THE MAIN PRIORITY OF EXAMINATION AND TREATMENT IN PULMONARY TUBERCULOSIS IN KOREA

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Recent advances in tuberculosis control was an important subject discussed at the Fourteenth World Health Assembly in 1961. It was stressed that although the methods of combatting tuberculosis might be the same all over the world, their practical use must be suited to the conditions which vary to a rather large extent from country to country, and no rigid scheme could, therefore, be generally applied.

The epidemiological situation of the country is the basis for the correct application of preventive, diagnostic and treatment procedure. Other factors such as suitable legislation, trained personnel and availability of funds are of paramount importance for the implementation of a control programme. Tuberculosis is a community problem. Its control must, therefore, be considered in relation to other problems in the community. It must be planned in conjunction with, and organized as an important part of the general public health programme and also as a part of the curative and clinical services provided for the community. Each country must find the solution best fitted to this principle, and the control programme include prophylactic, diagnostic and therapeutic procedures.

B.C.G.-Vaccination

The ability of B.C.G. vaccination to increase the immunity of the uninfected members of the community is widely recognized. In areas with a high prevalence of infection there is very strong support for its use on a mass scale for new-born, school-entrants and school-leavers. However, it must be remembered that B.C.G. is a supplement to, and not a substitute for, other control measures.

Chemoprophylaxis

Primary chemoprophylaxis has a limited place in the control programme. Secondary chemoprophylaxis is considered of value in preventing dissemination or the development of disease.

Case-finding

One of the main objectives of tuberculosis control is to find the infectious tuberculosis cases and render them non-infectious. This, however, can not be applied following standardized patterns. The application of case finding and treatment techniques must be suitably adjusted to the particular situation.

Tuberculin test, photofluorography of the chest and bacteriological examination are the three important diagnostic procedures in all case-finding programmes. If possible it should be carried out on a community-wide scale and in high prevalence areas all persons above the age of fifteen years should have their chest X-rayed. The value of this examination in a case-finding programme is appreciated by all countries who are trying to bring tuberculosis under control. It is regarded as the most practicable method leading to the detection of tuberculosis amongst the apparently healthy members of the community.

Treatment

Treatment with the three most commonly used antimicrobial drugs must be prolonged, uninterrupted and given in adequate doses and in correct manner. A combination
of at least two drugs is required during the infectious stage.

The importance of drug resistance to both the individual patient and to the community presents a double problem. Reduction in the therapeutic effectiveness of the drugs in the case of an individual patient is important, even more important, however, is the implications of the spread of drug-resistant mycobacteria in a community.

The question of whether chronic excretors of INH-resistant mycobacteria cause a public health problem has not been sufficiently studied to be able to form an opinion.

In the paper from WHO's expert committee on tuberculosis Fox stresses that in the technically advanced countries there has been striking progress in the chemotherapy of pulmonary tuberculosis. The great majority of the developing countries, however, have derived very little benefit from the progress because they have a gross shortage of medical resources and relatively little attempt has yet been made to adopt current knowledge to their special problems.

Even if there is general agreement regarding the aim and the means in the fight against tuberculosis it is necessary to modify some of the guiding principles which we consider as ideal.

In developing countries as well as in economically advanced areas it is a tragedy both for the patient and his family to be stricken by tuberculosis. However, we must realize that, in less advanced countries, there will always be a person who is eager and ready to take over the job left vacant by the patient. Because of overpopulation and unemployment it does not matter economically for the society if there exists a considerable tuberculosis problem. There is no strong opinion which demands medical services from the authorities, and the authorities in their turn have only limited obligations and responsibilities as regards the welfare of the individual in case of illness. Moreover, the national budget usually is limited and the appropriations for control and treatment of tuberculosis are minimal, other tasks enjoying far higher priority. Paradoxically it could be expressed in this way: these countries are so poor that they can afford to have a tuberculosis problem.

There are several questions which should be posed and evaluated on a realistic basis:

Does the individual and the society acknowledge the existence of a tuberculosis problem?

Is it possible to extend the B.C.G.-inoculation activities so as to cover the youngest age group?

Are qualified medical and paramedical staff available, and drug supplies sufficient, to carry out correct examinations and adequate treatment of everybody?

Does the family contact examination play the same role in countries with high tuberculosis prevalence as in low prevalence countries?

What is the situation regarding the tuberele bacilli susceptibility to the common drugs, and what are the consequences for medical treatment?

Is INH treatment alone really better than no treatment at all?

Although detailed knowledge as to the prevalence of tuberculosis in Korea may be limited, officially more than 800,000 of the population suffer from active tuberculosis. There is a great shortage of doctors and paramedical staff, there is a small supply of drugs and the budget is very limited.

Because of reduction of the drug budget for 1965 the number of cases under free treatment will be reduced from 100,000 to approximately 50,000. Isoniazid will be given to sputum positive and cavitary cases only and about 30% of the positive cases could be treated with companion drugs.

With regard to case finding by mass X-ray the number of exposures will be reduced with priority given to family contacts and people with symptoms.

To evaluate priorities and policy for chemotherapy in Korea some experiences from The Tuberculosis Control Station, Choong Koo health center in Seoul might be of some interest and should be further discussed.

The main purpose of the T.B.C. Control Station is to study the tuberculosis problems within two selected Dongs and accomplish a modern tuberculosis programme, in accordance with Scandinavian and generally accepted principles and adjusted to the particular circumstances in the area.

The preventive section of the T.B.C. Control Station has trained nurses for tuberculin testing and B.C.G.-vaccination and a 70 mm mass X-ray unit.

The therapeutic section takes care of the patients, and the double and triple drug treatment is given free of charge for all patients living in the area. There is near cooperation with the different departments at The National
Medical Center for further examinations, medical and surgical treatment.

The health nurses are visiting all registered patients. Household contacts are examined, and health education is an important part of their duties.

The social conditions in these Dongs have been assumed to correspond with the average of the city of Seoul.

**B.C.G.-Vaccination in The Pilot Project Area**

Tuberculin testing, B.C.G. inoculation and revaccination have been carried out since the establishment of the station in September 1961.

In 1964 2830 persons of the general population were tuberculin tested, 67% were Mantoux-positive. 93.6% of the negative reactors were B.C.G.-inoculated. Group examinations included 8485 persons in primary school, a girl high school, a university and other institutions. In school-entrants 30 per cent of the children were tuberculin positive, and at the age of 20 more than 90 per cent were infected. It is in full agreement with generally accepted policy that a vaccination be performed as early in life as possible in order to prevent consequences of a tuberculous infection in infancy.

The high prevalence of tuberculosis in Seoul gives very strong support to the need for mass use of B.C.G.-vaccination for new-born. The accomplishment of this procedure has been very difficult to fulfill because of the irregular registration of the new-born. In 1965 the public health nurses are visiting all households in the pilot project area and almost 90 per cent of the tuberculin negative children below the age of 5 years are B.C.G.-inoculated.

**Attendance at the Mass Examination**

Mass examination in the first Dong, Ya Hyun Dong, was finished in 1962. The second Dong, Dong Won Dong, has 17 Tongs, 7 of these were examined in 1964. Attendance at the mass examination and attendance for further examination in cases with pulmonary pathology is shown in table 1.

<table>
<thead>
<tr>
<th>Area examined</th>
<th>Inhabitants</th>
<th>Attendance</th>
<th>Attendance for further examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ya Hyun Dong</td>
<td>6079</td>
<td>4786</td>
<td>80.6</td>
</tr>
<tr>
<td>7 Tongs in Dong</td>
<td>7988</td>
<td>2964</td>
<td>77.2</td>
</tr>
</tbody>
</table>

Strychnine by the health nurses, Dong officers, Tong and Han leaders, the mobile X-ray unit in the area and overtime work at the station during the evenings and on Sundays, resulted in 80% attendance.

If we consider the possibility that those persons who did not attend at the survey had been examined, and the percentage findings of tuberculous diseases had been similar to those which were found, the prevalence of tuberculous diseases would have been approximately 5.4% in this urban area.

Unfortunately the exact number of inhabitants in the area is not known. Furthermore, there are many persons moving in and moving out of the district. The instability of the population and the fact some patients had only a temporary stay inside the selected area, make prevalence study unreliable.

The health nurses, therefore, visited the patients home to make certain that the patient really lived inside the selected area before they were registered. All household contacts should be examined before treatment was given.

With all resources is it possible to obtain this result in a very limited area, however, on a community-wide scale this case-finding procedure seems to be unrealistic in Korea today.

In the health centers case finding is not followed up by extensive, clinical laboratory and X-ray examinations.

Taking into consideration the fact that the drug supply for adequate, combined treatment is completely insufficient for the time being, this is one more reason why mass X-ray of the general population should not have too high priority in the present stage of development.

**The Role of Family Contact Examination**

In low prevalence areas, especially in such areas where the infection rate is falling, examination of family contacts with tuberculin converters and newly detected cases of pulmonary tuberculosis is very important in case-finding.

Struthers et al. examined household contacts in Seoul, Korea, and 11.9% of the persons examined had active pulmonary tuberculosis. Refsum in his examination revealed infections pulmonary tuberculosis in men in 22.4% and in women in 17%. The total finding of infectious plus non-infectious tuberculosis disease was 6.7% (Male 8.4%, Female 5.23%) compared to 5.1% in the general population.

In 1965 the T.B.C. Control Station re-examined contacts
Table 2: Result of tuberculin testing, X-ray and baro centrifological examination in 1961, 1962 and 1963

<table>
<thead>
<tr>
<th>Index cases</th>
<th>No. of contacts</th>
<th>Mantoux test</th>
<th>B.C.G.</th>
<th>X-ray &amp; sputum exam.</th>
</tr>
</thead>
<tbody>
<tr>
<td>183</td>
<td>816</td>
<td>24</td>
<td>596</td>
<td>194</td>
</tr>
</tbody>
</table>

Among 822 contacts examined 1.8% had infectious tuberculosis and 8.5% had non-infectious possibly active pulmonary tuberculosis.

Table 3: Re-examination of Contacts in 1965

<table>
<thead>
<tr>
<th>Index cases</th>
<th>No. of contacts</th>
<th>Mantoux testing</th>
<th>X-ray and sputum exam.</th>
</tr>
</thead>
<tbody>
<tr>
<td>183</td>
<td>547</td>
<td>214</td>
<td>142</td>
</tr>
</tbody>
</table>

Re-examination showed that 2 of the 16 originally infectious cases were still infectious, 2 had died of tuberculosis, 4 were non-infectious, 2 were normal and 5 had moved out of the area.

Among 70 non-infectious cases 3 had died of other causes (with tuberculosis), 37 were still non-infectious, 15 had normal X-ray findings and 15 were discharged partly because they had moved out and partly because they did not turn up for examination or treatment. Eleven cases with originally normal X-ray findings were classified as non-infectious on re-examination.

Incidence of active tuberculosis does not differ too much from the conditions in the general population. The sources of infection are heavy also outside the households because of poor health education and coughing and spitting habits.

In individual case contact examination should be done, and nobody denies the importance of this in the tuberculosis work. However, the procedure is time-consuming and trained doctors, medical and paramedical staff is not available now.

Drug susceptibility in the pilot area

A chaotic variation in methods of resistance testing is found also in Korean examination. Cultures and sensitivity tests in this survey has been performed at the Microbiology Laboratory at the National Medical Center. Twelve Löwenstein-Jensen media were used containing:

SM 100 mcgr. 50 mcgr. 10 mcgr. and 3 mcgr. pr. ml.
PAS 10 mcgr. and 1 mcgr.
INH 50 mcgr. 10 mcgr. 1 mcgr. and 0.1 mcgr. pr. ml.

The definition of resistance was growth in SM 10 mcgr. PAS 10 mcgr. and INH 1 mcgr. pr. ml.

In 1964 the number of media were reduced to:
SM 3 mcgr/ml and 10 mcgr/ml.
PAS # # #
INH 1 mcgr/ml # 3 #

Evaluation:

Full growth in highest concentration: resistance
Full growth in lowest and moderate growth in highest concentration: resistance
Full or moderate growth in lowest concentration, no or only few colonies in highest concentration: moderate resistance
No growth or few colonies only in lowest and highest concentration: sensitivity

In this paper only definite sensitivity and definite resistance is mentioned. Table 4 shows sensitivity and resistance to 2 and all 3 main anti-tuberculosis drugs.

In the total material, independent of treatment, 15.5% of the cases were resistant to two or all three main drugs. Still more than 80% of previously untreated, new confirmed cases were sensitive to two or all three main drugs.

Table 5 shows resistance to one, two and all three main drugs.

Table 6 shows resistance to each single drug and combinations.

In hospital material the percentage of resistance is higher. Park (1962) in his report on the sensitivity testing of 1000 strains from in-and out-patients, treated and untreated, at The National Medical Center showed resistance to a single drug in 28%, to two drugs in 25
Table 4. Sensitivity and Resistance to 2 or all 3 main drugs in 1962~1964

<table>
<thead>
<tr>
<th>Treatment result</th>
<th>1962</th>
<th>1963~1964</th>
<th>Total</th>
</tr>
</thead>
</table>
|                   | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Previously untreated | Treated | Preiously
Table 7. Cavity Formation and AFB-finding in 135 New Cases of Pulmonary Tuberculosis

<table>
<thead>
<tr>
<th>Number of new cases</th>
<th>Definite cavity</th>
<th>Possible cavity</th>
<th>No cavity</th>
<th>Tubercle bacilli</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13 (9.7%)</td>
<td>8 (5.9%)</td>
<td>114 (84.4%)</td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>74 (54.8%)</td>
<td>Negative</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>61 (45.2%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 8. Sensitivity tests in Cavitary Pulmonary tuberculosis

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>No growth</th>
<th>Sens. to all 3 drugs</th>
<th>Resistant to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>INH</td>
</tr>
<tr>
<td>Definite cavity</td>
<td>13</td>
<td>2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Possible cavity</td>
<td>8</td>
<td>1</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>3</td>
<td>12</td>
<td>1</td>
</tr>
</tbody>
</table>

Definite cavity was demonstrated in less than 10%, AFB was found on smear and culture in 55%.

Table 8 shows the sensitivity tests in cavitary cases. In 13 definite cavitary cases 11 were AFB-positive on culture and 4 of these strains were resistant to INH. Cavitary cases very often are advanced and previously treated. According to existing policy these cases should have priority in chemotherapy with two drugs. Many of these cases are resistant to isoniazid and in some time they will also be resistant to the companion drug.

Some of the patients are beyond any chance of successful chemotherapy and will contribute to increasing drug resistant strains in the community.

Naturally, this material is too small to make definite conclusions, however, these findings are in accordance with our clinical experience in in and out-patients. It should be taken in consideration when giving priority of free treatment for patients with symptoms, cavities and AFB in sputum.

Special Group Examination in The Pilot Area

The objective of this report is to discuss the realistic application of chemotherapy in Korea with particular reference to the immediate future, since the most pressing need is to know what should be done now rather what should be done at some indefinite date.

The result of the special age group examination in the pilot area might contribute in solving the problem of priority of examination and treatment in pulmonary tuberculosis.

In the pilot area there are three schools, one primary school, one girls high school and one university. Altogether 8185 persons were examined in 1964. The result of tuberculin testing and mass X-ray examination is shown in the annual report.

In 1965 the freshmen at the university were examined, ca. 90% of the students were males and the result of tuberculin tests is shown in Table 9. The material is divided into 3 groups: students grown up in the two largest cities in Korea, Seoul and Pusan, students from other cities and students from rural areas.

Table 9. Result of Mantoux test in Students

<table>
<thead>
<tr>
<th></th>
<th>Number tested</th>
<th>Not read</th>
<th>Mantoux testing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pos.</td>
</tr>
<tr>
<td>Seoul, Pusan</td>
<td>461</td>
<td>44</td>
<td>389</td>
</tr>
<tr>
<td>Other cities</td>
<td>136</td>
<td>6</td>
<td>118</td>
</tr>
<tr>
<td>Rural areas</td>
<td>187</td>
<td>14</td>
<td>130</td>
</tr>
<tr>
<td>Total</td>
<td>784</td>
<td>64</td>
<td>637</td>
</tr>
</tbody>
</table>

The infection rate in students from rural areas is lower than in those from the cities.

All pupils and students in the area were tuberculin tested and the negative reactors were B.C.G. inoculated. All of them had miniature X-ray and cases with pulmonary pathology were called for further examination with large chest X-ray, three sputum examinations on direct smear, cultures and sensitivity tests.

In the primary school group both sexes were equally represented. The middle and high school group were females and the majority of university students were males. Age and sex distribution is not representative for the general population. The material is selected. Many
of the students are hard-working, food and housing conditions are not always good, however, they do not belong to the poorest part of the population.

In primary school there was tuberculin converters, hilar adenitis and other signs of primary tuberculosis. The number of tuberculosis cases were decreasing from the 1st to the 6th grade. These manifestations of tuberculosis in school age are mostly benign, the prognosis is good, there was not found any case with destructive, progressing, postprimary pulmonary tuberculosis.

Among high school girls the radiological picture was completely changed from the primary school examination. Some few cases of primary tuberculosis appeared. Postprimary lung lesions progressing during the observation period were not uncommon and in two cases tubercle bacilli were demonstrated. All cases with fresh infiltrations were registered and treated as active pulmonary tuberculosis.

From the age of eighteen there is an enormous increase in active, destructive lung infiltrations, and AFB were demonstrated in 2~3% of the students. In this group 27 students with pulmonary pathology had no sputum for examination and 8 did not turn up for further examination.

These findings of active, pulmonary tuberculosis in the age group 15~25 was very well known in Western countries with high prevalence of tuberculosis 30~50 years ago.

It is a limited task to take special care of this age group representing the new generation. They will marry and have children, therefore, treatment in these cases is also prophylaxis. These patients have fresh lung infiltrations, primary resistance is uncommon and chemotherapy should be able to ensure the arrest of newly diagnosed cases of pulmonary tuberculosis, and there should be little or no relapse.

Mass examination is easy to perform in high schools, colleges, universities, army etc. The examination should be compulsory and the drug treatment free of charge.

Pulmonary tuberculosis in other age groups should be followed up in the health centers with sputum and X-ray examinations. They should be encouraged to buy their own drugs. Even poverty-stricken patients are prepared, when the position is fully explained to them, to purchase some of their medications. In the future when resources will be improved, the survey and treatment might be extended to other groups and the entire population.

Comments

During the last years the B.C.G. programme, laboratory facilities and mass X-ray equipment in the health centers have been much improved in Korea. Prophylactic and therapeutic measures, however have been spread, unsystematic and insufficient. A serious problem in combating tuberculosis is lack of interested general practitioners constantly looking for tuberculosis as a possible cause of chest symptoms and experienced specialists combining preventive and curative work in the health centers. The doctors are forced into, more than genuinely interested in tuberculosis work, which in general is not popular. The clever clinician, trained in preventive and diagnostic procedures, drug treatment and side reactions, and who know when additional surgery should be taken in consideration, is the missing link in the tuberculosis campaign. It is necessary that this key personnel obtain a proper status and adequate salary to encourage the activities within this most important and interesting field of medicine.

During the last decade attempts have been made to find out inexpensive short cuts in the eradication of tuberculosis. Chemotherapy has been made so extremely simple, indications for drug treatment and dosage are often made by friends, relatives, pharmacists and unqualified physicians. One should realize that in spite of the availability of drugs, there is no short-waves. Tuberculosis campaign always has been and will be a heavy work.
It all efforts were concentrated on B.C.G. from early childhood, compulsory examination and free treatment in the young adults, good results could be expected in the next decade.

Conclusions

1. B.C.G. inoculation should be performed as early in life as possible in this country with a high level of transmission.
2. Family contact examination is not of the same importance in high as in low prevalence areas. It might be limited to house holds with small children.
3. Case finding programme on a community-wide scale is not realistic in Korea today.
4. Drug resistance problems are not negligible.
5. The age group 15—25 years has a high prevalence of postprimary infections tuberculosis. It should be considered to concentrate examinations and free drug treatment on this age group.
6. When resources will be improved the activity should be extended to the entire population.
7. Interested and trained doctors are the key personnel in health education, prophylaxis and treatment of tuberculosis. It is highly desirable that they obtain a proper status.

Literature: