

## AMBADY ORATION

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### STUDIES ON TRANSMISSION OF LEPROSY AND CONTROL THROUGH CHEMOTHERAPY IN AN URBAN SET UP

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#### Urbanisation and leprosy

The need for a specialised approach to meet the increasing leprosy problem posed by urbanisation is now well recognised. Studies on leprosy carried out especially in the city of Bombay for more than two decades have not only enlightened us on the techniques based on chemotherapy to be adopted to effectively overcome this vexing public health problem, but also helped in the understanding of the transmission and causation of leprosy to a considerable extent. This presentation is based entirely on the experience of the author for over two decades in one of the most populous cities in India namely Bombay, which has a population reaching 10 million, of whom nearly 50% are believed to live in shanty tenements or slums. I hope that what I am relating will be found useful by the planners of leprosy work in the emerging cities in the countries with high leprosy prevalence, through a proper understanding of the disease transmission and arresting the spread through chemotherapy.

In 11 years time, it is believed that half the world's estimated population of over 6000 million will live in urban areas. India is one of the several developing countries particularly struggling to check the population explosion as well as the migration of rural population to urban areas.

#### Transmission factors

The special features of transmission of leprosy particularly through droplet infection coming to light by a perusal of recent literature, need to be borne in mind in understanding the peculiar problems in urban set up and in planning urban control programme. It is easy to imagine how the susceptible population living in congested cities under insanitary conditions are exposed to a high quantum of infection derived from the reservoirs, namely polar lepromatous and borderline-lepromatous cases, and fall an easy prey to the disease. With the non-availability of a vaccine, and working under an impossible situation to isolate the sources of infection, the only effective and recognised method applicable to the control of leprosy is to bring the reservoirs under effective multidrug therapy.

#### Epidemiological studies

Before launching an organized urban leprosy eradication programme, the target areas under treatment have to be defined. In Bombay we were not quite clear about this a decade ago, in the absence of definite data obtained through surveys. Figures from leprosy clinics where the patients attended voluntarily gave inadequate indication of the endemic and hyperendemic pockets in the city.

Since childhood infection gives a fair indication of endemicity, an analysis of clinic

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figures of Acworth Leprosy Hospital was undertaken and it showed that 6 to 14 years age groups accounted for 93.1% of the cases in children below 14, thus limiting the problem in the pediatric age group essentially to the school age. Massive school surveys on an unprecedented scale confirmed the hyperendemicity of leprosy in Bombay and these observations lead to the need for an objective assessment of the technique of school surveys and examination of contacts as a method of case detection in urban areas as compared to the whole population survey.

Though school surveys provided useful epidemiological pointers for assessing the endemicity in communities, the inadequacy of this technique as a sole method of case detection in the community as a whole became obvious. This led to the need for extensive slum surveys which were undertaken for the first time in the city which gave baseline data for understanding the urban epidemiology.

A study of leprosy undertaken among children of the pre-school age groups in slums and clinics gave further insight into the epidemiological aspects of leprosy.

In an effort to ascertain whether there were any further pockets of the disease in the city, we encountered ten self-settled leprosy colonies in the city and its environs, housing more than 2500 patients. The extent to which the pool of infection posed as a hazard to the citizens was firmly established by systematic studies.

The most practical and cheap technique other than mass survey to detect leprosy cases in slums is still not known. In this context we investigated the possibility of non-survey techniques and came to the conclusion that it should be possible to identify 53% of the total leprosy cases by techniques other than surveys which consisted essentially of intensive health education. More significantly, the striking feature of this study was that 81% of the cases of the true public health significance namely smear positive patients could be unearthed by these means.

### Investigations relating to treatment

The alarming drop out of leprosy patients from treatment in clinic-based urban programmes was first established. This brought to light fallacies of maintaining leprosy hospitals without field back up services. Study of dapsone compliance in urban field project, indicated that facilities for treatment offered at general hospitals or dispensaries and encouraging voluntary reporting could be quite fruitful and economical for obtaining better drug compliance.

With the transition of monotherapy to an era of supervised triple drug regimens for multibacillary cases, we studied 1027 such cases in a variety of urban clinics and reported on regularity rates during the phase of initial continuous therapy as well as during pulse therapy phase. The drug compliance was found to be highly satisfactory.

Investigations into the possibilities of involving general practitioners and municipal dispensaries and hospitals etc in urban leprosy control work have shown that considerable success can be achieved if these groups are persuaded to take interest in the leprosy services instead of placing reliance on vertical services.

The systematic steps in the management of multibacillary leprosy cases so vital for long-term follow-up were instituted in an integrated manner in various hospitals and medical colleges offering general health services. Some interesting findings in a large series of multibacillary patients methodically followed-up are worth pointing out:

1. Judging from the conversion of bacteriological index (BI), clofazimine based multidrug therapy (MDT) regimen with monthly administration of rifampicin as pulse therapy is quite satisfactory for mass application. In fact such a regimen is even superior to regimens based on intensive administration of rifampicin.

2. Initial results indicate that if multibacillary patients have received regular MDT

for 24 months under strict supervision, (drug intake being monitored by tile test for detection of DDS in urine), chemotherapy beyond this may not be necessary, as the fragmented bacilli seem to be cleared even without treatment. Long-term follow-up of such patients is in progress.

3. However, observations over 6 years in a large series of 839 patients indicated that if initial BI is more than 4+, an appreciable proportion (25%) still remained positive.

### **Integrated approach**

Recently, we have incorporated certain procedures into the routine functioning system of urban leprosy control programme with a view to break the barrier of stigma. Through integrated approach these manouvres were essentially directed towards, (1) general hos-

pitals, (2) students and interns in medical colleges, (3) local division of Indian Railways and city transport system, and (4) slum communities. The attempts at integrating leprosy at different levels of health and non-health structures in the city have resulted not only in a significant increase in voluntary reporting at various clinics but also helped to overcome the barrier of stigma. It is concluded that conventional methods of leprosy control programmes may have to be augmented or even replaced by newer techniques based on integration to reduce the cost and increase the output. This has become all the more necessary today as leprosy management through supervised drug administration has become a more complicated and technical procedure capable of being carried out only by competent agencies with sound infrastructure.