Nigerian Journal of Paediatrics, 7 (1), 1–6

Childhood Tuberculosis in Enugu

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Summary

Okeahialam, T. C. (1980). *Nigerian Journal of Paediatrics*, 7(1), 1. **Childhood Tuberculosis in Enugu.** In a study of 347 children with tuberculosis seen at the University of Nigeria Teaching Hospital, Enugu, 71.7 per cent were found to have severe pulmonary lesions particularly in the younger age group. Only 47 children (15 per cent) presented with primary complex in the lungs. Extra-pulmonary lesions which occurred included lymphadenitis, meningitis, chronic otitis media and Pott's disease. No case of abdominal tuberculosis was found. Lack of immunisation, late diagnosis and treatment and poor socio-economic status of the families concerned appeared to be important factors responsible for these severe forms of childhood tuberculosis. By the end of the first year of follow-up, there was a default rate of 49 per cent among patients on domiciliary treatment.

Tuberculosis is a major paediatric problem in most developing countries. In Nigeria, previous workers have described some of the features of the disease in children. (Morey, 1959; Hendrickse, 1961; Konstam and Blesvosky, 1963; Kolawole *et al.*, 1975). The incidence of this disease is unknown but the number of cases seen in clinics and hospitals throughout the country is reportedly high. Tuberculosis accounts for 12 per cent of the total yearly admission to the paediatric beds of the University of Nigeria Teaching Hospital, Enugu (personal observation). The pattern and presentation of tuberculosis vary from one country to another (Cammock and Miller, 1953; Davies, 1961; Hatcher, 1963). This paper describes observations on the clinical manifestations of the disease as seen in Enugu. It also reviews the results of long-term domiciliary management after initial hospital treatment.

Materials and Methods

During a two-year period (January, 1975 to December, 1976), 347 children with a definite diagnosis of tuberculosis were studied. The children were all admitted to the hospital and were treated with three standard anti-tuberculous drugs namely: streptomycin, isoniazid and thiacetazone, for four to six weeks. Before discharge from the hospital, the parents were given adequate education on the nature of the disease and the importance of regular attendance at the monthly follow-up clinic. They were further instructed to continue with isoniazid and thiacetazone as prescribed, for up to eighteen months.

Results

Age and Sex distribution

There were 191 boys and 146 girls. This does not differ from the observed sex ratio of 3 to 2 among all patients admitted to the paediatric wards. The types of lesion and the age distribution are shown in Table I. It will be observed that 310 (89.2 per cent) of the 347 children were under the age of nine years.

TABLE I

Type of Lesion and Age Distribution of 347 Children With Tuberculosis

Type of Lesion	*Age (Years)* 0–4	5–8	9–12	*Total*
Number of children with extrapulmonary lesions	52	38	8	98
No. of children with pulmonary lesions	111	109	29	249
Total	163	147	37	347
Per cent of Total	46.8	42.4	10.8	100

Pattern of Lesions

The pattern of pulmonary lesions is summarized in Table II. The lesions occurred in 249 (71.7 per cent) of the 347 patients. Segmental lesions alone occurred in 104 (30 per cent) of the patients while 78 others had pleural effusion or empyema (Fig 1). The segmental lesions affected particularly the right upper and middle lobes in the younger age group and the lower lobes in those above the age of 5 years (Table III). Uncomplicated primary tuberculosis (primary complex) occurred in 47 children (13.5 per cent) who were mainly below the age of 4 years (Table II). Twenty-two of these children had in addition, cervical lymphadenopathy.

Ninety eight (28.4 per cent) of the children had extrapulmonary lesions (Table IV) and these included 46 who presented with cervical lymphadenopathy only. Three of the children had generalised lymphadenopathy. Tuberculosis of the spine was seen in 29 children. The thoracolumbar region (T10-L1) was the commonest site of the lesion which affected mainly children below the age of eight years. Eleven (38 per cent) of the children with Pott's disease also had pulmonary lesions.

Tubercle bacilli were isolated from three children with chronic otorrhoea, and they responded dramatically to anti-tuberculous therapy. Twelve children admitted with the initial diagnosis of protein-energy malnutrition were found to have tuberculosis which affected the cervical group of lymph nodes in 4.

TABLE II

Pattern of Pulmonary Lesions in Childhood Tuberculosis

Lesion	*Age distribution (years)* 0–4	5–8	9–12	*Total*
Primary Complex (hilar lymphadenitis)	45	2	–	47
Segmental lesions	31	54	19	104
Pleural effusion/empyema	28	41	9	78
Miliary tuberculosis	5	1	–	6
Tuberculous bronchopneumonia	2	11	1	14
Total	111	109	29	249

TABLE III

Distribution of Segmental Lesions in 104 Children with Tuberculosis

Lesion	*Age distribution (years)* 0–4	5–8	9–12
Right lung			
Upper lobe	11	3	2
Middle lobe	9	7	–
Lower lobe	4	27	7
Left lung			
Upper lobe	2	7	4
Lower lobe	5	10	6
Total	31	54	19

TABLE IV

Pattern of Extra-pulmonary Lesions in Childhood Tuberculosis

Lesion	*Age distribution (years)* 0–4	5–8	9–12	*Total*
Cervical lymphadenitis	32	14	–	46
Generalised lymphadenitis	–	3	–	3
Pott's disease of the spine	7	19	3	29
Tuberculous meningitis	1	3	–	4
Tuberculous pericarditis	–	–	1	1
Chronic otitis media	1	2	–	3
Marasmus/Kwashiorkor associated with TB	12	–	–	12
Total	53	41	4	98

Outcome

Sixty-six (64 per cent) of the children had normal x-ray of the chest after 4–6 months of chemotheraphy (Fig. 2), fifteen developed fibrosis of the affected lobe during twelve months of treatment; the rest failed to attend the follow-up clinic. Eleven (3.2 per cent) of the children in the series died within the first two weeks of treatment in hospital; these included three with tuberculous meningitis.

Discussion

The clinical manifestations in the present series portray the severity of the disease in these children before admission to hospital. Most of the patients had earlier received ineffective and inappropriate treatment from traditional healers or patent medicine dealers. The resultant delay in diagnosis, the nutritional status and the poor socio-economic environment of the affected children probably accounted for the severe pulmonary forms in this series especially in the younger age group. Primary lung complex was diagnosed in only 13.5 per cent of the cases. This early form of tuberculosis is often missed and the clinical features of cough and fever at onset may be mistaken for an upper respiratory tract infection.

There had been some speculation in the past about the pathology of segmental lesions but it is now generally accepted that a segmental opacity occupying the area of a pulmonary segment or lobe is secondary to a lesion of the respective bronchus. The radiological segmental shadow can be caused by collapse, and/or consolidation. The nature of the change in the lungs can be determined fully by bronchoscopy and bronchography. Some of these lesions heal completely but others advance to the stage of fibrosis and bronchiectasis.

Pleural effusion is generally considered to be an early manifestation of primary tuberculosis in older children and young adults (Davies, 1961). This is at variance with the findings in this present study. Effusion was often associated with an underlying severe pulmonary collapse or pneumonia and occurred in the younger age group. It may be further complicated by empyema which may be mistaken for non-tuberculous staphylococcal empyema especially after measles infection.

Tuberculosis presenting as marasmus or kwashiorkor occurred in 12 children in the present series. The Mantoux test may be negative in these malnourished children and furthermore, bacteriological investigations are often unhelpful. However, a persistently raised erythrocyte sedimentation rate in a malnourished child not responding to adequate nutritional care and other forms of treatment is very suggestive of tuberculosis (Okeahialam, 1974).

Tuberculous meningitis was diagnosed in four children who were moribund on admission. The late or wrong diagnosis of this form of the disease and high mortality associated with it are probably responsible for the small number in our series in contrast to the high incidence in Ibadan (Hendrickse, 1961). It is significant also that no case of abdominal tuberculosis was diagnosed during

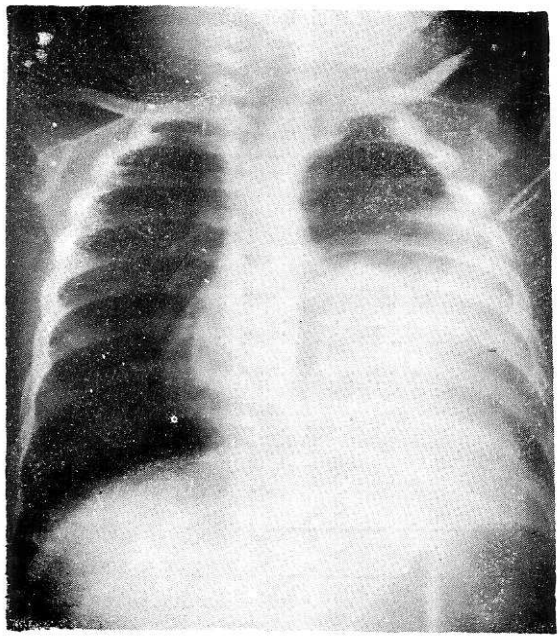
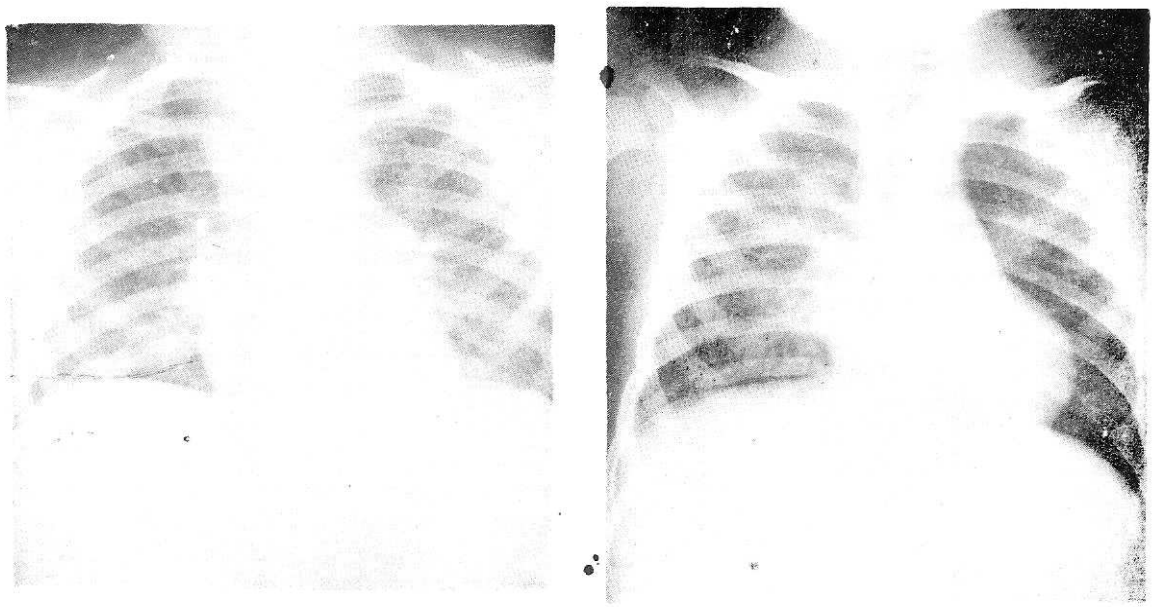


Fig. 1. *Tuberculous pneumonia and associated empyema confirmed by aspiration.*



(*a*) (*b*)

Fig.* 2.** *Bilateral tuberculous hilar lymphadenitis.* (*a*) ***Before treatment (*b*) ***After six months of chemotherapy.***

this study. Studies in Ibadan and Enugu have indicated that this form of tuberculosis occurs mainly after the second decade of life in Nigerians (Lewis and Abioye, 1975; Onuigbo 1977).

All children with tuberculosis of the spine were treated with chemotherapy only and those with associated paraplegia responded to the conservative method within twelve months. This emphasises the practical point that the application of plaster spinal jacket in these patients is not necessary. It has been shown that ambulant outpatient treatment is as effective as the use of spinal jacket, and there is no advantage in the expensive regime of bed rest in hospital for a long period (Konstam and Belevosky, 1963; East African Medical Research Council, 1973).

Apart from the stage of the disease when the diagnosis is made, the prognosis of childhood tuberculosis depends on the regular and correct administration of the drugs at home and attendance at the follow-up clinic. How effective then was domiciliary treatment in the present series? There was a default rate of 49 per cent by the end of the first year of follow-up. Similar experience on domiciliary management of tuberculous patients has been reported in Egypt (Gomma and Salem, 1963), Kenya (WHO, 1963), Swaziland (MacFayden, Klopper and Shongwe, 1963) and India (Andersen and Banerji, 1964). Some important contributory factors to this high default rate among our patients were the distance of the patients' homes from the hospital and the poor socio-economic status of the parents. Although the anti-tuberculous drugs were supplied free in the hospital, some parents could not afford the fare to attend the follow-up clinic. It is estimated that it costs a family living 40 kilometres from the hospital about ninety naira on fares alone for the mother and child to attend regularly for 18 months. Another factor which was responsible for the failure of some of the parents to keep regular appointments was the rapid response of the children to chemotherapy during the first four months. The symptoms of fever and cough subsided during this period and parents through ignorance, assumed that the children were completely cured despite the initial health education. One of the ways by which this default rate can be lessened is to reduce the period of treatment to six months. This is feasible with the use of newer drugs such as rifampicin and pyrazinamide which are however expensive (East African Medical Research Council, 1974).

Our experience in Enugu on childhood tuberculosis is likely to be similar to those in other parts of the country. The large number of children with tuberculosis in Nigeria particularly during the first four years of life is a reflection of the widespread infection in the adult population. The number of cases seen and treated in hospitals represents the tip of the iceberg of this disease. Its incidence can be reduced in children through effective control methods which should include early detection of adults with active lesions, mass B.C.G. immunisation with emphasis on all newborns. These should form important aspects of the basic child health and expanded immunisation programmes. In addition, improvement of housing and environmental conditions and the general standard of living of the population are essential socio-economic factors which will enhance the effective control of tuberculosis in any community.

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