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Tuberculosis in BCG Vaccinated Children

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In spite of BCG vaccination, children of all age groups are vulnerable to contract tubercular infection. We carried out a retrospective study to ascertain the site of tubercular infection in hospitalized patients in relation to their immunization status.

Material and Methods

This retrospective study was undertaken at Pimpri Chinchwad Municipal Corporation Hospital, Pune. Three hundred cases of tuberculosis diagnosed over a period of four years were analyzed. Tuberculosis was diagnosed by history, clinical examination, tuberculin

test, chest X-ray, ESR, biopsy of the lesion whenever available, isolation of AFB if possible, and examination of the spinal, pleural or ascitic fluid depending upon the type of tuberculosis. Tuberculin test was done with 1 TU of purified protein derivative and was considered positive, when after 72 hours, an induration of more than 10 x 10 mm was seen. Presence of BCG scar was taken as confirmation of immunization. The cases were analyzed according to site of tuberculosis and the BCG immunization status. Relative risk (odds ratio) of the type of tuberculosis, its 95% confidence interval were calculated.

Results

Of 300 patients, 147 were boys; 145 had a BCG scar. The youngest child was six months old, 147 were below 5 years, 100 were between 5 to 10 years and 53 were between 10-15 years. Children immunized with the BCG vaccine presented with less severe forms of tuberculosis including primary complex or thoracic tuberculosis (Table I). Unimmunized children presented with disseminated disease including miliary, intracranial and tubercular lymphadenitis involving multiple groups of glands. Most unimmunized children were seriously ill and required prolonged hospital stay.

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TABLE I—Relationship of Disease Type with Immunization Status

Type of Tuberculosis	Immunized (n=145)		Unimmunized (n=155)		Odds ratio (95% CI)
	No.	(%)	No.	(%)	
Thoracic	115	(56.5)	89	(43.5)	2.84 (1.68-4.66)
Lymph nodes	14	(32.6)	29	(67.4)	0.46 (0.24-0.93)
Meningitis	6	(42.9)	8	(57.1)	0.79 (0.28-2.32)
Abdominal	3	(27.3)	8	(72.7)	0.39 (0.12-1.51)
Renal	1	(100)	0		3.23 (0.13-7.84)
Bone	4	(22.2)	14	(77.8)	0.28 (0.01-0.91)
Miliary	2	(22.2)	7	(77.8)	0.9 (0.08-1.48)

Of 145 cases of immunized children, 115 suffered from thoracic tuberculosis and 30 from other types. Out of 155 unimmunized children, 89 suffered from thoracic and 66 from other types. The risk of thoracic tuberculosis was 2.84 times more in immunized children as compared to other type of tuberculosis. Tuberculin test was positive in 195 cases. Out of these 145 were from BCG vaccinated group and 50 were from non vaccinated group.

Discussion

The protective value of BCG vaccine is doubtful. Both BCG immunized and unimmunized children suffer from tuberculosis. In this study, nearly half (47.7%) cases occurred among vaccinated. A similar observation was documented by Singh *et al.*(1), who observed

that of the cases of tuberculosis, 57% were vaccinated. In the present study, maximum number of cases occurred below the age of five years which correlates with findings of others(2,3).

Thoracic type of tuberculosis was the most common lesion in immunized cases as also reported by Rao *et al.*(2). Seth *et al.*(4) reported that more than one third cases of pulmonary tuberculosis received BCG vaccination. Vaccinated children showed a greater tendency to localize the tubercular lesions while unvaccinated children suffered from progressive forms of the infection. In cases of meningeal tuberculosis, 42.9% were immunized and 57.1% were unimmunized. Rao *et al.*(2) noted that in cases of meningeal tuberculosis, 38.8% were immunized and 41.8% were

unimmunized. Abdominal tuberculosis was commonly found in unimmunized children.

The fact that considerable number of children with tuberculosis in this study were vaccinated, shows that BCG vaccination does not prevent infection. However, it offers a partial protection by preventing serious forms of tuberculosis (5-7).

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Typhoid Fever in a Neonate

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Typhoid fever is rare in the neonatal period. Several studies on typhoid fever in young children(1-4) do not include a single neonate. Even when typhoid fever complicated 1-3% of pregnancies in the early part of the 20th century in the United States, only few cases of typhoid fever were reported in neonates(5). The

rarity of the condition in this age group prompted us to report this case.

Case Report

An 1820 g male infant was born at 34 weeks' gestation to a fifth gravida mother by spontaneous vaginal delivery. The Apgar scores were 7 and 8 at 1

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