

EDITORIAL

CONTROL OF FILARIASIS

Optimism is an essential ingredient in the long-term view of the control of parasitic diseases worldwide. Recording the history of programs that have worked or are working is critical to the encouragement of strategy design in the effort to reduce this group of infections as a constraint on economic advance and improvement of the quality of life among the rural populations of Asia and other continents. In this context the review in this issue by Liu Jing-yuan and colleagues is timely, bringing to the global public the details of numbers and statistics behind successful elimination of filariasis as a practical problem in Fujian province of China.

In focusing on the story of one province, with a population greater than that of Malaysia, Liu *et al* make the task seem manageable in terms of time and effort. They take us first back into history to the classical description of microfilariae and the mosquito intermediate host by Manson in Xiamen in 1876, which were followed in 1878 by Bancroft's description of the adult worm in Brisbane, Australia, presumed by him to have been imported in Chinese immigrants from Xiamen (Amoy). Thus Fujian has been at the center of the filarial stage since early times, so that with the essential elimination of the disease in that province a critical chapter in the bancroftian saga has hopefully reached its finale.

This review covers, of course, both bancroftian and malayan filariasis, both of which had extraordinarily high frequencies in the province last century, although the first Chinese record of malayan disease was in a patient from Zhejiang province who presented in Xiamen in 1933. The distribution of the two diseases was geographically distinct in their epicenters: malayan in the mountainous western rice field area, bancroftian in the coastal plains and islands in the more densely populated central and southern areas.

The numbers of individuals examined over the years were prodigious, providing a record of undisputably solid value from the 1950s onwards. At that time individual countries had widely

differing microfilaremia rates, up to 30% in the highest, while one individual village recorded 85%. Filariasis was thus a highly prevalent problem and clinical disease rates were significant, including hydrocele, elephantiasis, lymphangitis, chyluria. The distribution patterns of clinical disease were different for the two causal organisms, some cases were grotesque but amenable to surgical treatment.

Meticulous studies were carried out on microfilarial periodicity in man and experimental animals. Although experimental transmission of *B. malayi* to animal hosts was achieved it is not clear whether any convincing evidence for animal reservoirs of this organism was found. Vectors were analyzed and defined. These data were then put to good use in defining parameters for control monitoring, which has been continued well past the point at which evidence for transmission ceased.

The control program was in essence simple, in extent phenomenal. It began with mass blood examinations: more than 22 million between 1958 and 1960. In this period more than 1 million persons were treated with a large dose of diethylcarbamazine (DEC). This process required about 1,000 trained medical personnel. There was a marked decrease in microfilarial rates and densities in the population. But the review is frank in its reporting of the serious side effects of this large dose strategy, in people with high microfilarial densities and in those with *Ascaris lumbricoides*, including a number of deaths in remote mountain areas.

Longer course smaller dose DEC treatment was substituted in 1964-67, with fewer complications and no deaths among 370,000 cases treated from among more than 7 million examined. In 1970-71 over 14 million persons were examined and nearly half a million treated, by which time the microfilarial rates in 896 villages were below 1%. In the period 1973 to 1987 mass examinations and treatments were carried out each year.

In the whole period from 1958 to 1987 over 80 million blood examinations for microfilaremia were done and over 3 millions were treated, a

truly amazing achievement in terms of dedicated labor.

The criterion used in China for basic elimination of filariasis is that the microfilarial rate in a village is reduced below 1%. This has been achieved by case finding and drug treatment, but also with concurrent vector control in difficult areas, particularly for malayan filariasis. Evaluation of the control program has been extensive and ongoing, using random cluster sampling. Independent assessment in 1988 confirmed microfilaric rates as being below 0.13% in a large number of sampled villages.

Simply told in a business-like manner this story gives little insight into the critical ingredient of community participation and collaboration in this effort, yet clearly this component so commonly assumed in China is the one which is so difficult to enlist on this scale over such a long time period in many other countries. This story has been repeated in many other provinces in China. Basic elimination has of course been achieved in some other countries where the effort required has not been on this scale.

Also missing from this record, as is indeed the case from most records of infectious disease control programs in most countries is an economic analysis. Ultimately cost/benefit of control strategies is a major determinant of their feasibility on a scale such as this which is required over a sufficiently long time to ensure that elimination of disease is truly achievable. The crunch comes at this point, too: what is the long term strategy for surveillance and its potential cost? It is to be hoped that these issues will be addressed in Fujian province at this juncture, as a lead for the world.

In the overwhelming need to concentrate on modulation of acute parasitic disease burden, too little time and interest has so far been available to address the type of situation which this overview describes. The costs of bringing a serious disease such as filariasis under control are difficult enough to meet when the disease causes serious morbidity but little or no mortality. To maintain control indefinitely past the era of morbidity is at the margin of health planning economics, particularly when countries such as China face a rising chronic disease burden.

This issue is not only money but also motivation of individual health workers and populations at large. It is easy for a technologist to have great enthusiasm when in the midst of a massive control drive on a major disease when laboratory specimens are pouring in daily, many are positive and the rewards for diagnosis are cured patients. It is a very different matter, years down track, when the same technologist is examining thousands upon thousands of negative specimens and there is little or no clinical disease to cure. The epidemiologist may still get satisfaction from data analysis and planning, but the technologist has no such enlightenment at this point. The population at large will eventually lose interest, too. Clearly there is a new challenge in technology design and selection, and in strategy delineation. It is hoped that China will take up this challenge as well as that of economic planning in this field. It is a different sort of opportunity but one which will potentially assist infectious disease control and surveillance programs globally.

Chev Kidson