特 別 講 演 I

Leprosy in India

K. V. DESIKAN

(Central JALMA Institute for Leprosy, Agra, India)

Historical: Leprosy is one of the most ancient diseases. It could perhaps be as old as humanity itself. As such, in those parts of the world with ancient civilization, leprosy has been known to exist from time immemorial. India is one of the countries where leprosy has been prevalent from the ancient times, in addition to China, Middle East and certain parts of Africa.

The ancient system of Medicine in India is called Ayurveda. Standard books of Medicine were prepared early as 1000 to 500 B.C. Three outstanding authors of medical texts are Charaka, Sushruta and Vagbhatta. Leprosy has been described by all the three of them. It is interesting to find that even in such an ancient literature, leprosy was classified into two major types of manifestations—(a) Vat shonita (corresponding to the neuritic type) and (b) Maha Kushta (exhibiting cutaneous manifestations). There is also description of treatment using “tuvarka” which is identical with *Hydnocarpus*. Apart from the medical texts, mention is made of leprosy in books of ancient mythology, which were written several centuries before Christ.

A disease of such a great antiquity, it has been ravaging the country for several centuries posing severe social, economical and public health problems. Being an indigenous disease, it has percolated deep into the remote villages and not restricted to pockets of cities or to areas of concentrated population. Again, being an age old medico-social problem, the outlook of the people towards leprosy is interwoven with their cultural habits and customs. Therefore, while reviewing the leprosy problem in India, one has to take a total picture of the cultural background, socio-economic conditions, general health standards and facilities of medical relief. It is therefore relevant to provide certain background information regarding the country.

Geographical: India is a vast country having an area of 3.3 million square kilometer—almost 5 times the area of Japan. It is tropical and sub-tropical, lying between latitudes 8°N to 38°N. As far its physical features, the country consists of the great Himalayan range in the north, a plateau land of peninsula in south with a vast plain in the middle in which flow the large rivers of Ganges and Jamuna. The mean temperature in mid-summer varies from 20°–40°C and in mid-winter from 10°–30°C, the Central and Northern parts of the country having extremes of temperature. The rainfall is mainly in the monsoon season and it is erratic and ill-distributed. Rainfall varies from place to place and year to year, ranging from 500 mm to 2000 mm.

As a very large country, it thus has diverse physical features and extremely varying

climatic conditions. There are people living in the very densely populated plains. Also there are small towns and villages in the hilly regions of different altitudes. There are areas in South which are uniformly warm throughout the year. There are the populated regions in the Himalayan belt which have a continuously low temperature. Large areas of Central India have extremes of temperature with very hot summers and quite cold winters. There are areas of heavy rainfall and high humidity in the coast. There are large stretches of arid land with scanty rainfall and very dry atmosphere. Despite these extreme variations, the prevalence of leprosy is almost uniform indicating that the climate does not have any influence on the incidence of leprosy.

Government and people: India is a Sovereign Democratic Republic with a parliamentary system of Government. It is divided into 22 states each governed by a Council of Ministers and 9 “Union Territories” directly governed by the Centre. The Central Government co-ordinates the administration of the State Governments.

Different languages are spoken in the states. There are 15 official languages and about 200 dialects.

India is a secular country and there are people of different religions living amicably and with protection of their rights regarding freedom of worship. Of the major religions, Hindus form 83 %, Muslims 10 %, Christians 2.5 %, Sikhs 1.8 %, Buddhists, Jains and other religions form the remaining 2.7 %.

Population: The population of India in 1977 was 626 millions. It thus stands next only to China in population. Nearly 80 % of the people live in villages. The villages are scattered all over the country. Communication is difficult since most of the villages do not have good roads and it becomes extremely difficult to reach them in rainy season. The hilly areas are even more difficult to reach.

Habits and customs: The habits and customs have an influence on the prevalence and spread of leprosy. The traditionally joint family system is breaking up in recent years but there is a strong bondage between the families. This leads to closer contact with leprosy patients within the families. The major religion is Hinduism followed by 83 % of the population. There are castes and sub-castes within Hinduism and people marry only within their own castes. Marriages between first cousins is also a common practice particularly in South India. Such an inbreeding leads to a greater influence of genetic factors in the occurrence of leprosy.

Attitude towards leprosy: There is age old prejudice against leprosy. The stigma associated with the disease exists in all parts of the country, in all communities and in all social and economical strata. Therefore, while working in the community it is very essential for the workers to be cautious since it can adversely affect the social life of the patients and also the success of the scheme.

Economic standard: India is a poor country. Although the Government provides free medical aid, the average Indian in the villages has to face so many day-to-day economic problems, that he gives a low priority to health and sanitation. While his earning power

is already low, disability due to leprosy makes it worse. He is thrown out of occupation, thrown out of society. Apart from treatment of the cases, rehabilitation is a major problem.

Evolution of anti-leprosy work: Although leprosy was rampant in India for several centuries, there was no effort at organized antileprosy work till very recent times. The earliest work carried out was on religious and philanthropic grounds. The Christian Missionary institutions were the first to start an organized antileprosy work. The first leprosy colony established by the Christian Missionaries was in 1875 in the hilly regions of Himalayas. Other philanthropic organizations undertook the work. These were encouraged and helped financially by the then British Government.

It is of special interest to note that possibly the first institution to provide shelter and care to leprosy patients was established at Agra in 1861, much earlier to the Missionary institutions. It is a happy coincidence that exactly 100 years later, the Japanese Leprosy Mission for Asia (JALMA) started its Institute very close to this Centre. When India secured her freedom from British rule, there were 231 colonies accommodating just about 28,000 patients. At that time, there were about 2.5 million estimated cases of leprosy and the only attempt to control leprosy was by isolation of patients. Obviously the available accommodation could hardly provide accommodation for 5% of infectious cases. Control of leprosy by segregation could thus be considered an un-achievable ideal.

The use of oral Dapsone as an effective cure for leprosy was gaining ground by about 1950. Gandhi Memorial Leprosy Foundation, a voluntary organization functioning with the fund raised in memory of Mahatma Gandhi, was the first Institution to systematically put into practice an attempt to control leprosy by domiciliary chemotherapy, simultaneously detecting all cases and keeping all the patients on regular treatment and surveillance. The methodology of the Gandhi Memorial Leprosy Foundation was appreciated by the Government of India and it formed the basis of the policy to be followed by the Government of India in its programme of leprosy control.

Magnitude of the Problem: It is estimated that there are about 3.2 million leprosy cases in India, thereby constituting more than one-fourth of total cases in the world. Thus India is the country with the largest number of cases in the world. There is an extensive belt of high endemicity in Southern India particularly in east coast. This highly endemic belt encompasses almost the whole of Southern peninsular India. Central India is comparatively less endemic. The lowest prevalence is in north-eastern part. Thus the different states of the country fall into high endemic, moderate endemic and low endemic areas. The table lists out the different states with the prevalence of leprosy.

About 371 million people live in the endemic areas, being exposed to the risk of infection. In other words, this population at risk has to be protected against leprosy and every effort is being made by the Government to safeguard the health of these people.

Out of the 3.2 million cases 25% are of the infectious type. 25% of the total number in both the infectious and non-infectious types have deformities. About 10% are economically dislocated and 5% have become floating beggars.

Table

Degree of endemicity	State	Estimated average prevalence rate per thousand	Estimated Number of Cases ×10 ⁵
I. High Endemic States	Tamil Nadu	20.0	7.0
	Andhra	15.0	6.0
	Orissa	12.0	2.0
	West Bengal	10.0	3.5
II. Moderate Endemic States	Maharashtra	7.5	3.0
	Karnataka (Mysore)	6.5	2.0
	Bihar	6.5	3.0
	Kerala	4.0	0.5
	Madhya Pradesh	3.0	1.0
	Uttar Pradesh	2.5	2.0
	Assam	2.0	0.5
	Meghalaya		
III. Low Endemic States	Gujarat	1.7	0.5
	Himachal Pradesh	1.5	0.5
	Jammu & Kashmir	1.0	0.2
	Punjab	0.5	0.3
	Haryana		
	Rajasthan		
India as a whole		0.5	32.0

The National Leprosy Control Programme: The National Leprosy Control Programme was launched by the Government of India in 1955. The objective of the programme was to control leprosy through a series of leprosy control centres basically engaged in following functions: (a) within the identified area of the Centre, all cases of leprosy to be detected by survey of contacts, survey of school children, survey of whole population and by continued health education. (b) All cases to be treated at clinics located at convenient places. Of equal importance is the surveillance on the patients in order to see that they take treatment regularly. (c) Survey the area repeatedly to assess the effect of control methods. For this purpose, 3 types of projects are in operation:

- (1) Leprosy Control Units
- (2) Survey, Education, Treatment (SET) Centres
- (3) Urban Leprosy Centres.

Leprosy Control Units: These units are established in highly endemic areas having a prevalence of 10 per 1000 or more. Each unit covers a population of 200,000 to 400,000 population. The unit is headed by one Medical Officer. He is assisted by 10-20 Paramedical Workers, each worker covering a population of 25,000. The other staff in the unit consists of 2 Non-medical supervisors, 1 Laboratory technician, 1 Physiotherapy technician

and other supportive staff.

SET Centres: These centres are established in moderately endemic areas with a prevalence of 2.5 to 10 per 1000. Each Centre covers a population of 25,000 population. It is looked after by 1 Paramedical Worker. The Centre is attached to a general hospital or dispensary and the Medical Officer-in-Charge of the general hospital or dispensary also supervises the leprosy work.

Urban Leprosy Centres: These centres are located in large cities. They are attached to a Medical College or District Hospital. One Paramedical Worker helps the doctor in treatment of cases and in follow up of the cases by home visits.

The number of Centres of above categories at present are given below :

Leprosy Control Units 381

SET Centres..... 6595

Urban Leprosy Centres..... 430

In addition to the above control schemes, the following supportive activities help in the implementation of the National Leprosy Control Programme :

(i) *Reconstructive Surgery*: In order to help in rehabilitation of patients, and to provide motivation for availing treatment the Government has been establishing Centres for reconstructive surgery. In Medical Colleges and other Institutions where facilities for surgery exist, the Surgeon is provided with necessary additional facilities to carry out corrective surgery for deformities. The total number of such units is 71.

(ii) *Temporary Hospitalization*: To provide intensive treatment with more effective modern drugs, and to cater for acutely ill and complicated cases, temporary hospitalization wards with 20 beds each, have been attached to Medical Colleges. The total number of such wards is 199.

(iii) *Leprosy Training Centres*: With the progress of the work, there is an ever increasing demand for trained workers, both doctors and paramedical personnel. Training Centres were started immediately from the time of starting of the Control Programme and more Centres have been added from year to year. Up to date, there are 41 training centres. Of these 32 are being run by the Government and 9 are run by voluntary organizations. About 50 doctors and 1500 Paramedical Workers are being trained each year.

Participation by Voluntary Organizations: The voluntary organizations have played a prominent role in anti-leprosy work in India. They were actually the pioneers in the field and their work and experience has guided the Government to formulate the National Leprosy Control Programme. They are continuing to participate in the control programmes of leprosy. About 40 voluntary organizations are co-ordinating their efforts with the Government of India. Besides local bodies, several international agencies have a participation scheme with the Government of India.

Objective achievements: With the efforts of the network of the various Centres, a substantial proportion of the population has been covered and cases detected. Details are given below :

Population covered by the projects : 286 million out of
371 million.

Population surveyed : 113 million.

Number of cases recorded for treatment : 2.8 million out of
3.2 million.

It is seen that there is a substantial work done in the direction of identifying cases and bringing them under treatment. However, a much bigger task and perhaps the most difficult task is to see that all the patients take treatment. Since the period of treatment is very long, the patients drop out of treatment. Hardly 30% of the patients receive treatment with a reasonable regularity. Irregularity and discontinuation of treatment leads to a greater harm, by the emergence of secondary drug resistance.

Sulphone resistance : The entire project of leprosy control programme is based on chemotherapy. If drug resistance is developed, there will be a total chaos. On account of monotherapy with Dapsone, there has already been established evidence of occurrence of drug resistance. How serious is the problem and what proportion of risk is involved in being worked out. It is estimated that 3% of cases develop drug resistance if treated by a single drug. This could be a very serious problem. Consequently, efforts are being made to provide multi-drug therapy to all the bacilliferous cases. It is a stupendous task involving a very heavy expense.

Assessment of Control Programme : What is the impact of all this work on the leprosy problem? Data is not available since a countrywide assessment has not been done. There are several practical problems. The work is enormous. There are difficulties of transport in the control units. There is a shortage of drugs. Availability of proper personnel is the most important problem. We need a large army of qualified, specially trained personnel having the required enthusiasm and zeal to carry out this difficult task. Due to all these limiting factors, the quality and quantity of work varies from place to place. Assessment of Control has been done in a few centres and they report a fall in the incidence of leprosy by 50 to 58%. However, in other areas, the results are not very encouraging. A more determined effort is required.

Leprosy Research : India has taken its due share in leprosy research. While the problem is enormous, the country also possesses enough qualified people including medical doctors and scientists. Over 500 doctors are engaged in full-time leprosy work, and their work is guided by research scientists in specialized institutions. There are few institutions fully engaged in leprosy research. It is a pleasure to record here that the India Centre established by the Japanese Leprosy Mission of Asia is now the Premier National Institute. It is fully financed by the Government of India under the Indian Council of Medical Research and is playing a major role in fundamental and applied research in leprosy. The Central Leprosy Teaching & Research Institute at Chingleput is an older Institution also run by the Government. The Schieffelin Leprosy Research Centre near Vallore, the Foundation for Medical Research in Bombay, Leprosy Field Research Centre at Jhalda near Calcutta

are the full-time leprosy research institutions, financed by voluntary organizations. Some of the major Medical Institutions are also conducting leprosy research ; specially to be mentioned are the All India Institute of Medical Sciences, New Delhi ; Christian Medical College, Vellore and JIPMER, Pondicherry.

Research is being conducted in several aspects, which are of special relevance to Indian problems. Some of the important investigations are listed below :

- (i) Control methods—Operational and field techniques.
- (ii) Chemotherapy, with special emphasis on regimens from mass therapy.
- (iii) Chemoprophylaxis.
- (iv) Sulphone resistance—its incidence, methods of management and preventions.
- (v) Animal experiments specially for drug trials and investigations of drug resistance.
- (vi) Clinical Research, specially in deformities including Pathogenesis, surgical correction and rehabilitation.
- (vii) Immunology, immuno-therapy and efforts at development of vaccine.
- (viii) Fundamental research in microbiology, cellular immunology and serology.
- (ix) Epidemiology, risk factors, sub-clinical infection and health education.

India has several health problems and leprosy is one of the important ones. With the determined efforts of the Government, voluntary institutions, medical scientists and social organizations, it is fondly hoped that there will be a successful attempt in fighting against this scourge of mankind.