

PROBLEMS OF CHILDHOOD TUBERCULOSIS *

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Twenty-five percent of Lebanese children of the age group between 12 and 18 years are tuberculin-positive. Papanicolaou found that 26-65 % of the inhabitants of the Middle East (Jordan, Iraq, Iran, Pakistan and Aden) are tuberculin-positive. According to these figures tuberculosis appears to be a definite epidemiological and consequently an important clinical problem in these countries. Primary pulmonary infections are prevalent; oral and intestinal primo-infections are rare², despite the fact that, for instance in Lebanon, 50% of the cattle are tuberculin-positive. However, tuberculosis of the cervical as well as mesenteric and retroperitoneal glands is not rare and can occur as a lymphogenous or hematogenous complication of a hilar or paratracheal infection. On the other hand, the incidence of malignant lymphoma (Hodgkin's lymphosarcoma and reticulosarcoma) in the Middle East is considerably higher than lymphoglandular tuberculosis and has to be ruled out by biopsy even if the tuberculin test is positive. Of course in cervical lymph node tuberculosis the bacilli may be recovered by puncture of the node. Bluish-reddish discoloration of the skin, softening of the lymph node and anterocervical angular location thereof speak more in favor of tuberculosis.

Laparotomy is sometimes indicated in the ascitic form of tuberculous peritonitis as well, particularly also to rule out the many other causes producing ascites.

Bronchus tuberculosis with compression of the bronchus and consequent atelectasis or emphysema, or alternating emphysema and atelectasis, has received considerable interest in recent years. Atelectasis has to be differentiated from caseous pneumonia and nonspecific perifocal infiltration, though some authors do not recognize the existence of the latter. In every case of atelectasis, bronchoscopy is indicated in order to overcome the condition before fibrosis or bronchiectasis develop.

Among the hematogenous forms, miliary tuberculosis, tuberculous meningitis, bone and urogenital tuberculosis must be mentioned.

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The diagnosis of miliary can only be made by x-ray and even here a technically unsatisfactory picture may simulate the condition. According to Lorber and Emery ⁴, the x-ray findings are considered positive when at least five to twenty tubercles are present in one square centimeter. Clinically, there are nonspecific signs such as general malaise, fatigue, fever (usually not above 38° or 39° C). The lungs may be entirely normal on auscultation and percussion; occasionally they are hyperresonant and reveal crackles and also wheezes on auscultation. An increased respiratory rate occurs only after considerable parts of the lung parenchyma have been replaced by tubercles. Hepatomegaly and splenomegaly were present in less than 50% of our cases, and in only two cases was the spleen 4 cm below the costal margin. Although some authors report leucopenia, leucocytosis of between 9000 and 15000, with more than 70 % neutrophiles, was found in all our cases.

Meningitic was as frequent as miliary tuberculosis, yet was part of a miliary dissemination in only half of our cases. In the other cases of meningitis, other hematogenous metastases were occasionally found, mainly in bone. Cases of bone tuberculosis, especially Pott's disease without other hematogenous manifestations, were next in frequency. There is no time to go into details, but we would like to mention that not every angular or rounded kyphosis is tuberculous; we have seen several cases of Hurler's disease and also of malformation of the spine (diastematomyelia) which were treated as tuberculosis for a considerable length of time, only because an angular kyphosis alone was considered sufficient evidence for the diagnosis of Pott's disease.

In the following pages a short outline is given of the treatment of tuberculosis as recommended at the present time. In spite of the new development of antimicrobial therapy, the general management of the patient should never be neglected, though it appears to have lost some of its importance of the days before chemotherapy. Under general management are understood the creation of a quiet environment, bed rest, good nutrition and vitaminotherapy. Surgery has its place in childhood tuberculosis, though in general not to the same extent as in adults.

Therapy should be guided by some general considerations, which follow:

1. The mortality rate is highest in infancy, decreases in late infancy and the toddler age, remains low between 3 and 12 years and rises again in puberty (12-13 years in girls, 14-15 years in boys). The same age incidence holds for post-primary complications; quiescent tuberculosis is reactivated in puberty more frequently than before.

This reactivation, and also susceptibility, are in general during puberty greater in girls than in boys.

2. Local, bronchogenic and particularly hematogenous complications (dissemination of the disease) are most frequent within the first six months after onset^{5,6}. Ninety percent of the serious complications of primary tuberculosis occur in the first years of the disease⁸.

3. The severity of the disease is greater, and complications of the primary infection are more frequent, when the patient remains in the tuberculous environment, i. e., when contact with the infective source is sustained.

4. The morbidity and mortality of tuberculosis are higher in persons of low socio-economic status.

5. There are several indications for antimicrobial therapy. Miliary and meningitic tuberculosis were nearly 100% fatal diseases before the time of chemotherapy. For these conditions antimicrobials are a life-saving matter. Progressive pulmonary tuberculosis, with or without cavitations, was also a very severe disease. Here, too, antimicrobials are indicated. In skin tuberculosis, antimicrobials are given to shorten the course of the disease, although this condition is not a threat to life. Antimicrobials, especially INH, also shorten the course of renal tuberculosis and (in combination with orthopedic measures) of bone tuberculosis. In both conditions it occasionally replaces surgical intervention. Chemotherapy has no influence on the necrotic lesions of the primary complex. It has been shown that neither the primary focus in the lung nor the hilar adenitis took a shorter or milder course under antimicrobial treatment. In these cases antimicrobials are given only in order to prevent post-primary complications.

6. Chemotherapy probably is or would be effective at the very early beginning of the primary disease, before tuberculin hypersensitivity has developed; it can also prevent a tuberculous infection⁷. INH could therefore be given to tuberculin-negative contact children, before, but not during, their BCG vaccination — unless an INH-resistant BCG is discovered.

Children below three years and between twelve and seventeen years of age, with a newly-converted positive tuberculin reaction or a primary complex without systemic symptoms, receive INH 5 mgm per day per kilo of body weight for six to twelve months.

For primary tuberculosis with systemic symptoms and progressive primary tuberculosis (caseous pneumonia, bronchus tuberculosis), INH as above, plus PAS 0.5 gm per day per kilo of body weight, are given for eight to twelve months. The PAS may be omitted for two days a week if it causes anorexia and intestinal disturbances.

TABLE : 1

ANTIMICROBIALS FOR TUBERCULOUS MENINGITIS

Age in years	Weight in Kg	Surface in m ²	SM mgm per day ¹	INH mgm per day ²	PAS gm per day ²	Intrathecal	
						SM mgm per day ³	INH mgm per day
Newborn	3.5	0.25	180	75	2.5	10	6
2	12	0.5	350	150	5	20	12
9	30	1	700	300	10	40	25
Adult	70	1.7	1000	500-700	14-17	70	40

¹ Streptomycin sulfate or streptomycin calcium chloride intramuscularly for 2 - 4 months.

² By mouth for one year or longer.

³ Streptomycin sulfate or streptomycin calcium chloride for 2 months.

For miliary and other hematogenous forms, INH 10 mgm per kilo per day and PAS 0.5 gm per kilo per day are given for eight to twelve months.

Table 1 represents one of several methods of treating tuberculous meningitis. There are cases on record which recovered without intrathecal treatment. Nearly all the more experienced authors, however, claim that not all cases can be treated safely and efficiently without intrathecal therapy; however, only very severe cases require the intrathecal administration of two antimicrobials.

Cortisone or ACTH have proven effective in preventing or overcoming adhesions and block formation in tuberculous meningitis. For example, oral hydrocortisone 1 mgm per kilogram per day and 2-5 mgm intracisternally may be given for four weeks.

Recently it was found that the corticosteroids enhance specific defense mechanisms and also their antiallergic effect was seen to be beneficial, particularly when the hormone is given in early stages. For example, the injection into the pleural cavity of 25-50 mgm of hydrocortone every three days for from one to four doses has yielded dramatic results in the improvement of tuberculous pleurisy.

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