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## *Readers Forum*

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**Q.** *Of the two generally available diagnostic tests for childhood tuberculosis, namely, Mantoux and BCG, which is better?*

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**A.** Tuberculin or Mantoux's test is commonly used to detect the level of prior sensitization to tuberculous proteins as a corroborative evidence for diagnosing childhood tuberculosis. The test however, suffers from certain limitations as it can often be negative in presence of disease particularly the severe forms like meningeal, disseminated or miliary tubercular infection. The test is also negative in children who have malnutrition. Most of the studies have reported 40-68% positivity in proven cases of tuberculosis(1-4). In view of the poor reported sensitivity of the Mantoux's test, the clinicians looked for various alternatives including using higher strengths of PPD and BCG as antigens to elicit skin reaction for diagnosing tuberculosis.

*Table I* depicts the results of BCG and Tuberculin test in some of these studies. BCG test does provide positive reactions in a much higher number of cases, particular-

ly those with malnutrition and severe disease. However, the increase in sensitivity by using BCG as an antigen instead of PPD comes at the cost of loss of specificity. The false positive reactions to BCG are much higher as compared to Mantoux Test (*Table II*).

Most of the data for BCG test pertains to times when the BCG coverage in the country was poor. The validity of this test will obviously be affected by prior BCG immunization. Most of the studies evaluating the BCG test have not considered the possible impact of prior BCG immunization on the BCG test. Mehta et al.(6) in their study showed that the false positivity in BCG vaccinated group was statistically greater than the unvaccinated group (28.6% vs 16.9%). Myint et al.(10) have reported that over 50% of 1095 BCG vaccinated children (6 mo-5 yrs) had an accelerated reaction to a subsequent BCG test even 4.5 to 5 years after BCG vaccination. The validity of the BCG test in countries like India where routine BCG vaccination is undertaken is therefore suspect. The false positive reactions to BCG test in BCG vaccinated group also raises the related issue of repeatability of BCG test in an individual. While the tuberculin test can be used repeatedly to

**TABLE I-** *Results of BCG and Tuberculin Test in Patients Suffering from Tuberculosis.*

| Authors                          | No. of cases | BCG test positive (%) | Tuberculin test positive (%) |
|----------------------------------|--------------|-----------------------|------------------------------|
| Udani <i>et al.</i> (1971)(3)    | 41           | 100.0                 | 68.3                         |
| Lothe <i>et al.</i> (1973)(4)    | 97           | 92.7                  | 47.6                         |
| Datta <i>et al.</i> (1982)(5)    | 65           | 87.7                  | 29.2                         |
| Bhandari <i>et al.</i> (1984)(6) | 165          | 90.9                  | 47.2                         |
| Mehta <i>et al.</i> (1986)(7)    | 81           | 83.6                  | 40.6                         |

**TABLE II**—*False Positivity of BCG Test in Non Tuberculous Patients*

| Authors                         | No. of control | BCG test (%) | Mantoux test (%) |
|---------------------------------|----------------|--------------|------------------|
| <i>Desai et al. (1972)(8)</i>   | 450            | 16           | -                |
| <i>Praharaj et al (1977)(9)</i> | 50             | 10           | 0                |
| <i>Datta et al. (1982)(5)</i>   | 142            | 25.3         | 14.7             |
| <i>Bhandari et al (1984)(6)</i> | 700            | 8.7          | 3.4              |
| <i>Mehta et al (1986)(7)</i>    | 70             | 28.6         | 10               |

diagnose fresh tuberculin conversion but the same cannot be said of the BCG test. Further, it would also invalidate future tuberculin testing.

The diagnosis of childhood tuberculosis is usually based on indirect evidences along with the clinical profile. Both BCG test as well as Mantoux's test predict prior sensitization of an individual to tuberculous protein through either natural infection or vaccination. They do not in any way confirm the diagnosis of active tuberculosis. A negative BCG test can at best be taken as a good evidence against the diagnosis of tuberculosis whereas a positive test hardly supports the diagnosis of tuberculosis.

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