per pair, the materials alone costing US\$12.7 per pair. Distribution costs were not examined.

Results

SAMPLE CHARACTERISTICS ON ENTRY

Table 1 shows the sample characteristics at the start of the study.

AREA OF ULCERATION

Figures 1 and 2 show the area of ulceration found at the start and at subsequent follow-up visits, for the plastazote sandal and canvas shoe groups, respectively.

Three of 28 subjects in the plastazote group never had an ulcer during the period of study, so 25 are included in Figure 2. Five subjects who were initially ulcer free, developed ulcers, at least one because the new plastazote shoes did not fit well. Twelve of 40 subjects in the canvas shoe group never had an ulcer during the period of study, so 28 are included in Figure 1. None who were initially ulcer free developed ulcers.

The geometric mean size of ulcers over time for the two groups is shown in Figure 3, with confidence intervals for each value. There is a highly significant difference between the two groups at the end of the study. All ulcers in the canvas shoe group decreased in size (the majority of them healing completely), except in two instances. In one case, the only one in which a large ulcer showed no improvement over the year, a biopsy showed epidermal hyperplasia (requiring surgical excision); in the other case, a new ulcer appeared at the one-year follow-up, said to be due to inexpert trimming of dead skin by the person himself.

Table 1. The characteristics of the two groups at the start of the study. Inversion was said to be present when part of the medial aspect of the sole was not in contact with the ground on standing or walking.

	Control group plastazote shoes	Experimental group canvas shoes
Total analysed	28	40
Age <45	16	21
>45	14	19
M : F	8 : 20	20 : 20
<i>Foot pathology:</i>		
Complete loss of protective sensation	28	40
Adsorbed toes (1 or more)	28	40
Ulceration	20	28
superficial ulcers (<5 mm deep)	7	14
deep ulcers (range: 5–15 mm deep)	13	14
Inversion of both feet	4	2
Inversion of one foot	8	9
Footdrop without inversion	5	6
Adsorbed forefoot: bilateral	10	4
unilateral	7	7

Deformed feet also did better with canvas shoes. Of the 11 subjects with inverted feet in this group, 9 had ulcers at the start (5 deep, 4 superficial) but only 4 had ulcers at one year. Of the 12 subjects with inverted feet in the plastazote group, 9 had ulcers at the start (6 deep, 3 superficial), but 11 had ulcers at the end of the study.

DURABILITY

In general, both types of shoes have a useful life of not more than 6 months if used on a daily basis. The plastazote insoles wore out in the majority of cases by 6 months while the soles and leather uppers remained in good condition. The canvas uppers were usually badly torn by 6 months, but the soles and MCR insoles of the canvas shoes remained in good condition.

We have attempted, in conjunction with the Canvas Shoe Factory, to strengthen the canvas uppers and the initial results are encouraging.

ACCEPTABILITY

Clients were asked how they themselves, their families and their neighbours liked the shoes and also how suitable the shoes were for their work. These questions were asked at each follow-up visit.

All the clients using canvas shoes found them excellent and more than 80% reported an excellent acceptance by family and neighbours, as well as suitability for work. One client, with a severely inverted foot in which the ulcer improved but did not heal, requested a pair of plastazote sandals for use at home and a pair of canvas shoes for work and activity away from home.

Approximately 60% of clients using plastazote sandals found them excellent, but full

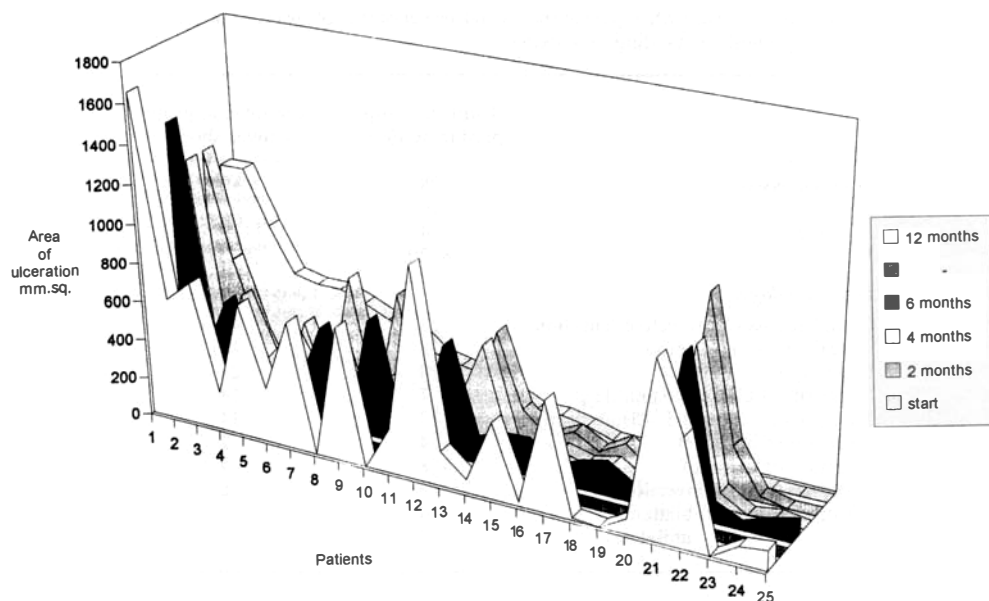


Figure 1. Ulcer size over time for the plastazote sandal group. The patients are placed in order of ulcer size at the start of the study and numbered 1–25. The area of ulceration for each patient at the start, is shown at the back of the diagram; moving towards the front, the area of ulceration at 2, 4, 6 and 12 months is seen for the same patients.

acceptance by family and neighbours was reported by no more than 20% at any time. Suitability for work was between 30% and 60%.

COST-EFFECTIVENESS ANALYSIS

Canvas shoes

We have shown that 21 (75%) of 28 subjects with deformed feet and chronic ulceration showed healing of the ulcers during a one-year period of regular use of canvas shoes.

The cost of these shoes is approximately US\$ 6.7 per pair and two pairs are required per person per year. For comparison MDT for MB patients costs about US\$ 15 per year.

Cost per ulcer healed: 16 ulcers were healed in the first 6 months and 6 more in the second 6 months. The first 16 ulcers were healed at an average cost of $28 \times 6.7/16 = 11.7$ US\$. The subsequent 6 were healed at a cost of $12 \times 13.4/6 = 26.8$ US\$. The average cost per ulcer healed was $28 \times 13.4/22 = 17.1$ US\$, over a one-year period.

Cost of ulcer prevention: 12 clients without ulcers but with anaesthetic and deformed feet, did not develop ulcers during the year; and 15 out of 16 clients with healed ulcers at 6 months remained ulcer-free for the second six months.

Ulcer prevention was therefore attempted for 40 subject/half-years at a cost of $40 \times 6.7 = 268$ US\$. Ulcers were prevented in 39 of these half-year periods. The cost per ulcer prevented was therefore $268/39 = 6.9$ US\$.

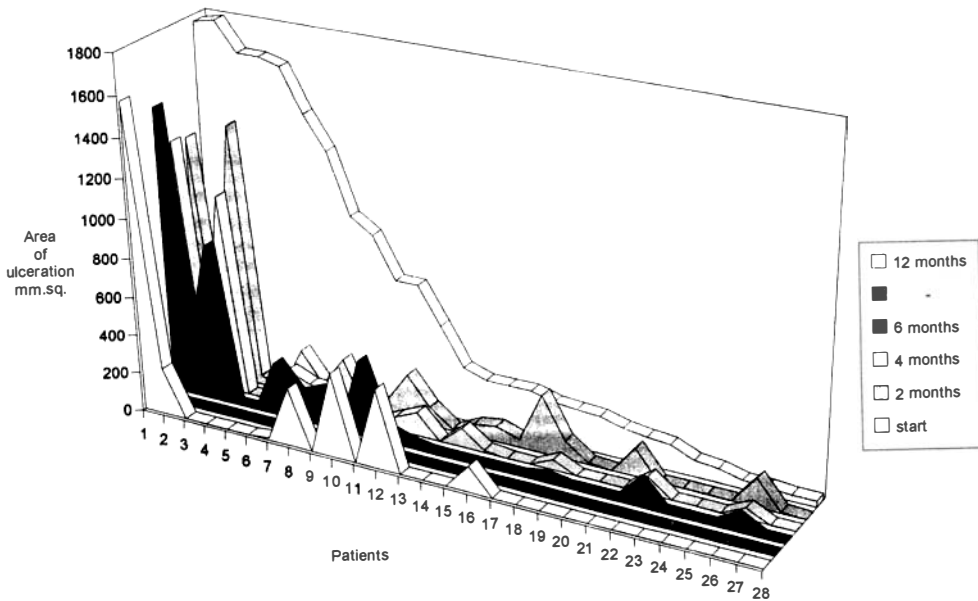


Figure 2. Ulcer size over time for the canvas shoe group. The patients are placed in order of ulcer size at the start of the study and numbered 1–28. The area of ulceration for each patient at the start, is shown at the back of the diagram; moving towards the front, the area of ulceration at 2, 4, 6 and 12 months is seen for the same patients.

Plastazote sandals

Plastazote sandals showed no overall benefit in healing and preventing ulceration. Eight of the group started without ulcers and 7 were ulcer-free at one year. Only 3 clients remained ulcer-free throughout.

LABORATORY TESTING OF CANVAS SHOES

Neuropathic plantar ulceration develops over areas of high pressure associated with deformity or joint limitation. Laboratory methods have been developed to show how effective different shoes are in reducing peak walking pressures.¹⁵ A sample of the Ethiopian Canvas Shoes (ECS) used in this study has been tested at the University of Liverpool, UK, and compared with a range of products available in different leprosy control programmes around the world. Pressure was measured at 10 points on the plantar surface of the foot during normal walking. Forty-one different shoes, sandals and insole materials were examined (including the ECS).

Table 2 compares the results for the ECS with the means and ranges for other samples and the results from walking barefoot. No shoes were consistently at the low end of the range across all measurements, but the ECS was one of about 6 pairs to have consistently below average pressures.

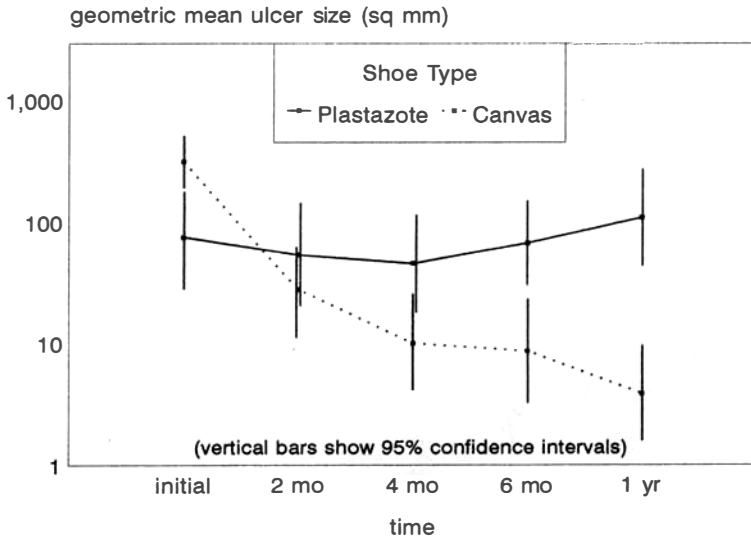


Figure 3. Geometric mean size of ulcers (mm²) over time for 25 Ethiopian subjects with plastazote sandals and 28 subjects with canvas shoes.

Discussion

Previous studies have shown that it is possible to achieve high rates of ulcer-healing through various techniques, such as: good wound care and immobilization in a centre of excellence—94% healed,⁴ podiatric orthoses—57% healed,¹⁴ and the use of canvas shoes in China—84% healed.¹¹ The challenge for control programmes is to achieve and maintain ulcer-healing on a wide scale at the lowest possible cost and by a method straightforward enough to be applied through the general health services.

This study was carried out under field conditions in a rural part of Ethiopia, 250 km from Addis Ababa, where a large number of people affected by leprosy have settled. It

Table 2. The maximal force and peak pressures recorded at various points on the sole of a normal foot during walking, in the Ethiopian Canvas Shoe (ECS), in 40 other shoes or sole materials from other leprosy projects and barefoot.

	Mean and range for all 41 samples				
	ECS	mean	low	high	Barefoot
Maximal force (Newtons)					
mean of readings for metatarsal heads	50	75	44	100	93
mean of readings for all 10 sites	76	88	68	105	103
reading for the heel	394	394	290	461	472
Peak pressure (N/cm sq)					
mean of readings for metatarsal heads	16.1	16.4	9.2	22.1	25
mean of readings for all 10 sites	12.8	13.3	9.5	17.3	20.7
reading for the heel	19.2	19.7	13	27.5	31.5

was prompted by the awareness that:

- People affected by leprosy have been taught how to carry out self-care, but a large number (which can only be guessed at) are unable to prevent chronic or recurrent ulceration of their anaesthetic feet, without appropriate protective footwear.
- The large numbers of former patients with anaesthetic feet (whether deformed or not) cannot be supplied with special footwear made in orthopaedic workshops. It is logistically impossible at present.
- Various commercial footwear manufacturers can make shoes which are protective for anaesthetic feet and are socially acceptable.

The study has shown that commercially produced canvas shoes are beneficial for clients who have deformed as well as anaesthetic feet. They are a cost-effective method of achieving ulcer-healing and or preventing new ulcers. Probably the most important aspect of the canvas shoes is their ready acceptance by both clients and community, while the specially made plastazote sandals immediately stigmatize the person as a leprosy case. It appears also that the canvas shoes are preferred for farm work and for walking on dusty and stoney grounds.

The study was unable to investigate why subjects with plastazote shoes showed no improvement overall. However, it is our impression that because of poor acceptability by the families and neighbours of clients, these shoes may not be worn on many occasions. However appropriate as a technical solution, plastazote sandals and even open MCR sandals, appear to be socially (and often functionally) unacceptable in Ethiopia.¹⁰ Conditions in different countries must be examined closely; for example, canvas shoes may not overcome problems such as working in paddy fields and not wearing shoes in the house, which are issues in India.⁶

At ALERT, we are trying to move away from the traditional monthly care clinic, where patients come for soaking, trimming and oiling, but then may do very little else for the rest of the month. We have recently started a pilot study of community-based self-care, in which a group of clients living near each other meet weekly to assist each other in self-care and to discuss problems. A supervisor and foot-care specialist have been visiting monthly in the initial phase and early results are very promising.

We would therefore advocate a foot-care programme in which self-care is promoted and commercially available footwear is provided twice a year. In the long-run, most clients would only see a health worker or supervisor twice a year. People who still have an apparently simple ulcer after 1 year of using canvas shoes would require further investigation to discover the reason and may need referral for surgery. There may be epidermal hyperplasia, as in one of our subjects, or even a malignancy; surgical correction of deformities and reduction of pressure points may be indicated. This would also be the most appropriate stage for the provision of special footwear, after discussion between surgeon, orthotist and technician. It may be that two types of footwear, for use on different occasions, will be the best solution for some people with deformed feet.

While the annual cost of providing footwear is noted to be very similar to the cost of MDT for MB patients, the provision is not limited to the two years of MDT. Thus there are many more clients requiring footwear than are registered for MDT and they will require it for many years. It may be that some manufacturers can produce such shoes for a lower cost, and part of the cost can be recovered from clients, but this will still be an expensive programme, requiring further long-term commitment from donors.

Acknowledgments

We thank Dr Diana Lockwood, Ms Heather Currie, Ms Catherine Benbow and Dr Roland Kazen for helpful comments; Dr Peter Byass for the statistical analysis; Dr Peter Byass for the statistical analysis; Mr Keith Linge for testing the shoes in the laboratory; Ato Gabre Yesus, Ato Sahelu and the Shashemane workshop for their cooperation; the ALERT field staff for their continuing care of patients and Wzt Almaz Mengesha for typing the manuscript.

ALERT is supported by ILEP members through NSL, the Netherlands Leprosy Relief Association.

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Two unusual nerve abscesses—lepromatous leprosy and pure neural leprosy: case reports

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Accepted for publication 22 April 1996

Summary We report two cases of nerve abscesses, one suffering from lepromatous leprosy (LL) and the other from tuberculoid neural leprosy. Neither had any signs of reactions. Both were untreated cases. Surgical nerve decompression and systemic prednisolone had resolved the nerve abscess in the first case, whereas the second one responded only to surgical nerve decompression. The unusual nature of clinical presentation of nerve abscess has been outlined.

Introduction

Nerve abscess in leprosy is commonly seen in paucibacillary leprosy especially during reactions, but has rarely been reported in multibacillary forms.^{1–4} Pure neural leprosy usually presents with thickening of one or more peripheral nerve trunks in association with sensory/motor disturbance or both.⁵ In this report we present two cases, one case of lepromatous leprosy (LL) and one case of pure neural tuberculoid leprosy, both exhibiting some unusual features.

Case reports

CASE 1

A 25-year-old man presented with a swelling near the right elbow region of 2 months and diffuse thickening of facial skin and ears of 2 years duration. Physical examination revealed multiple symmetrical coppery to erythematous papules, nodules and diffuse infiltrations involving the chin, forehead, ears, shoulders and chest. A large fusiform deep-seated nodule of 6 × 4 cm was seen on the medial side of right elbow region. The

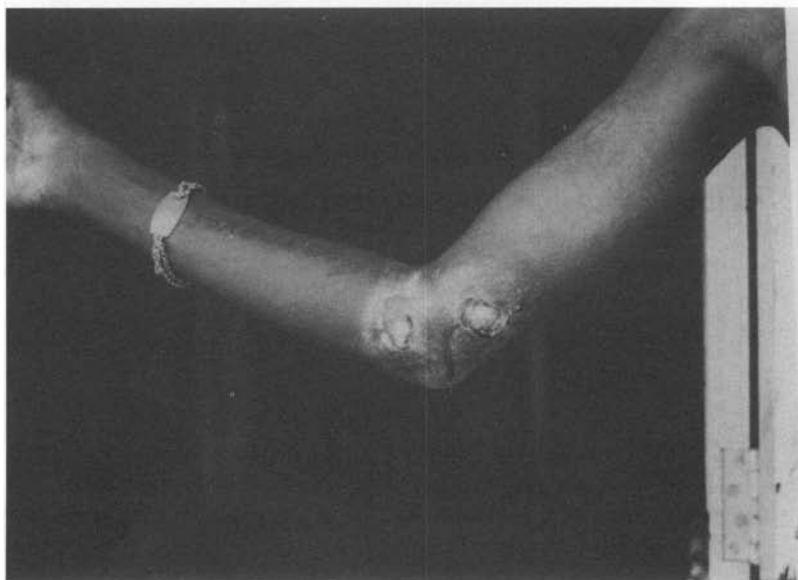


Figure 1. Shows fusiform swelling with discharging sinuses near elbow region.

skin over the mass was stretched, oedematous and adherent to underlying structures. There were multiple sinuses discharging pus (Figure 1). The nodule was very tender, movable from side to side but not vertically and was found to be continuous with the thickened ulnar nerve. The left ulnar nerve also was diffusely thickened. Bilateral and symmetrical thickening of the lateral popliteal, posterior tibial and radial cutaneous nerves was noted. Glove and stocking anaesthesia was noticed. There was no motor deficit or deformity. All other systems were normal. The patient was apyrexial.

A skin smear from an ear nodule and a pus smear from the sinus showed a MI of 20 percent and 0 percent, respectively. BI was 6+ (Ridley's logarithmic scale) from both the sites. The cytology of pus revealed necrotic material admixed with few neutrophils. The lepromin test was negative. Skin biopsy of a cutaneous nodule confirmed the diagnosis of LL. All other investigations were normal. The patient was put on multidrug therapy as recommended by WHO and oral prednisolone (40 mg) after surgical nerve decompression. The mass subsided and the sinuses healed in 1.5 months time. Steroids were continued for another 1.5 months in a tapering dose and stopped.

CASE 2

A 20-year-old man sought our advice for small swellings over his right upper limb. He denied any history of hypopigmented patches on the body or antileprosy drug therapy, but reported frequent attacks of pain and paraesthesia of the same limb. Clinical examination revealed 8–10 firm, mildly tender subcutaneous nodules (0.5–5 cm) distributed over the medial and lateral sides of the arm, medial and dorsolateral sides of the elbow and dorsolateral side of the forearm on the right side (Figure 2). The skin over the

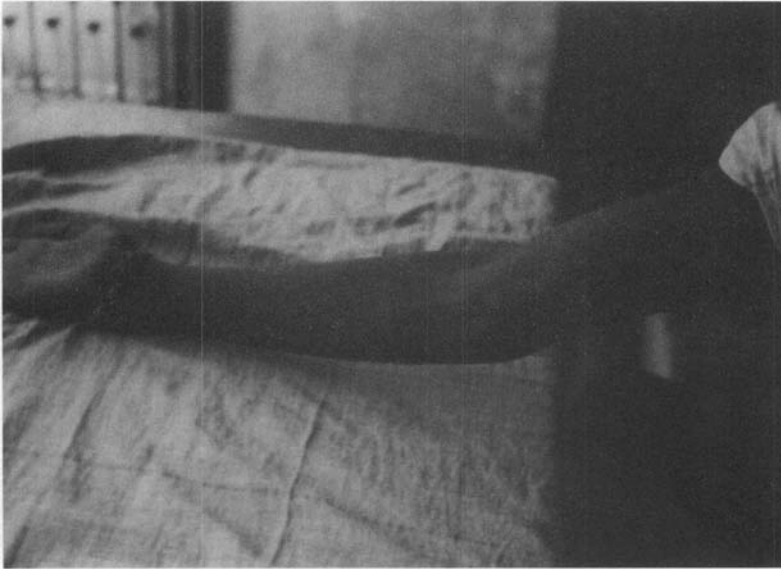


Figure 2. Shows subcutaneous nodules and beaded cutaneous nerves of forearm.

nodules was normal and free from underlying structures. Thick cord-like cutaneous nerves of the arm and forearm could be felt above and below the nodules. Patchy hypoaesthesia of the arm and forearm skin was noticed, but there were no hypopigmented patches anywhere on the body. The main peripheral nerve trunks were normal. Surgical exploration revealed a shiny fusiform nodule with glistening cords above and below. Manipulation of the cords elicited paraesthesia. The nodule was incised. Thick yellow pus was drained. Cytology of the pus showed caseating material, a few epitheloid cells and lymphocytes.

Pus and skin smears (from right forearm and ears) were negative for AFB. The lepromin test was strongly positive (3+). Nerve biopsy confirmed the diagnosis of neural tuberculoid leprosy (Figure 3(a) and (b)). The patient was put on MDT according to the WHO recommendations. The nerve abscesses required surgical nerve decompression as they failed to respond to oral prednisolone.

Discussion

In the earlier reports typical manifestations of Type 2 lepra reaction were present in most of the LL patients who developed nerve abscesses.^{1-4,6} The unusual feature of LL in our case is the occurrence of nerve abscess in the absence of other evidence of Type 2 lepra reaction.

A cold abscess of nerve appears to be rare, and its presence in pure neural leprosy indicates that it may be TT or BT. In such cases a lepromin test helps.⁵ The peculiar features of neural tuberculoid leprosy in the present case are: 1, the involvement of

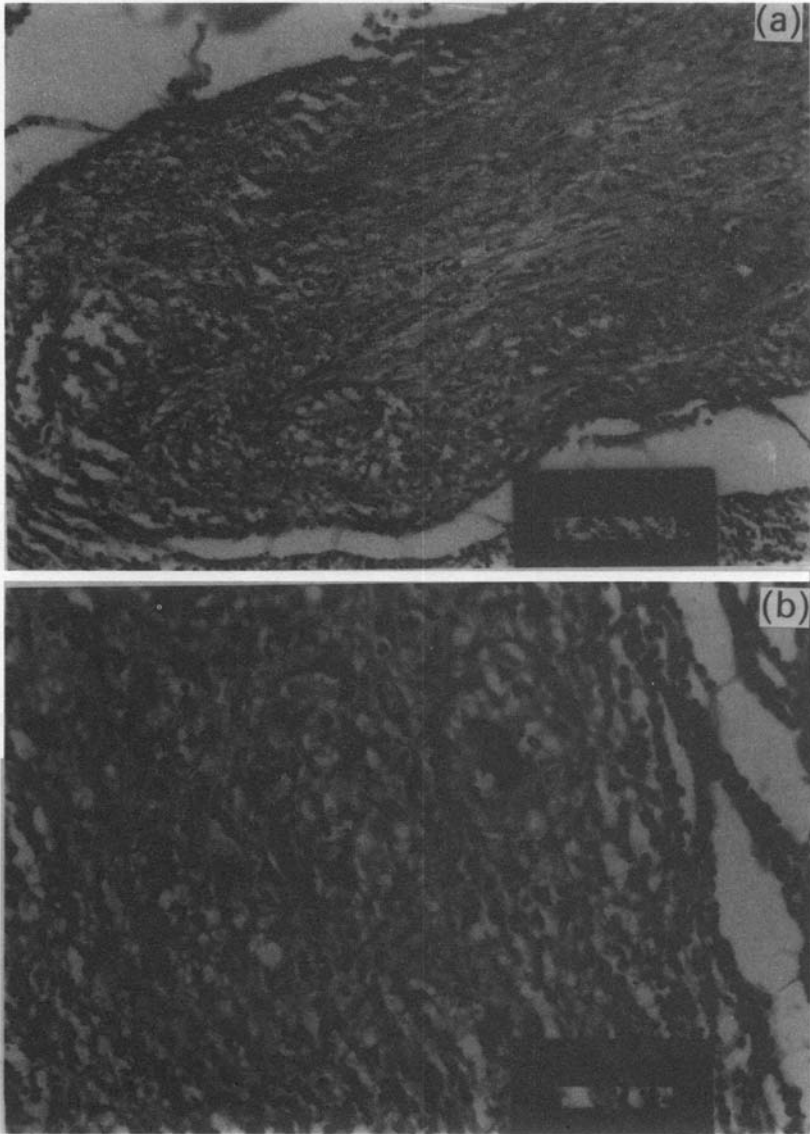


Figure 3. Histological features of biopsied nerve specimen. (a) Shows epithelioid granuloma consisting of epithelioid cells and lymphocytes involving the nerve (H & E 10×20); (b) Magnified view of the granuloma showing epithelioid cells, lymphocytes and Langhan giant cells (H & E 10×40).

cutaneous nerves alone in the form of subcutaneous nodules and headed cord-like structures, but without thickening of the peripheral nerve trunks; and 2, the appearance of multiple nerve abscesses as mildly tender subcutaneous nodules without any clinical evidence of Type 1 lepra reaction. In the present case these may be multiple cold abscesses. Multiple nerve abscesses are said to be more common in LL,¹⁻³ than in tuberculoid leprosy.⁴

Acknowledgments

We would like to thank Dr B. Srinivas, Senior Resident, Department of Pathology, Sri Venkateswara Institute of Medical Sciences, Tirupati for taking photographs and Mr. M. Venkata Ramana Reddy, Programme Assistant, Department of Pathology, Sri Venkateswara Institute of Medical Sciences, Tirupati for keying the manuscript.

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SPECIAL ARTICLE

Largest vaccine trial in Africa shows protection against leprosy but not tuberculosis

Results of the largest vaccine trial ever carried out in Africa are reported in the *Lancet*, 1996; **348**: 17–24.

More than 120,000 people in Karonga District, Northern Malaŵi were followed up for 5–9 years after receiving one or two BCG vaccines, or BCG plus killed leprosy bacilli. **Results show that two doses of BCG reduced the incidence of leprosy by 75%, but did not protect against tuberculosis.** The protection against leprosy was particularly evident among younger individuals. There was no evidence that the addition of killed leprosy bacilli contributed to protection against either disease.

The trial demonstrates that BCG—the most widely-used vaccines in the world—can have a considerable impact against leprosy, but none against tuberculosis, in the same population. **The findings provide an important guide for leprosy control, and a key for research on new tuberculosis vaccines, by revealing disease-specific activity of BCG which differs within and between populations.**

The trial commenced in 1986, in co-operation with the Government of Malaŵi and the people of the Karonga District. It was designed and directed by Professor Paul Fine of the London School of Hygiene and Tropical Medicine and funded by the British Leprosy Relief Association (LEPRA), other antileprosy agencies and the World Health Organization. It represents one of the largest and most detailed controlled clinical studies ever undertaken (see below for details).

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Supporting statement

Effective vaccines are urgently needed in the fight to control leprosy and tuberculosis, the most important mycobacterial diseases in the world. Leprosy is still widespread, but its elimination as a public health problem by the year 2000 is one of the major targets of the World Health Organization. Tuberculosis is now responsible for more deaths than is any other infectious disease, and has been declared a global emergency by the WHO. BCG vaccines are employed against both these diseases but are effective to a variable degree, and a major international research effort is now underway to develop and test new vaccines.

Though repeat BCG vaccination has been policy in many countries for prevention of tuberculosis and leprosy, its effectiveness has never been evaluated. It has been proposed that adding antigens of the leprosy bacillus to BCG might increase its effectiveness against leprosy. A double-blind randomized controlled trial to evaluate both these procedures was carried out in a rural area in Malaŵi, where a single BCG delivered by the routine health services had previously been found to halve the incidence of leprosy but to provide no protection against tuberculosis.

The trial began in 1986. 121,000 people were randomized to receive either a single (Glaxo) BCG, two BCG vaccines, or a new experimental vaccine combining BCG plus killed leprosy bacilli. Results obtained after 5–9 years of follow-up revealed that a second dose of BCG vaccine again halved the incidence of leprosy indicating that a two-dose schedule could prevent 75% of cases of leprosy. The protection appeared greatest among younger individuals (less than 15 years of age at vaccination). On the other hand, the additional BCG still failed to provide any protection against tuberculosis, and there was no evidence that the addition of killed leprosy bacilli contributed to protection against either disease.

These results provide an important new perspective on the action of BCG, which is both the most widely used yet most controversial vaccine in the world. They have immediate implications both for disease control and for research priorities. The evidence for appreciable protection against leprosy but no protection against tuberculosis, in the same population, indicates that the poor performance of BCG vaccines against tuberculosis in many tropical areas is attributable to selective immunological response rather than to problems with handling or administration of the vaccines. The demonstration of this clear dichotomy in BCG's effect provides a key to the riddle of BCG's variable behaviour, which has obstructed efforts to develop improved mycobacterial vaccines.

The results further confirm that BCG vaccination is playing a major role in reducing leprosy incidence worldwide, and indicate that repeated BCG vaccination of high-risk individuals will be an appropriate strategy in populations where leprosy is common.

The BCG vaccine employed in this trial, and in the Malaŵi national programme, is identical to that used in routine BCG vaccination in the UK, where it is known to impart consistently high (approximately 80%) protection against tuberculosis. Comparison of the responses to this vaccine in the UK and in Malaŵi should help researchers to understand the differences in vaccine action in different populations and hence to design better vaccines against both leprosy and tuberculosis.

The Karonga Prevention Trial is the largest vaccine trial ever carried out in Africa, the first trial ever carried out of repeat BCG vaccination, and the only combined leprosy–tuberculosis vaccine trial in the world. The trial was designed and directed by Professor P. E. M. Fine and Dr J.M. Ponninghaus from the London School of Hygiene and Tropical Medicine, and was supported primarily by the British Leprosy Relief Association (LEPRA), with co-operation of the Malaŵian Ministry of Health. Additional support came from the International Federation of Anti-leprosy Organisations (ILEP) and the UNDP/World Bank/World Health Organization Special Programme on Research and Training in Tropical Diseases.

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Karonga Prevention Trial. Randomized controlled trial of single BCG, repeated BCG, or combined BCG plus killed *Mycobacterium leprae* vaccine, for prevention of leprosy and tuberculosis in Malawi. *Lancet* 1996; **348**: 17–24.

LEPRA, The British Leprosy Relief Association, is a medical charity, founded in 1924. The current Director is Mr Terry Vasey. Dr Jo Colston is Head of the Medical Research Council's Mycobacterial Laboratory at the National Institute of Medical Research, and is Chairman of LEPRA's Medical Advisory Board. LEPRA's main objective is the eradication of leprosy, in pursuit of which it supports field control programmes and funds research aimed at combating the disease. Because of the association between tuberculosis and leprosy, LEPRA is also involved in research and control of tuberculosis. For further details please contact LEPRA, Fairfax House, Causton Road, Colchester CO1 1PU, UK. Tel: 44(0)1206 562286; fax: 44(0)1206 762151.

The London School of Hygiene & Tropical Medicine is a post-graduate medical school of the University of London and the leading institution in Europe for public health and tropical medicine. For further details of this paper and of the work of the LSHTM, please contact Dr Barbara Judge, Project Officer 44(0)171-927-2464, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT, UK.

Obituary

**PAUL TEBEFIA ODEGHE, MFR, DSC (Ilorin),
FWCP, FMCPH, LRCP, LRCS (Dublin–Ireland)
DTPH (London) 1926–1995**

Dr P. T. Odeghe, retired Chief Consultant Leprologist passed away in the early hours of Friday 21 April 1995 at the age of 69 years.

Pa Odeghe was born at Uvwiamuge in Ughelli North Local Government Area of Delta State, Nigeria on 30 March 1926.

After his primary and post-primary education, he trained as an engineer and served with the Federal Department of Works. However, his interest lay in medicine and so he went to the Royal College of Surgeons in Dublin, Ireland from 1953 to 1959. He returned to Nigeria in 1960 and worked as a medical officer for the then Western and Midwestern Regional Governments from 1960 to 1965. In 1965 he returned to the United Kingdom and studied at the London School of Hygiene and Tropical Medicine returning to Nigeria in 1966 to take charge of the leprosy control programme at the Specialist Hospital, Ossiomo, then the former Bendel State.

He worked in Ossiomo for 19 years rising to the status of Chief Consultant and Medical Director of the former Bendel State Leprosy Control Service until retirement in June 1985. Thereafter, he went into private practice establishing the Odeghe Clinic in Sapele where he was the Medical Director until his sad demise.

With the death of Pa Odeghe, Nigeria has lost a leading leprologist, humane physician, able administrator, teacher, compassionate father and loving husband.

His extensive activities (too numerous to mention) in conjunction with the surgical and medical treatment of leprosy patients, as well as the control of the disease in and outside the country resulted in his engagement in numerous related organizations. As a result, he was a recipient of many national and international awards which include the National Award of Member of the Federal Republic of Nigeria (MFR) in 1978 and in 1982, the Honorary Degree of Doctor of Science (DSc) by the University of Ilorin, Nigeria. He served as a member of the World Health Organization (WHO) Expert Panel of Leprosy and was also the Medical Adviser on Leprosy to the Federal Ministry of Health.

He was an author and presented many scientific papers at various National and International Conferences.

He was the foundation on which the present leprosy control in Nigeria was built on and his activities were all encompassing. There was no area in the life of the average leprosy patient that his humane touch did not influence, whether it was medical, surgical, social, spiritual or rehabilitation.

To him, leprosy control was not a matter of life or death, it was much more than that. He was a great disciplinarian and his devotion to duty could not but rub off on his subordinates, whom he regarded as colleagues and friends.

For those of us who had the rare opportunity of working closely with him: we have lost a

mentor, a father figure, adviser and teacher. We take consolation that the current crop of leprologists in Nigeria have carried on his work.

We pray for his wife, Helen, and their seven children, knowing full well that 'Papa' is resting peacefully in the Lord's bosom watching over us all.

M. C. NDUKWU & T. O. MAJOROH

Letters to the Editor

AN UNUSUAL REACTION TO RIFAMPICIN IN A ONCE MONTHLY DOSE

Sir,

We came across an unusual reaction to a supervised monthly dose of rifampicin in a patient with multibacillary leprosy.

A 47-year-old male, nonalcoholic, a case of BL leprosy was taking MDT comprising a dapsone 100 mg tablet orally daily, a clofazimine capsule 50 mg daily, and a rifampicin 600 mg capsule once a month on an empty stomach for the last 1½ years regularly. He complained of fever with chills and bleeding from the gums, after taking the monthly dose of rifampicin for the last 3 months.

The patient was admitted and a rifampicin 600 mg capsule was given on an empty stomach under observation. One hour after ingestion the patient developed fever with chills, his BP started falling, his respiratory rate was 32 per minute and he had no adventitious sounds in the lungs. The patient was given an injection of hydrocortisone hemisuccinate, 200 mg, intravenously. He was given 1 bottle of normal saline (500 cc) fast intravenously. Warm blankets and leg elevation was given. Within one hour his general condition improved.

After 3–4 hours, he developed punctate bleeding spots over tongue, buccal mucosae and gums. He had scanty bleeding from the oral cavity. This bleeding stopped after a day. The previous three episodes were the same but of milder intensity.

No purpuric spots on the skin or bleeding from other sites were noted.

Laboratory abnormalities were haemoglobin 10 gm%, urine microscopy showed abundant RBC. The bleeding time was slightly raised (6 min 35 s) with a normal clotting time, normal platelet count (3.2 lacs per cubic millimeter) normal prothrombin time and normal LFTs and FTS.

On the 3rd day the bleeding time and urine microscopy was normal. Thereafter, rifampicin was omitted from the antileprosy treatment.

Discussion

Adverse reactions to rifampicin on daily or intermittent intake are cutaneous rashes, gastrointestinal disturbances, hepatitis and thrombocytopenic purpura.¹⁻³

Reactions such as flu-like syndrome, shock, shortness of breath, renal failure, haemolytic anaemia usually occur after intermittent rifampicin intake as in leprosy.¹⁻³

It seems to be less common when a drug is given once a month² as compared to a once a week regimen. Reactions are more frequent when the dosage of rifampicin is 20 mg or more per kg body weight.²

In this case, fever with chills, circulatory collapse are well-known adverse effects to the intermittent intake of rifampicin but bleeding from the oral cavity with raised bleeding time and normal clotting time, prothrombin time platelet count could not be explained.

The transient changes in bleeding time was most probably because of temporary platelet

dysfunction induced by rifampicin rather than thrombocytopenia as the platelet count was normal. Such an unusual reaction to rifampicin has not been reported before.

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PURE NEURITIC LEPROSY OF THE SUPRAORBITAL NERVE

Sir,

An unusual presentation of leprosy affecting only the supraorbital nerve is described.

Case Report

A 21-year-old man was referred from a clinic elsewhere to rule out any dermatological cause accounting for bouts of pain confined to the right half of his forehead. He had been experiencing them for the past 9 months. The recurrent bouts were characterized by a dull ache and tickling sensation that persisted for sometime and then subsided. It extended from the right side of the forehead and diminished as it passed along the head on the same side. They were unrelated to food, and personal habits like smoking and alcoholic beverages. The bouts were provoked by washing or wiping the face. He had taken symptomatic treatment and at not time had he had skin lesions. General examination revealed a person of average build and nutrition.

The skin of the face and rest of the body appeared normal. On palpation of the forehead a moderately thickened linear cord was felt above the right eyebrow corresponding to the supraorbital nerve, that on gentle pressure evoked the symptoms he had experienced. The closure of eyelids was normal and corneal sensation was preserved. A provisional diagnosis of primary neuritic leprosy was made. Biopsy of a longitudinal sliver of nerve tissue revealed a compact epithelioid cell granuloma with giant cells indicating tuberculoid type of leprosy. The Mitsuda reaction to intradermal lepromin test was strongly positive showing an erythematous nodule measuring 12 mm in diameter.

Discussion

In association with skin lesions, leprosy is an important cause of peripheral neuropathy.¹ Primary or pure neuritic leprosy is an established entity particularly in India² affecting usually the peripheral nerves of the limbs at sites where they are most superficially placed. Of the cranial nerves, the zygomatic branch of the facial and the ciliary branch of the ophthalmic division of the trigeminal may be affected, giving rise to lower eyelid paralysis and corneal anaesthesia respectively. Involvement of the supraorbital nerve, a sensory branch of the ophthalmic division, is quite rare and found in 16% along with skin lesions of leprosy,³ which are pointers to the diagnosis. In our patient the symptoms were localized to one half of the head and the thickening of

the supraorbital nerve was appreciable only on palpation. Though such rare neuralgic presentations have been mentioned by experts⁴ they are likely to be misdiagnosed by physicians without a high index of suspicion, to whom these patients generally report for the first time. Nerve biopsy is the only method to confirm the diagnosis.

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DEVELOPMENT OF LIFE-THREATENING THROMBOCYTOPAENIA IN A PATIENT ON MDT AND PREDNISOLONE

Sir,

A 32-year-old man was diagnosed as having lepromatous leprosy in February 1995 at one of our field clinics. He had generalized skin infiltration, symmetrically enlarged peripheral nerves and a positive skin smear with an average BI of 4.66. He presented to the clinic in ENL reaction. He had been receiving MB/MDT privately since July 1994, and had begun ENL reaction one month before coming to our clinic.

The patient received MB/MDT with rifampicin 600 mg monthly supervised, clofazamine 300 mg monthly supervised, DDS 100 mg daily and a course of high-dose clofazamine 300 mg daily for his ENL, tapered according to response. He also began prednisolone 40 mg daily to control his ENL.

Since beginning treatment from our clinic, he continued to suffer repeated ENL reactions occurring whenever his prednisolone dose dropped below 15 mg/day and developed a typical crushingoid appearance with moon face and a buffalo hump. However, by December 1995 his ENL had subsided enough to allow the prednisolone dose to be reduced to 5 mg/day. Two weeks after reducing his prednisolone to 5 mg/day, the patient suffered a severe nose bleed necessitating his admission to the local Medical College Hospital. A blood count carried out there showed his platelet count to be only 15,000/ml. He was transfused with 8 units of fresh blood and his prednisolone increased to 60 mg/day to treat the thrombocytopaenia. Subsequently the patient made a good recovery, his platelet count in January 1996 being 125,000/ml with a haemoglobin of 13.6 g/ml and a total white count of 11,500/ml.

Thrombocytopaenia is recognized as a side-effect of rifampicin, but not of DDS or clofazamine. It is hypothesized that in this case the relatively high doses of prednisolone being given for his ENL reaction 'masked' the development of the thrombocytopaenia until the dose dropped to a low enough level (5 mg/day) for it to develop and cause his near-fatal nose bleed.

The case provides a salient reminder of the potential hazards of rifampicin therapy.

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R. CROSS

DELUSIONAL PARASITOSIS IN LEPROSY

Sir,

Delusional parasitosis is a psychocutaneous disorder, occasionally found to be associated with systemic diseases¹, such as pellagra, vitamin B₁₂ deficiency, cerebrovascular disease, disseminated sclerosis, severe renal disease, neurosyphilis and temporal lobe epilepsy.

The feeling of insects crawling under the skin has been reported by many patients of leprosy in India². We have seen three cases of delusional parasitosis, who were later detected to have leprosy.³⁻⁵ The delusion was discrete, systematized and the patients responded to pimozide (4-12 mg/day) within 3 months of treatment. One patient relapsed within 2 weeks of stopping pimozide of her own accord but again responded within 1 month on restarting the drug.

The exact mechanism, of the evolution of the delusional system in leprosy is not known. One hypothesis is that these patients develop a profound inability to discriminate between normal and abnormal somatic sensations and the delusion may be mediated by limbic system dysfunction. This dysfunction may be the result of overactivity of the dopaminergic system as evidence by the efficacy of the specific dopamine antagonist pimozide¹, leprosy is essentially a disease of the peripheral nerves and does not involve the central nervous system, but in it, neuritic manifestations may be acting as a trigger for the development of delusion of parasitosis.

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COMMENT: 'SILENTLY ARISING CLINICAL NEUROPATHY' AND EXTENDED INDICATION OF STEROID THERAPY IN LEPROSY NEUROPATHY

Sir,

I would like to make a few comments on the article entitled 'Silent neuropathy' in leprosy: an epidemiological description.¹

As a first step in an epidemiological evaluation, it is essential to provide a precise definition of the disorder. To more accurately define the ideas put forward by the authors, the expression 'Silently arising clinical neuropathy' would better describe the neurological complications in leprosy as presented within the framework of 'silent neuropathy'. In the same line of thought, 'quietly arising nerve paralysis' would be more appropriate than 'quite nerve paralysis', since by the time paralysis is detected, the nerve damage is no longer quiet, because it has been detected clinically.

The words 'clinical neuropathy' refer better to the pre-clinical stage of the nerve damage which has preceded the clinical neuropathy as detected by routine voluntary muscles and touch sensibility testings. Indeed, it is assumed that symptoms like nerve function deficit are found in those patients who already have severe pathological changes.²

The pathogenesis of nerve damage in leprosy reversal reaction and erythema nodosum leprosum are considered to be accelerated phenomena of the basic and inherent cell-mediated and humoral autoimmune phenomenon present during leprosy.³

As for the pain which eventually attends the neuropathy, it may be associated with the rate of fibre degeneration⁴ and is certainly directly related to the accelerated episodes of nerve damage during overt reactions.

Taking into account the above-mentioned fundamental concepts, 'Silent neuropathy' may actually be considered to be the basic progressive neuropathy inherent to leprosy.

Extending the classical indication of steroid therapy in leprosy to include also 'Silent neuropathy', the hypothesis comes down to a very simple proposition of treating all leprosy cases with steroids. Should we consider this as an approach to the treatment of nerve damage in leprosy?

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COMMENT: NEWLY 'REGISTERED' VS 'DIAGNOSED' LEPROSY PATIENTS IN THE LITERATURE

Sir,

While going through the various articles I find that a slight difference in the language, knowingly or unknowingly, makes a big difference in the interpretation of the data. I refer to an interesting article¹ in which the authors have reported disabilities in 260 new and previously untreated patients who presented at the clinics. In the methodology they have specified that these were newly-diagnosed leprosy patients. Those of us who work in the field know that many of such patients have been diagnosed as cases of leprosy by general practitioners or healers but have not taken specific treatment so far. Unless a specific inquiry is made one should call these patients as newly-registered cases rather than newly-diagnosed cases. This makes a lot of difference to the health planners. Twenty-one percent grade II disability in newly-diagnosed cases, where a leprosy control programme is in operation, shows that the survey component has been very poor and needs strengthening. If these patients were newly registered but were diagnosed earlier indicates that there are strong social and cultural factors which are not allowing the patient to accept this as disease and take proper medical treatment. Here we need to bring a change in attitude by appropriate health education.

Our comments do not pertain only to the article referred to but to all such reportings which should specify if the cases were newly diagnosed or newly registered. If these patients knew about

the disease earlier, it is important to record the time gap between diagnosis and registration and reasons for this.

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COMMENT: CURRENT CONCEPTS IN THE SURGICAL MANAGEMENT OF LAGOPHTHALMOS IN LEPROSY

Sir,

The article by Paul Courtright and Susan Lewallen in *Lepr. Rev.* (1995) **66**, 220–23 calls for a response from an African surgeon. Under *Results* they state that in Africa surgeons rely on tarsorrhaphy almost exclusively in the management of lagophthalmos. First-line treatment is of course, to suppress the ‘reaction’, which often will bring back adequate eye closure. Only then is surgery indicated.

It is not possible for me to know if they surveyed the unit where I worked from 1954 to 1982. Unfortunately, I have no exact figures, but I know we performed a good number of temporalis transfers after obtaining the proper tendon tunneler in about 1965. I think we would have performed at least 30 of that procedure. Without exception patients obtained satisfactory closure when told to clench their teeth. But the number who initiated closure of their eye(s) was very small. We concluded that only those patients less than 30 years of age and who had retained sensory perception of the cornea would initiate closure spontaneously.

For that reason we resorted to doing both a nasal and temporal tarsorrhaphy as depicted in the diagrams. The nasal ‘Z’ plasty is of limited value, as it cannot be very extensive without injury to the lacrymal puncta. It should be used along with a temporal tarsorrhaphy. To determine where to extend the incision to point ‘A’ in the second illustration, pinch the lids shut laterally as in Figure 1. After completing the procedure as outlined in Figures 1 and 2, close with interrupted sutures, leaving a few long to tie over small gauze rolls that may be impregnated with Tr. benzion to repel flies. This dressing makes it possible to keep the eye(s) uncovered. The sutures are removed after a week.

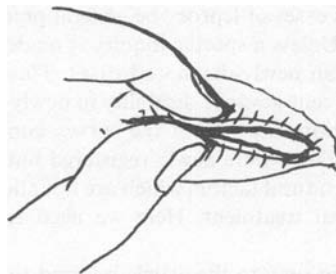


Figure 1. Extent of tarsorrhaphy: Test how much passive closure of the lids is needed to cover the cornea.

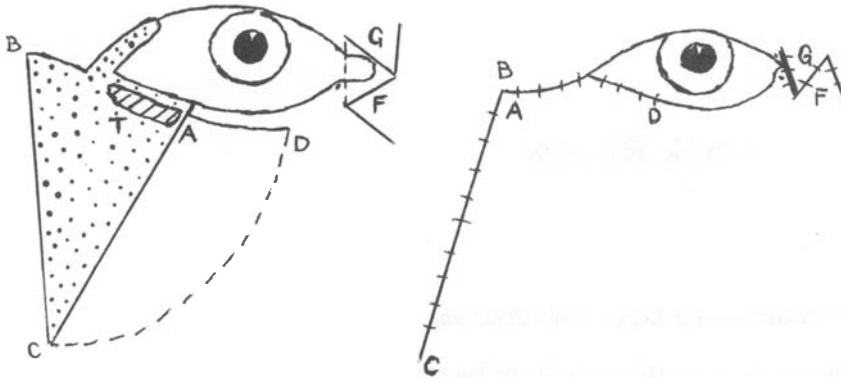


Figure 2. Tarsorrhaphy for lagophthalmos of right eye. Lateral tarsorrhaphy: The dotted triangle of skin, the lateral part of the tarsal plate and the mucocutaneous junction beneath the lashes of the upper lid are removed. ACD is undercut, and A is sutured to B. 'T' is the tarsal plate. Medial tarsorrhaphy: Two v-shaped flaps (F & G) are raised, the intervening skin and mucous membrane are removed, and the flaps interposed and sutured. The puncta are spared.

Remove the temporal $\frac{1}{3}$ rd of the upper lid margin taking care to excise the lash hair follicles completely.

It is impossible to recall how often we carried out this procedure, but it was done far more frequently than the temporalis transfer—possibly 100 times or more. I recommend this technique both because it is technically simpler than the temporalis transfer, and because functionally the results are much to be desired.

Although I cannot be specific, I am quite sure there have been several other institutions in Africa using the temporalis transfer for lagophthalmos during the past 40 years.

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R. E. PFALTZGRAFF

Book Review

Hubert Sansarricq: *La Lèpre. Coordination.*

This manual of 384 pages (reinforced paperback) is part of a series under the heading 'Universités francophones (French-speaking universities), established in 1988 by the Agence francophone pour l'enseignement supérieur et la recherche (AUPELF-UREF) for the publication of works of reference, specialized manuals, records of scientific meetings and colloquia, and intended mainly for French-speaking universities and research workers. The series will be multidisciplinary, written by authors from the South and North, and based on research and recent studies in French from various parts of the world.

'La Lèpre' has been coordinated by Dr H Sansarricq, formerly Chief, Leprosy Unit, Division of Communicable Diseases, WHO, Geneva, with the help of 35 colleagues, mainly from francophone countries. The 'avant-propos' stresses that one of the main objectives has been to describe all aspects of the disease, in the hope that students, generalists, public health experts and research workers will be able to acquire, or to expand, their knowledge of leprosy. The 6 main parts, comprising 39 chapters, are headed: introduction; epidemiology; clinical findings and diagnosis; immunology; management of the patients; and anti-leprosy campaign. The central part of the book carries 47 colour pictures of various aspects of leprosy, including differential diagnosis and the text is profusely illustrated throughout by black and white drawings, diagrams and photomicrographs.

Dr Sansarricq has coordinated the production of a major work of outstandingly high quality on all aspects of leprosy. Apart from its value as an up-to-date source of factual knowledge and information, this book is of great interest on account of its penetrating consideration and discussion of some of the difficulties which still confront those working towards the control, elimination or eradication of leprosy. Whilst acknowledging the astonishing changes which have come about (and continue) due to the progressive implementation of multiple drug therapy (MDT), as advised by WHO in 1982, emphasis is given to: (a) the predictable difficulty of eradicating leprosy (as opposed to attaining an elimination level of less than one case per 10,000 of the population, as defined by WHO), in the absence of an effective vaccine; (b) the state of uncertainty, at this stage, of the possible effects of the HIV pandemic on leprosy, and (c) the prevention and management of disability, '... so far, generally neglected, despite its essential importance.'

This book deserves, and will no doubt receive, widespread acclaim and distribution. In his comments on the back cover, Professor Marc Gentilini, Member of the National Academy of Medicine, describes it as *the* work of reference on leprosy at the present time, not only for francophone countries, but also for others in search of a book which is '... structured, up-to-date and written by experienced people.' However, for those whose first language is not French, it should be pointed out that the level is essentially medical student, graduate or qualified doctor; most UK readers will find it difficult unless they have at least 'A level' French, plus some knowledge of medical terms. The price is 280 French francs, but with significant reductions for countries in the South.

Further enquiries: Ellipses, 32 rue Bague, 75015, Paris, France. Tel (1) 4567 7419. Fax (1) 47 34 6794.

A. Colin McDougall

Published by Ellipses, Paris, France, 1995

Teaching Materials and Services

WHO: Chemotherapy of leprosy

This booklet carries the Report of a WHO Study Group in the *Technical Report Series* No. 847, WHO, Geneva, 1991. The contents include: present situation; currently available antileprosy drugs; recommended regimens; operational aspects, research trends and needs. The following information on antileprosy drugs is reproduced from pages 10 and 11:

Fluoroquinolones

Although a large number of fluoroquinolones have been developed, some such as ciprofloxacin are not active against *M. leprae*; of those which are, most interest has focused on ofloxacin. Like all fluoroquinolones, ofloxacin interferes with bacterial DNA replication by inhibiting the A subunit of the enzyme DNA gyrase. It was used in a clinical trial by Ji & Grosset in a dose of 400 mg daily. A single dose had some bactericidal activity, although less than that of a single dose of rifampicin, and 22 doses killed 99.99% of the viable *M. leprae*. Ofloxacin is well absorbed, reaching a peak serum concentration of 2.9 µg/ml after 2 hours, and has a half-life of 7 hours. Most of the dose is excreted unchanged in the urine. Side-effects include nausea, diarrhoea and other gastrointestinal complaints, and a variety of central nervous system complaints including insomnia, headaches, dizziness, nervousness and hallucinations. Serious problems are infrequent and do not usually require discontinuing the drug.

Minocycline

Minocycline is the only member of the tetracycline group of antibiotics that has significant bactericidal activity against *M. leprae*. This may be because of its lipophilic properties, which allow it to penetrate cell walls. The standard dose is 100 mg daily, which gives a peak serum level that exceeds the MIC of minocycline against *M. leprae* by a factor of 10–20. Its bactericidal activity against *M. leprae* is greater than that of clarithromycin, but much less than that of rifampicin. It was shown to be very effective clinically when administered as monotherapy in eight patients with lepromatous leprosy, although 2 months of therapy was required before all patients became negative for *M. leprae* as determined in the mouse-footpad model.

Like the other tetracyclines, minocycline inhibits protein synthesis via a reversible binding at the 30S ribosomal subunit, thereby blocking the binding of aminoacyl transfer RNA to the messenger RNA ribosomal complex. It is well absorbed, with a half-life of 11–23 hours. Side-effects include discolouration of teeth in infants and children, occasional pigmentation of the skin and mucous membranes, various gastrointestinal symptoms and central nervous system complaints, including dizziness and unsteadiness. Minocycline is commonly used for the long-term treatment of acne, which indicates that in general it is well tolerated.

Macrolides

Several members of this group, including erythromycin, have been evaluated as antileprosy drugs,

but only clarithromycin shows significant promise at this time. Studies in the mouse-footpad model have demonstrated the potent bactericidal activity of clarithromycin, but it is clearly less bactericidal than rifampicin. When clarithromycin was administered at a dose of 500 mg daily to lepromatous leprosy patients, 99% of bacilli were killed within 28 days and 99.9% by 56 days.

Clarithromycin is readily absorbed from the gastrointestinal tract and converted to its active metabolite, 14-hydroxyclearithromycin. A single dose of 500 mg produces a peak serum concentration of about 1.0 µg/ml in 1–4 hours, which subsequently decays with a half-life of 6–7 hours. About 38% of the dose is excreted in the urine and 40% in the faeces. Tissue concentrations are higher than those in serum.

Clarithromycin inhibits bacterial protein synthesis by linking to the 50S ribosomal subunit, thereby preventing elongation of the protein chain. It is relatively non-toxic. Gastrointestinal irritation, nausea, vomiting and diarrhoea are the most common problems, but they usually do not necessitate discontinuation of the drug.

Other drugs

With the possible exception of fusidic acid, other drugs available or under study with known activity against *M. leprae* are much less potent than those mentioned above or purely bacteriostatic. They include amoxicillin plus clavulanic acid, brodimoprim, thioacetazone and deoxyfructoserotonin. Given the large number of much more potent antileprosy drugs available which have the potential in MDT regimens for further marked shortening of the length of therapy, there is no justification for using any of these other drugs.

WHO: Training materials for tuberculosis

The Global Tuberculosis Programme of WHO has supplied the following information:

1. *Treatment of Tuberculosis: Guidelines for National Programmes*, World Health Organization 1993. This has been widely distributed to all countries and is intended to assist National Tuberculosis Programmes to formulate effective treatment plans for tuberculosis. This booklet provides standardized short-course chemotherapy regimens recommended by WHO.
2. *Managing Tuberculosis at the District Level*: This set of 10 modules (plus Course Director's Guide, Facilitator's Guide, Workbook and Answer sheets) is a training course intended to equip district TB coordinators in the necessary skills for management of TB control at district level.

The Global Tuberculosis Programme has trained approximately 4,000 national and regional TB Programme Managers during the past three years at global, regional, inter-country and national (in some countries) levels. In India, the Regional Workshop for South-East Asia was held in July 1993 in New Delhi followed by several national and state level workshops.

3. *Managing Tuberculosis at National Level*: The Global Tuberculosis Programme is developing a set of four modules which is intended to equip Tuberculosis Programme Managers with skills to incorporate the WHO strategy for TB Control into their programmes and to achieve the global targets for TB control. This is expected to be completed by early 1996.
4. In addition, we are in the process of preparing materials to address TB control issues in specific target groups such as refugees, HIV-infected TB patients, etc.

Further information: Global Tuberculosis Programme (National Programme Support), WHO, 1211 Geneva 27 Switzerland. Fax +44 41 22 7910746.

Tuberculosis training courses at ALERT, Addis Ababa, Ethiopia

As a result of the successful introduction of MDT, many leprosy programmes are facing a considerable reduction of patients in need of treatment.

In order to ensure efficient use of the available infrastructure (trained personnel, vehicles, laboratory and hospital facilities etc), many programmes are combining tuberculosis control with leprosy control. This new set-up creates new training needs. ALERT is responding to these needs by offering several courses featuring a tuberculosis training component.

Four courses focus on combined leprosy–tuberculosis programmes. All contain the following basic modules:

- Health promotion, including communication and psycho-social aspects of both diseases
- Clinical aspects of leprosy
- Clinical aspects of tuberculosis
- Management aspects of a combined programme
- Practical demonstration of a combined programme in the field
- Individual options chosen by each trainee according to his/her specific needs and interests

The duration and the relative importance of each module will vary for each course, taking into account the target group of the course.

The **Essentials of Leprosy and TB for Physicians** course is aimed at medical officers new to the field of leprosy and TB. In this course, the clinical aspects will receive particular attention. The **Management of Combined Leprosy and TB Control Programmes** course is aimed at physicians and senior programme managers who already have experience with leprosy and/or TB. There will be less emphasis on clinical aspects, which will be reviewed, and more on the management issues specific to combined programmes. Nevertheless, a properly selected candidate for one of these two courses could equally well profit from the other. This may be useful for projects with time constraints, as one course is offered during the first half of the year, and one during the second half.

The **Supervision of a District Leprosy and TB Control Programme** course is aimed at supervisors, either new to the field, or in need of a refresher course. There will be a thorough revision of the clinical aspects, and the management tasks will be taught in depth at a level appropriate for the district, through practical exercises.

The **Essentials of Leprosy and TB for Non-medical Staff** course is aimed at administrators, accountants, non-medical project managers, staff responsible for public relations or fund raising, either working in the field or with a donor agency. The course will mainly focus on familiarizing lay persons with the medical aspects of leprosy and TB, in order to allow them to communicate more effectively with the medical staff. As the target group of this course has many time constraints, the course is given in 2 weeks. It will be an intensive programme, involving evening study and weekend assignments. No options are included.

One course deals with tuberculosis only. The **TB Control for Physicians** course is aimed particularly at medical officers whose programme has newly changed from leprosy alone to leprosy and TB combined, although it will be useful for anyone who is new to the field of tuberculosis. The course will focus mainly on practical aspects of patient management and on programme management, in the context of a leprosy–TB combined programme. Thus, the course will be quite different from the Arusha course organized by the IUATLD. Nevertheless, for those who have already taken the Arusha course, the ALERT course will not be of much additional benefit.

The course dates are as follows:

March 11–April 12	Management of Combined Leprosy and TB Control Programmes
May 6–May 24	TB Control for Physicians
June 10–June 22	Essentials of Leprosy and TB for Non-medical Staff

Sept 16–Oct 25 Essentials of Leprosy and TB for Physicians

Oct 28–Dec 13 Supervision of a District Leprosy and TB Control Programme

For all further information, please contact: International Training Coordinator, ALERT, P.O. Box 165, Addis Ababa, Ethiopia. Tel: 251-1-712792 and 251-1-711524. Fax: 251-1-711111.

Dangerous TB treatment practices threatening lives of AIDS patients, WHO 1995

The above WHO/70 was released on 22 September 1995:

The World Health Organization (WHO) today warned against incomplete and often harmful tuberculosis treatment practices that are robbing years of life from nearly a third of all HIV-positive people.

According to WHO, HIV-positive tuberculosis patients could probably gain more than two years of healthy life with an improved anti-TB treatment strategy known as directly observed treatment, short-course (DOTS).

'By failing to use DOTS to treat TB, we are ignoring one of the most practical and affordable weapons we possess to help people with HIV,' said Dr Arata Kochi, Director of the WHO Global Tuberculosis Programme, following a meeting of representatives of foreign aid agencies, ministries of health and NGOs in Oslo, Norway.

WHO estimates that up to two-thirds of all HIV-positive people who seek treatment are being misdiagnosed or treated improperly for TB. The most common error in treating TB patients has been failing to ensure that TB patients actually take their anti-TB medicine every day. Unsupervised TB treatment increases the likelihood that the co-infected patient will not recover from TB. This improper TB treatment practice also allows TB patients to remain infectious for longer periods of time, thereby putting family members, friends and health workers at considerable risk of becoming infected with TB.

Other improper TB control practices are also contributing to the premature demise of HIV-positive people. According to WHO, health workers are often unable to accurately diagnose TB in an HIV positive person. In other instances, the anti-TB drug thiacetazone—which can be lethal to HIV-positive people—is still being prescribed in AIDS endemic areas. While thiacetazone is quite inexpensive, it causes the skin to become detached from the body in some HIV-positive persons and has other severe side-effects in up to 27% of HIV-positive patients.

'An estimated 266,000 HIV-positive people will die from TB this year. Their TB was potentially preventable and treatable,' said Dr Arata Kochi. 'It is crucial that those who care about AIDS become aware about how to properly control TB.'

The Global TB Programme urged that two steps be taken to reduce TB deaths among HIV-positive individuals. First, that all countries quickly adopt directly observed treatment, short-course (DOTS) to control TB. DOTS is a strategy where a health worker or volunteer watches each TB patient swallow a specific regimen of TB medicines for a six-month period. The DOTS strategy uses a combination of anti-TB medicines that do not cause serious side-effects in HIV-positive people. This strategy has been nearly 100% effective in curing TB in both HIV-positive and HIV-negative patients. DOTS has been recently used to great success in parts of the world facing the TB/HIV co-epidemic, such as New York City and Tanzania.

Secondly, the Global TB Programme called for the mobilization of research efforts to address the most urgent, practical problems posed by the TB/HIV co-epidemic. This TB/HIV research agenda would investigate how to, 1) develop better ways to coordinate TB control and HIV prevention and care efforts at the district and community level, 2) improve diagnosis and treatment of TB in HIV-infected individuals, 3) remove barriers which discourage people who are ill with TB from seeking care in high HIV prevalence areas, and 4) assess the role of preventive TB therapy for HIV-positive people.

'We need to help equip primary health care workers with the means to incorporate AIDS

prevention and TB control strategies into their day-to-day activities,' said Dr Paul Nunn, Chief of the Global TB Programme's research unit. 'TB workers need to understand how HIV will exploit unsound TB treatment practices. AIDS workers need to understand the importance of the DOTS strategy for caring for their patients.'

'While the two diseases greatly overlap, the UNAIDS and the Global TB Programme each have very clear and distinguishable roles to play in combatting the co-epidemic,' said Dr Peter Piot, Director of the United Nations' AIDS Programme. 'If UNAIDS can succeed in preventing the spread of HIV, there will be much less TB in the world. If the Global TB Programme can succeed in establishing more effective TB control programmes, we can greatly extend the lives of HIV-positive people and save a considerable amount in the cost of caring for AIDS patients.'

According to WHO, TB is the leading opportunistic infection to kill HIV positive people. An estimated 266,000 HIV-positive people will die from tuberculosis this year out of an estimated 600,000 AIDS-related deaths. Likewise, HIV is increasingly playing a bigger role in the TB epidemic. Currently, only 9% of TB deaths are related to AIDS, although this percentage is expected to reach 17% by the year 2000.

For more information, contact Kraig Klaudt at (41-22) 791-4627 or Courtenay Singer at (41-22) 791-2189. Fax (41 22) 791 41 99. Global Tuberculosis Programme, WHO, Geneva.

World TB Day, 24 March 1996, WHO

The following statement was recently made by WHO to mark World TB Day:

The tuberculosis epidemic has never been worse, surpassing all other infectious diseases as the leading killer of youth and adults. In 1995, TB killed nearly 3 million people—over 10,000 times as many deaths as caused by Ebola and The Plague combined. In 1995, over 8 million people became sick with TB, and it is estimated that someone is infected with the TB bacteria every second of the day.

In the Americas, last year outbreaks of the epidemic were investigated in churches, schools, dental offices, court rooms, trains, subways, racetracks and even on a river boat casino. In Minneapolis, a person with TB infected 45 people in a neighbourhood bar. A postal worker in Tampa was discovered to be carrying TB bacilli as well as the mail. In Western Canada, a health care worker infected 100 other people.

In Europe, TB cases have been on the rise in Denmark, Norway, the Netherlands, Italy and other European countries over the past few years. Russia and Eastern Europe are also reporting increasing numbers of TB cases. In London, two percent of the city's homeless population may currently be sick and infectious with TB. Also in London, the city's first major outbreak of multidrug-resistant TB was recently reported in a hospital.

In Asia, the World Health Organization has warned that Thailand and India could be sitting on a dangerous 'timebomb' of multidrug-resistant TB. A study in Pakistan suggests that up to 40 percent of TB patients in some regions are resistant to three or more anti-TB drugs. Another study in Thailand reports that up to 68 percent of health professionals in some hospitals are infected with TB. Indications are that over 50 percent of all HIV-positive people in Asia may eventually become sick with TB.

In Africa, record numbers of nurses in some hospitals are dying of TB. Approximately 40 percent of South Africa's population may be infected with the TB bacillus. Yet—in spite of the horrific extent of TB in Africa—the continent has produced some of the most promising success stories in fighting the epidemic.

The World Health Organization will release its **Report on the TB Epidemic 1996** just prior to World TB Day. The theme of this report will be 'Groups at Risk'. The report will discuss how the TB epidemic affects women, children, workers and other risk groups. The report concludes that 'there is nowhere to hide from TB', as we are all at risk.

For additional information, contact Courtenay Singer at (41-22) 791-2189, WHO, 1211 Geneva 27, Switzerland.

TB 'will kill 30 m in next 10 years', *The Guardian*

The following item appeared in *The Guardian*, 22 March 1996:

Tuberculosis is spreading rapidly throughout the world and is killing more people than at any time in history, the World Health Organization said yesterday.

British specialists said that the number of cases in Britain had increased every year since 1986 and there had been reports of drug-resistant TB which was difficult and expensive to treat.

A new report by the organization, launched in London yesterday to mark World TB Day on Sunday, said that the disease would kill 30 million people over the next 10 years. Yet effective treatment was available for £7 per person in some parts of the world.

TB was the most urgent health problem facing the planet, dwarfing fears about the ebola virus or BSE, yet there was still huge complacency in many countries, it said.

Paul Nunn, chief of research for the organization's global TB programme and a former specialist at Hammersmith Hospital, London, said: 'The population of Britain is legitimately concerned about BSE, but reports focus on 10 cases of CJD which may be related to this.' There were about 6,000 cases of TB a year in Britain and 400 deaths.

Arata Kochi, director of the TB programme, said the position had deteriorated over the past three years despite the organization declaring TB a global health emergency in 1993, the first time it had ever so identified a single disease.

Some 80 countries were now using an effective treatment programme under which patients were supervised when taking drugs to ensure they finished the six-month course, but many others could not afford to implement this.

'We knew three years ago that tuberculosis had become the world's greatest killer of adults. We also know that a third of the world's population was already infected, with an additional person being infected every second. Three years ago we warned that the TB epidemic would become much worse. It has.'

TB was the biggest single killer of women across the globe and a third of people with HIV died from TB. Because TB struck people in their most productive years it caused huge economic damage.

'Many leaders are still behaving as if TB did not exist. Other diseases such as flesh-eating bacteria, the plague, and the ebola virus . . . are higher on the public-policy agenda than tuberculosis.

'Tuberculosis kills over 10,000 times as many people each year as the ebola virus. And, unlike ebola, tuberculosis spreads through the air. Anyone can catch tuberculosis simply by inhaling a TB germ that has been coughed or sneezed into the air. These germs can stay suspended for hours.

'In a closed environment, they can remain alive for up to three years. There is nowhere to hide from tuberculosis. We are all at risk.'

The disease had killed 2.1 million people in 1900 but today, because of the increase in population, the rise of HIV, which weakens the immune system, and the failure of control programmes, TB was killing 3 million people a year.

Poor control programmes where people failed to finish the course of treatment were fuelling drug-resistant strains.

These were extremely difficult to treat and in some cases were incurable.

'With continued neglect and inaction, deaths from TB may continue to rise and kill well over 100 million people in the next 50 years.'

John Moore-Gillion, chairman of the British Lung Foundation, said: 'Between 1986 and 1994 there has been a steady increase in TB cases in this country. People under 60 forget what a terrible cause of suffering TB was in Britain.'

Technical guide for smear examination for leprosy, insert 1995

The following revision insert was printed to go with the Second, Revised Edition, 1987:

Since the publication of the *Second Revised Edition* of the *Technical Guide* in 1987, there have been a number of important changes relating to the use of slit-skin smears in leprosy, especially in control programmes and in relation to the wider implementation of the multiple drug therapy (MDT).

In 1987 (shortly after the Guide had gone to press), WHO published Guidelines for the prevention and control of possible infection with HIV and hepatitis B virus for personnel involved in the collection of skin smears in leprosy. In view of the known risks of all skin-piercing procedures, this advice should be widely circulated and made known to health staff.

In 1988, the *WHO Expert Committee on Leprosy* defined 'a case of leprosy' as a person showing clinical signs of leprosy, with or without bacteriological confirmation of the diagnosis, and requiring chemotherapy—thus establishing that skin smears are not essential for this purpose.

More recently (1994) WHO has added further advice on facilities for bacteriological examination and classification—

Facilities for bacteriological examination. 'A service for the bacteriological examination of skin smears is not a prerequisite for initiating an MDT programme. In view of the increasing prevalence of human immunodeficiency virus (HIV) infection and hepatitis B infection in many countries where leprosy remains endemic, the number of skin smear sites and the frequency of smear collection should be kept to a minimum.'

Classification. 'Classifying patients through skin smear examinations should be continued. Where reliable facilities for the bacteriological examination of skin smears are not available, approaches based on clinical classification may be required. When classification is in doubt, the patient should be treated as having multibacillary disease.'

Furthermore, in view of the negligible relapse rate following WHO MDT regimens, it was recommended that it is no longer necessary to continue routine annual surveillance of patients after completion of MDT.

Although the technical and laboratory content of the 1987 Guide remains acceptable, the above publications and advice call for considerable re-interpretation of many parts of the text, including attention to the possible risks of hepatitis B and HIV infection and the need to reduce skin smears to the minimum.

The following are the most important documents for consultation—

1. WHO. Guidelines for personnel involved in collection of skin smears in leprosy control programmes for the prevention and control of possible infection with HIV. WHO/CDS/LEP 87.1 Rev.1. World Health Organization, Geneva, 1987.
2. WHO. WHO Expert Committee on Leprosy. Sixth Report. Technical Report Series 768. World Health Organization, Geneva, 1988.
3. WHO. Chemotherapy of Leprosy. Report of a WHO Study Group. Technical Report Series 847. World Health Organization, Geneva, 1994.
4. ILEP (International Federation of Anti-Leprosy Associations). Achieving MDT for all leprosy patients. Medical Bulletin, Issue No. 7, December 1994. ILEP, 234 Blythe Road, London W14 0HJ, England.

Technical guide for sputum examination for tuberculosis by direct microscopy

This Technical Guide originally published in Supplement No. 2, December 1978 of the *Bulletin of the International Union Against Tuberculosis*, is available from IUALTL, 68 Boulevard Saint-Michel 75006, Paris, France. The contents are:

- I Collection of sputum specimens: A. Number of specimens requested; B. Recording of sputum examinations; C. Place for collecting the specimens; and D. Technique for collection.
- II Storage and transport of sputum specimens: A. Storage; and B. Dispatch.
- III The laboratory: A. Safety; and B. Laboratory arrangement.
- IV Reception and registration of sputum specimens.
- V Preparation of smears: A. Engraving slides for smears; B. Smear preparation; C. Drying; D. Fixation; and E. Disinfection and sterilization of contaminated material.
- VI Staining technique: A. Staining; B. Decolourization; and C. Counter-staining.
- VII Examination by microscopy: A. Arranging the working table; B. Use of the microscope; and C. Technique of reading.
- VIII Results of examination.
- IX Recording at a microscopy centre.
- X Disposal of examined slides.
- XI Dispatch of results of examination
- XII Formulation of reagents.

TALC: Teaching aids at low cost

TALC, P.O. Box 49, St Albans, Herts AL1 5TX, England has issued its 1996 list of books, slides and accessories from which we select the following on AIDS, leprosy and tuberculosis:

AIDS education and communication

The AIDS Handbook: *John Hubley*—For those involved in AIDS education & community work, it covers origins, symptoms, transmission and counselling. £4.00. *New Edition*

Talking AIDS: *G. Gordon & A. Klouda*—A practical handbook for community workers based on real questions and concerns voiced by people around the world. English, French or Arabic £2.00.

Women and HIV/AIDS: *Marge Berer & Sunanda Ray*—Impact of HIV/AIDS on women's health, sexual relationships and reproductive rights and what women are doing about it, around the world. English, French or Spanish £5.60.

Strategies for Hope: *Series editor Glen Williams*—A series of case study booklets, training pack and video programmes which aim to promote informed, positive thinking and practical action. No. 1 **From Fear to Hope**, No. 2 **Living Positively with AIDS**, No. 3 **AIDS Management**, No. 4 **Meeting AIDS with Compassion**, No. 5 **AIDS Orphans**, No. 6 **The Caring Community**, No. 7 **All Against AIDS**, No. 8 **Work Against AIDS**, No. 9 **Candles of Hope**, No. 10 **Filling the Gap** (*New*). Booklets 1–8 and No. 10, in French. 1–7 and No. 9 £1.50 each. No. 8 and No. 10 £2.00 each. *Each title may be ordered separately.*

1) **TASO Living Positively with AIDS:** A video about the care, support and counselling of people with HIV/AIDS. No English PAL format available. Limited availability of other formats: English NTSC, French (PAL, SECAM & NTSC). Portuguese (PAL & NTSC). 2) **The Orphan Generation:** A video on community based care and support for children orphaned by AIDS. Available in English (PAL & NTSC) and French (PAL, SECAM & NTSC). £25.00 for charitable organizations and NGOs, £45.00 for others. 3) **Stepping Stones Training Pack.**

Other AIDS related materials: sets of slides on HIV and Sexually Transmitted Diseases (see slide section) flannelgraph on **Family planning, STDs and AIDS and One-For-One AIDS Learning Activity.**

The following slide sets with script are available (24 slides unless otherwise stated):

H1cA HIV Infection—Clinical Manifestations in Adults: Describes the clinical case definition

and various clinical manifestations of HIV infection in adults. Especially for the Asian and Pacific region. (DNA) 1993.

- HIVa HIV Infection—Virology and Transmission:** Describes the epidemiology, virology, immunology and transmission of HIV infections. Especially for the Asian and Pacific region. (DNA) 1993.
- HIVc HIV Infection—Clinical Manifestations:** Describes the clinical case definition and various clinical manifestations of HIV infection in Africa. (Fr) (DNA) 1989.
- HIVe HIV Infection—Prevention and Counselling:** A discussion of the problems of prevention and transmission. It requires an understanding of the HIVv and HIVc slide sets. (Fr) (DNA) 1989.
- HIVm Per group education in AIDS and STD programmes:** This set provides a training module that can be used to plan peer group education among key target groups. (AO) 1995.
- HIVp HIV Infection in Children:** An overview of the situation in Africa, including epidemiology, transmission, diagnosis, clinical manifestations, management and issues (48 slides, double the price). (DNA) 1992.
- HIVv HIV Infection—Virology and Transmission:** Describes the epidemiology, virology, immunology and transmission of HIV infection in Africa. (Fr) (DNA) 1989.

Leprosy and related subjects—slide sets (24)

Leprosy: An introduction to leprosy, particularly in children, and methods of treatment.

Common skin diseases in children in the tropics. Diagnosis and treatment.

Care of the nerve damaged limb. How to teach patients to care for their limbs in leprosy and other neurological conditions and to preserve residual function.

Tuberculosis

Clinical tuberculosis (210 pages, paperback) by John Crofton, Norman Horne & Fred Miller is sponsored by the International Union against Tuberculosis and Lung Disease and by TALC. A low cost edition for developing countries has been financially supported by the World Health Organization and other bodies. It is written primarily as a practical guide for busy non-specialist doctors working in areas with few resources. The language is simple and there is an extensive glossary. The book can therefore be useful to Health (Medical) Assistants and senior nurses with a limited knowledge of English. It can also serve as a helpful reference for younger doctors in developed countries who now have less experience of tuberculosis.

The book covers diagnosis and treatment of all types of tuberculosis, pulmonary and non-pulmonary, both in adults and children. It deals fully with the effects of HIV infection on the disease and describes the essential elements of a National Tuberculosis Control Programme. There are many line drawings and flow charts as aids to training, learning and clinical practice. 'Stories' about individual patients highlight practical points.

The three authors have had many years experience of dealing with tuberculosis and of teaching both undergraduates and postgraduates. They have advised in many countries in Asia, Africa and South America. The final text incorporates constructive comments on an earlier draft by experienced consultants from the IUATLD, WHO and consultants working in several countries in Asia, Africa and the Pacific. The book therefore represents much collective wisdom.

First published in English, translations in Chinese, French, Spanish, Portuguese, Thai, Vietnamese and Farsi have already been published and translations into seven other languages are in progress. Over 12,000 reduced price copies have already been distributed to 122 countries.

The Natural History of Childhood Tuberculosis: a 24-slide set.

For further information write to the address above or tel: +44 (0)1727 853869; or fax: +44 (0)1727 846852.

IILEP: training catalogue (Catalogue de Formation) 1996

The Co-ordinating Bureau of the International Federation of Anti-leprosy Associations (IILEP) has produced a catalogue, covering training centres in Addis Ababa, Ethiopia; Bamako, Mali; Bauru, Brazil; Cebu, The Philippines; Dakar, Senegal; Fontilles, Spain; Karigiri, India; Manaus, Brazil; Mexico City, Mexico, and Purulia, India.

Teaching tools for health workers. Luc van Parijs

The purpose of this book is to provide busy health professionals with a guide to the selection and use of seven of the most widely available and effective tools for teaching, i.e. chalk board, flip chart and flash card, objects and models, hand-outs, overhead projector, slides and video.

This booklet has previously been priced at £3.00, but TALMilep are now able to offer the publication free of charge to IILEP Projects and leprosy training centres.

If you would like copies of the booklet please contact Fiona Thomas at: TALMilep c/o TLMI, 80 Windmill Road, Brentford, Middlesex TW8 0QH, GB.

WHO Guide to eliminating leprosy as a public health problem in French

This important publication (originally in English, WHO/LEP/95.1) has now been published in French and is available from: Action Programme for the Elimination of Leprosy, WHO, 20 ave Appia, 1211 Geneva 27, Switzerland.

Liverpool School of Tropical Medicine

The Liverpool School of Tropical Medicine is a registered charity affiliated to the University of Liverpool, is one of the few postgraduate centres of excellence in the world in the field of tropical medicine and its allied disciplines. Its principal, inter-related functions are research, teaching, and consultative activities. The School is extensively involved in national and international programmes to control tropical disease and to develop effective health care systems. It has links with health ministries, universities and research institutions worldwide.

The School was founded in 1898 by Sir Alfred Lewis Jones, a Liverpool shipowner and businessman, and is the oldest tropical school in the world. Its first Professor of Tropical Medicine, Sir Ronald Ross, was awarded the Nobel Prize in 1902 for discovering the mode of malaria transmission. The School was built on its present site, on the edge of the University campus, in 1915 and later extended, since when three new Wings have been added, in 1964, 1977 and 1988. Some 185 academics, research and support staff are employed in the School, and over 500 students from more than 70 countries attended courses last year, ranging from three-year PhD research programmes to one-week summer courses. The School has a world-wide reputation as a centre for research into tropical medicine and the issues relevant to the improvement of health in tropical populations. Its multi-disciplinary programmes range from community health and health systems research to parasite biochemistry and molecular entomology. In the last UFC Research Selectivity Exercise the School was commended for its research into 'Vector Biology and some aspects of immunoparasitology which were of exceptionally high standard'. More recently, the School was given an 'A' rating (the highest grading) by the Medical Research Council in its review of University Departments and the research training they provide.

Research funding in the School in 1993-94 totalled £3.2 million, and came from the World Health Organization (WHO), the Medical Research Council (UK), the Overseas Development

Administration, the European Community, the Wellcome Trust and many other charitable Foundations and Trusts. The School houses three WHO Collaborating Centres in the Control of Antivenins, Environmental Management for Vector Control, and for the Development of Health Systems based on Primary Health Care. The School is one of the top four international institutions receiving WHO funding for research training.

Research in the School is organized around a number of research groups within four Divisions that represent the main areas of the School's work—International Health, Tropical Medicine, Parasite and Vector Biology (including veterinary parasitology) and Molecular Biology and Immunology—and is co-ordinated through the Research Support Office. In addition to the research carried out in its well-equipped laboratories, the School is involved in field research throughout the tropics, in Asia, Africa, Latin-America and Australasia. There are also joint research programmes with several departments of the University of Liverpool, including research centres for Tropical Medical Microbiology, Tropical Pharmacology and Latin-American Health Studies.

In clinical research, current programmes include the management of cerebral malaria in children; clinical trials of new anti-malarial drugs; influence of maternal anaemia and malaria on birth weight; clinical manifestations and treatment of HIV-related diseases in the tropics; prevalence of HIV and hepatitis among drug users; epidemiology and control of sleeping sickness; and studies of the incidence and causes of pelvic inflammatory disease. Field studies are conducted in a number of countries, including Malawi and Uganda, Nigeria, India, Guatemala and Brazil. There is a group concerned with the epidemiology of snake bite in Brazil, Papua New Guinea and Nigeria and the production and testing of recombinant proteins for anti-venom production.

Research in the Divisions of Molecular Biology and Immunology and Parasite and Vector Biology comprises both field and laboratory-based research and includes research on parasites of veterinary importance. Current work includes studies of the host and parasite dependent factors that determine the therapeutic outcome of antimalarial therapy; rational chemotherapy based on improved knowledge of parasite biochemistry (*Leishmania* and *Trypanosoma cruzi*) and mechanisms of drug resistance; the immune response, molecular cloning of protective antigens and vaccine testing in onchocerciasis; the development of BCG as a live vaccine vector to stimulate protective immunity against intra-cellular parasites; antigenic variation in malaria parasites; the role of cytokines in immunity and pathogenesis; and the development of new immunodiagnostic methods for field use in the tropics.

Other interests include the development of DNA probes, PCR and other molecular approaches to the diagnosis and identification of parasites and insect vectors; transgenic technology and gene expression in mosquitoes; mosquito ecology, malaria epidemiology and control; the biology and control of leishmaniasis in the neo-tropical region; pheromones, chemical attractants and chemical ecology in sandflies, simuliid blackflies and mosquitoes; the genetics and biochemistry of pyrethroid insecticide resistance in malaria vectors; and defence mechanisms of mosquitoes against bacteria and filarial parasites.

The School is concerned that its research should inform health policy and contribute directly to improved management of health services. Examples of such research are comparative studies of the structure of modern and traditional health services; the relationship between female literacy and child health and survival; identification of simple interventions for the prevention of hearing loss; the nutritional and health problems of refugee populations; and evaluation of the health impact of development programmes. A research interest of several staff is the improvement of management of health districts and the application of surveillance methods and information technology to support the decision-making process. There is a multi-disciplinary group concerned with health sector reform in developing countries.

Much of the School's research involves collaboration between various specialized interest groups. For example the Unit for Statistics and Epidemiology (USE) applies its expertise across a broad range of the School's research activities, from the implementation and evaluation of

practical disease surveillance systems to the analysis of demographic and anthropometric data. The development of hypertext software for computer assisted learning by USE complements the research interests of the Education Resource Group. The latter group is currently investigating training needs in health promotion.

Women's health is a relatively new area of research with an emphasis on maternal health, growth and development in adolescent girls and gender differences in disease prevalence. The long term objective is to work towards new approaches in health care which are sensitive to the social constraints of women.

For further information including details of degrees by research, taught courses, masters courses, diploma courses, certificate courses and short courses apply to: Courses Secretary, Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA. Telephone +44 (0)151 708 9393. Fax: +44 (0)151 708 8733.

INTRAH: Free materials in reproductive health

The Program for International Training in Health (INTRAH) compiles this valuable and already well-known list, now in its 6th edition (1994). This edition contains over 1200 entries organized into seven categories: family planning, maternal and child health, primary health care, AIDS, population, development and information sources. Each record contains the bibliographic entry, a brief description of the contents and level, as well as the address. (INTRAH, 208 N. Columbia St, Chapel Hill, NC 27514, USA).

General low-cost sources of health literature. ELBS

Educational Low-Priced Books Scheme (ELBS)—A complete catalogue of material available under this scheme sponsored by the UK Overseas Development Administration contains some nursing books. (ELBS Administration, IBD Ltd, 6 Devonhurst Place, Heathfield Terrace, Chiswick, London W4 4JD, UK).

Reviews of leprosy and other mycobacterial diseases in Spanish

For Spanish-speaking colleagues we draw attention to the material produced in *Revista de Leprologia Fontilles*, Vol. XX (3), Sept–Dec 1995. This issues carries 30 pages of recent publications with abstracts or summaries in Spanish. Apply: Director Medico, Sanatorio San Francisco de Borja, 03791 Fontilles, Alicante, Spain.

News and Notes

SIDA's contribution to leprosy control in India

The following abstract is from 'An evaluation of the contribution of the Swedish International Development Authority (SIDA) to leprosy control in India based on the implementation of multiple drug therapy (MDT) 1981–93' published in the *Indian Journal of Leprosy*, 1995; Vol. **67**(4): 447–465.

The Swedish International Development Authority (SIDA) first supported the National Leprosy Control Programme in India in 1978. In 1981/82 priority was given to the implementation of multiple drug therapy (MDT), starting in two high-endemic districts, and gradually extending to a total of 19 districts in the years by 1993. SIDA then decided to undertake a detailed evaluation of its 12-year contribution and this was carried out by an international team between November 1993 and April 1994.

In terms of epidemiological and public health impact, the main results were impressive and clear-cut; 837,519 cases (old and newly arising) were successfully treated, with few complications and a low rate of relapse. The voluntary reporting rate had improved significantly. Data relating to new case detection, child and disability rates were, however, less clear and difficult to interpret. Deficiencies were also identified in the areas of health education, community participation, gender issues, disability prevention and management, rehabilitation, operational research and assessment of cost-effectiveness. These problems should not, however, detract from the contribution of SIDA, from 1981 onwards, in establishing the implementation of MDT in two 'pilot' districts at an early and important stage in the history of the MDT programme in India. SIDA also made significant contributions in other areas, namely pre-MDT 'screening' of registers in 45 endemic districts in 1990–1993, appointment of consultant leprologists at district level, group education activities, annual meetings of voluntary agencies and the development of a monitoring and information system, with computer facilities, at national level.

This paper describes the design and methodology, main findings and conclusions of the evaluation, based on the final report and the appendices submitted to SIDA in Stockholm in April 1994.

IDEA: International Association for Integration, Dignity and Economic Advancement

On 12 September 1994, approximately 50 people from six countries gathered together in Brazil to participate in The International Seminar for the Integration of Organizations of Persons Affected by Leprosy (Hansen's Disease). Countries represented were Brazil, Korea, India, Cuba, the US and the People's Republic of China.

After a great deal of discussion, it was decided that an international organization dedicated to improving the social and economic lives of individuals with Hansen's Disease (HD), and led primarily by individuals who had been affected by this disease, was needed and should be established. On 16 September 1994, IDEA, the International Association for Integration, Dignity and Economic Advancement was officially founded.

On 22 February 1995, IDEA was officially registered in the United States of America.

IDEA's objectives, as stated in its bylaws are as follows: The objectives of IDEA shall be to promote, respect and dignify all human beings, particularly those who have had Hansen's Disease (leprosy), and to work in partnership to ensure that they live rewarding lives with dignity. IDEA is dedicated to the principle that individuals who have had Hansen's Disease should be actively involved in various Hansen's Disease programmes, including public education and fund-raising projects that will directly improve the socioeconomic condition of individuals affected by Hansen's Disease throughout the world. IDEA will work in collaboration with governments, national and international nongovernmental organizations, and individuals with regard to education, training and rehabilitation of persons affected by Hansen's Disease in order that they may live as normally as possible. IDEA also seeks to combat prejudice, discrimination, segregation, rejection, the use of derogatory terminology and the stigma associated with the disease through self-support, self-reliance, dignity and public awareness programmes. The leadership of IDEA will rest with individuals affected by Hansen's Disease.

Further information: IDEA, 200 Abney Circle, Oak Hill, WV 25901, USA.

XV International Leprosy Congress: preliminary announcement

The XVth ILC is to be organized by the International Leprosy Association (ILA) in joint sponsorship with the International Federation of Anti-Leprosy Associations (ILEP) and the World Health Organization (WHO). The ILC is to be hosted by the Ministry of Health, People's Republic of China.

Time and Venue: The main session of the ILC will be one week, from 7 to 12 September 1998.

The venue and the accommodation will be the Beijing International Convention Centre and the adjacent Beijing Continental Grand Hotel.

Joint United Nations Programme on HIV/AIDS

WHO's Global Programme on AIDS (GPA) ceased to exist on 31 December 1995 after eight years as leader of global efforts against the pandemic. It has been replaced by UNAIDS, a programme sponsored by WHO and five other UN agencies. The Joint United Nations Programme on HIV/AIDS will focus above all on strengthening national capacity for a response of greater quality, scope and duration.

The central office of UNAIDS is located at the WHO headquarters in Geneva.

UNAIDS, 20 ave Appia, CH-1211 Geneva 27, Switzerland. Tel.: +41/22 791 2111. E-Mail: unaids@who.ch. WWW://gpawww.who.ch/unaids.htm

***Leprosy Review* posters: 1 Diagnosis and reversal reactions**

The A3 poster enclosed with this issue of *Leprosy Review* is the first in a series of four covering important areas of management and research in leprosy and is distributed free to subscribers to the Journal.

We hope subscribers will find these posters informative and useful. Displayed prominently in clinics, they should serve as a useful teaching resource and aide memoire for all those involved in the treatment of leprosy and its reactions and in prevention of disability work.

We would welcome feedback and comments (to the Editor please) on this series and suggestions for future topics. Additional copies of the poster in this issue and those in future issues will be available from LEPR, Fairfax House, Causton Road, Colchester CO1 1PU, England.

Instructions to Authors

Papers submitted for publication in *Leprosy Review* should be sent to the Editor, Professor J. L. Turk, LEPR, Fairfax House, Causton Road, Colchester CO1 1PU, England. The name(s) of the author(s) and the place where the work was done should be clearly indicated below the title of the paper. Degrees and diplomas are not to be included.

It is understood that the paper is offered to *Leprosy Review* alone, that it will be subject to editorial revision, and that its copyright becomes the property of LEPR. Manuscripts should be typewritten, in double spacing, on one side of A4 (297 × 210 mm) paper, with wide margins (4 cm all round). Contributors must send three complete copies of the text, tables and figures. On a separate sheet give the title, short title, name and postal address of the author, together with the name of the institution where the work was done. Abbreviations of titles of journals should follow the list of journals indexed in *Index Medicus*. References to books should include the editor(s), publisher and place of publication. Once manuscripts have been accepted a copy on disk that matches the hard copies exactly would be very much appreciated.

Units and Abbreviations. The Journal recognizes the adoption of the *Système International d'Unités* (SI Units) proposed in *Units, Symbols and Abbreviations* (1972) published by the Royal Society of Medicine, 1 Wimpole Street, London W1M 8AE. Abbreviations should only be used for unwieldy names, and only when they occur frequently.

Proofs are submitted to authors for immediate return by air.

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