

Tuberculosis in BCG-immunized Children and Adolescents from Elite Social Class Families

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Summary

Ekanem EE and Uniga AJ. Tuberculosis in BCG-immunized Children and Adolescents from Elite Social Class Families. *Nigerian Journal of Paediatrics* 1994; 21: 89. Nine cases of tuberculosis in children and adolescents from four elite social class families in Calabar are presented. In two families, two domestic-helpers who shared the same sleeping rooms with the patients constituted the sources of infection. In the third and fourth families, HIV infection in the parents and siblings, was the predisposing factor. It is recommended that domestic-helpers should be medically examined and certified fit before close contact with children is allowed. A history of recent employment of, as well as medical screening of such domestic-helpers, should be part of tuberculosis management in children. Furthermore, HIV infection should be suspected when childhood tuberculosis presents in an elite social class family.

Introduction

TUBERCULOSIS, an important medico-social problem world-wide, affects an estimated eight million and predominantly poor people with three million deaths each year; a majority of the deaths occur in those aged less than 15

years.¹ In Nigeria, the annual incidence of the disease which remains a major cause of morbidity and mortality,²⁻⁴ was estimated at more than 13,000 cases per annum by 1989.⁵ The present communication reports a study of tuberculosis among fully-immunized children and adolescents from four elite social class families in Calabar, with the aim of highlighting emerging risk factors for the infection in children.

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Patients and Methods

Children and adolescents from four elite families as classified for African countries by Olusanya,⁶ with a diagnosis of tuberculosis (TB) were studied between March 1991 and September 1993. In addition to the standard investigations for TB, human immunodeficiency virus (HIV) antibody screening by enzyme-linked immunosorbent assay (ELISA) and immunoblot techniques, were also carried out on blood specimens obtained from the cases. Similarly, HIV antibody screening was carried out on parents whose children were HIV-positive. Efforts at contact tracing in each family, were made.

Case Reports

Table illustrates the cases in the four families. In families one and two, the infection was traced to domestic-helps with open TB, who were employed 12 and nine months respectively, before the onset of illness in the children. In both instances, the helpers shared bedrooms with the children. In families three and four, the predisposing factor was HIV infection in the siblings and the mothers, one of whom also had open tuberculosis. All the children in families one and two recovered with anti-TB therapy. The child in family four was improving, four weeks after the commencement of anti-TB therapy, before being lost to follow-up, while the child in family

three, died one week after admission.

Discussion

In Nigeria, as in many other developing countries, tuberculosis is usually associated with low socio-economic status and non-immunization with BCG vaccine.^{3 4} The present cases, occurring in children from elite social classes who had all received BCG vaccine, illustrate emerging risk factors which are likely to become increasingly important in tuberculosis. The current deteriorating socio-economic condition in the country has produced a large pool of unemployed people living below the poverty line. These same conditions have created an even greater need for both parents in the family to work outside the home, necessitating in many cases, the employment of domestic-helps for child-care and other domestic chores. These helpers are usually recruited from the ranks of the unemployed poor and some of them may be infected with tuberculosis. Families one and two illustrate this emerging risk factor. Perhaps, a more important emerging predisposing factor for childhood tuberculosis, as illustrated by families three and four, is HIV-infection. Increasing incidence of tuberculosis infection has been reported with increasing rates of Acquired Immuno-deficiency Syndrome (AIDS).⁷⁻¹⁰ The mother in family four had HIV infection and pulmonary tuberculosis; therefore, her child most

TABLE
Serial Numbers and Summary of Features of Four Elite
Social Class Families with Tuberculosis

Number	Parental Occupation		Patient	Predisposing Factor/Contact
	Father	Mother		
1	Military Officer, alive and well	Senior civil servant who later developed pulmonary TB	1 21-year old female with pulmonary TB	22-year old female domestic help with open pulmonary TB, who was employed 12 months before onset of illness in the siblings. She shared bedroom with the younger siblings
			2 16-year old female with pulmonary TB	
			3 15-year old female; had pulmonary TB	
			4 13-year old male; pulmonary and right hip joint TB	
			5 Six-year old female; TB cervical lymphadenitis	
			All five children were claimed to have been immunized with BCG	
2	Medical practitioner Both parents were alive and well	Senior bank staff	1 Twin siblings 11-month old male and female, both had TB cervical lymphadenitis. These children had been previously vaccinated with BCG	Domestic help with open pulmonary TB; she was employed nine months before onset of illness in the twins
3	Unknown	Business-woman with international connections. HIV positive ?pulmonary TB	A 10-month old male with disseminated TB and fungating nodule under BCG scar. ?HIV status.	HIV infected mother and sibling ?infection by BCG organism.
4	A USA-trained engineer.	Middle cadre civil servant. HIV positive and open pulmonary TB infection.	A 12-month old female with pulmonary TB, heart failure and delayed milestones. ?HIV status. Was previously vaccinated with BCG.	HIV infected mother and ?sibling.

likely developed the infection by horizontal transmission. There is a possibility that the child in family three developed disseminated tuberculosis from BCG vaccination which is known to occur in immuno-compromised children¹¹ and, because of this risk, BCG is not recommended for children with AIDS.¹²

It has been estimated that, as at June 1991, there were 92,422 cases of AIDS in Africa and another three million with asymptomatic infection.¹³ By 1992, 236 cases of AIDS had been reported in Nigeria,¹⁴ a low figure which is most likely due to inadequate diagnostic facilities and/or under-reporting.¹³ Asindi and Ibia¹⁵ in 1992, reported seven cases of paediatric AIDS in Calabar, with one or both parents infected in each case. Since then, five more cases have been diagnosed in the same centre (unpublished information). It seems very likely therefore, that there is an increasing pool of infected adults in Nigeria who constitute potential sources of tuberculosis in children.

In order to reduce the incidence of tuberculosis in this group of children, employers of domestic-helpers should ensure that such employees are properly screened before close contact with children is allowed. History of recent employment of domestic-helpers should be sought in children from the elite social classes presenting with features suggestive of tuberculosis and such domestic-helpers should be screened.

Furthermore, infants with TB from such social classes should be screened for HIV infection.

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