THE IMPORTANCE OF CONTACT HISTORY IN CHILDHOOD TUBERCULOSIS

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ABSTRACT
Tuberculosis is an ancient disease that is known to have existed in the prehistoric times, and has been a major health burden, even today 95% of the cases are present in the developing countries. The exact proportion of children with tuberculosis is unknown but it is estimated to be between 3-13% of all cases (Ejaz and Mumtaz, 2002). The child with TB in a community will represent a failure of TB control in that community.

Patients included in the study were children age between 1-15 years of either sex coming to a tertiary hospital with history, clinical and laboratory findings of tuberculosis. Diagnosis of tuberculosis was made on the basis of WHO criteria, with the support of MT, chest X-ray, clinical history and history of contact with patients of pulmonary tuberculosis. There were total 160 patients include in our study, 109(68.1%) patients had positive history of contact from home, close relatives and from neighbors while in 51(30%) cases there was no history of contact detected.

Keywords: Tuberculosis, Contact history.

INTRODUCTION
Tuberculosis has represented a significant threat to children’s health since antiquity. Far from being eradicated, conclusive evidences exist to suggest the presence of a global pandemic. In 1995 WHO estimated that at least 180 million children under the age of 15 years were effected with Mycobacterium Tuberculosis world wide and that nearly 170,000 children died of tuberculosis every year (Ravoglione, 1995 and Nelson, 2002).

In Pakistan tuberculosis is still ranks as one of the leading cause of death and the important disease in term of morbidity and mortality among vaccine preventable disease (Allen, 1984 and Malik, 1982; Bokhari and Ahmed, 1987). In traditional societies like ours there is stigma attached to tuberculosis, peoples are afraid to disclose the disease and diagnosis due to fear of discrimination by the community, thereby being a source of disease spread (Shamim et al., 1998; Baloch et al., 1993).

Children especially of the pre school age acquire tuberculosis within their family from parents, grand parents or other elderly. At least 10% of infected children develop active tuberculosis (Puri and Sachdev, 1991). Incidence of tuberculosis in children depends upon the magnitude of the infectious adults who are the sufferer and transmit the bacilli to their close contact including the children (Margaret et al., 1992).

Most children acquire infection from adults with whom they come in contact in their environment so the epidemiology of TB in children usually follows that in adults. As infected children represent a large proportion of the pool from which cases will arise in the future, the distribution of TB infection in children can be considered a marker of recent ongoing transmission in the community (Christian et al., 2003).
MATERIAL AND METHODS

The aim of this study was designed to focus on the importance of history of contact in childhood tuberculosis.

The present study was conducted at Hamdard College of Medicine and Dentistry in collaboration with National Institute of Child Health.

160 patients were included in the study; they were aged between 1-15 years of either sex coming to a tertiary hospital with history, clinical and laboratory findings suggestive of tuberculosis. Diagnosis of tuberculosis was made on the basis of WHO criteria, with the support of MT, chest X-ray, clinical findings and history of contact with patients of pulmonary tuberculosis. The WHO, American Academy of Pediatric and British Thoracic Society consider the history of contact as one of the important diagnostic criteria in the diagnosis of childhood tuberculosis.

Childhood contact were defined as children living and sleeping in the same house or group of clustered house/shacks on the same residential site with the index case for at least 20 minutes a day, 5 days a week for at least 1 month.

Index case was defined as an individual >15 year of age with sputum positive for M. Tuberculosis.

Informed consent was obtained before enrollment from parents. The study was approved by local ethical committee.

WHO Guidelines for Diagnosis of Tuberculosis Suspected:

- Any ill child with Hx. of contact with a confirmed case of pul. Tuberculosis.
- Any child
  - Not regaining health after measles or whooping cough etc
  - Weight loss, cough or wheeze not responding to treatment.
  - With pain less swelling of the superficial lymph nodes.

Probable

A suspected case and any of the following
- Positive (.10 mm) indurations on tuberculin test
- Suggestive appearance on CXR
- Favorable response to specific anti tuberculous therapy

Confirmed

- Detection by microscopy or culture of tubercle bacilli from body secretion
- Identification of mycobacterium tuberculosis by culture.

RESULTS

Table 1 shows the general characteristic and distribution of tuberculous children by history of contact. 109(68.1%) patients had positive history of contact while 51(32%) cases had no history of contact.

Depending upon the age the subjects were sub grouped as less than 5 years, 5-10 years and 10-15 years. In order to see the history of contact in patients the subjects were sub classified as history of contact positive and history of contact negative. We when we observed the history of contact positive, we have found 48.1%, 16.2% and 3.75% of patients in age groups less than 5 years, 5-10 years and 10-15 years respectively. Similarly in history of contact negative patients, we have found patients 12.5%, 6.8% and 12.5% of patients in age groups less than 5 years, 5-10 years and 10-15 years respectively.

Regarding the sex distribution 73(45.6%) were male and 87(54.3%) were female. In contact positive history 47(64.38%) were females while 62(71.26%) were males. In contact negative history 26(35.61%) were males and 25(28.73%) were females.
Table-1
General Characteristic & Distribution of Tuberculosis Children by History of Contact

<table>
<thead>
<tr>
<th>Variables</th>
<th>History of contact Positive n=109 (68%)</th>
<th>History of contact Negative n = 51 (32%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 5</td>
<td>77(48.1)</td>
<td>20(12.5)</td>
</tr>
<tr>
<td>5-10</td>
<td>26(16.2)</td>
<td>11(6.8)</td>
</tr>
<tr>
<td>10-15</td>
<td>6(3.75)</td>
<td>20(12.5)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (73)</td>
<td>47(64.38)</td>
<td>26(35.61)</td>
</tr>
<tr>
<td>Female (87)</td>
<td>62(71.26)</td>
<td>25(28.73)</td>
</tr>
</tbody>
</table>

Table-2
Geographic Proximity to the Case

<table>
<thead>
<tr>
<th>Variables</th>
<th>History of contact Positive n=109</th>
<th>% (68%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home n=83 (51.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Not same room</td>
<td>17</td>
<td>20.48</td>
</tr>
<tr>
<td>2. Not same bed</td>
<td>23</td>
<td>27.7</td>
</tr>
<tr>
<td>3. Same bed</td>
<td>43</td>
<td>51.80</td>
</tr>
<tr>
<td>Activity shared with the case n=83 (51.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Occasional</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>2. Part of the day</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>3. Most part of the day</td>
<td>57</td>
<td>69</td>
</tr>
<tr>
<td>History of contact in close relative</td>
<td>19</td>
<td>17.4</td>
</tr>
<tr>
<td>History of contact in neighbors</td>
<td>7</td>
<td>6.4</td>
</tr>
</tbody>
</table>

Table-2 describes the geographical distribution of the children with positive history of contact. In our study we have analyzed that majority of children exposed to index case of tuberculosis in their own house especially at night-time. This study shows that 83 (51.8%) children who exposed to tuberculosis in their houses this was further elaborated as children sleeping with the index case, not the same room (some other room), not the same bed (but in the same room) and the same bed, the subjects identified as 17(20.48%), 23 (27.7%) and 43 (51.8%) respectively.

The other valuables described in Table-2 was the activity shared by the subject with index cases either in house during the day time. This was categorized as occasional, part of the day and most part of day. In this study 57 (69%) of cases have had exposure with the index cases during most part of day, while 19 (23%) of the cases had exposed a part of daily activity and only 7 (8%) were having occasional exposure.

Table-2 also showed that 19 (17.4%) subjects had history of contact in close family members other than their own resident who use to come in contact regularly i.e. grand father/mother (paternal/maternal), uncles, cousins etc. while 7 (6.4%) children had history of contact of tuberculosis from neighbors.
DISCUSSION

Virtually all transmission of M. Tuberculosis is from person to person, usually by mucous droplets i.e. cough, sneezes, laugh, sings or even breath (Strake, 2004).

We had described earlier that risk of tuberculosis in children exposed to tuberculous adult patients were higher than in contacts of healthy community.

Adults are the main source of tuberculosis in the community (Singer, 1996). Children are mainly affected; both directly and indirectly close contact with an open case of tuberculosis.

Age is an important aspect of the epidemiology of childhood tuberculosis. About 60% of tuberculosis cases in children are under 5 year of age (Strake, 2004). This is in accordance with our study in which 77 (48%) were having positive history of contact while 20 (12.5%) cases had no history of contact. Children under the age of 5 year are more likely to have history of contact with their close relatives (parents, grand parents and other elderly).

As the age increases they spend more time away from house, thus are more prone to have tuberculous exposure from people not residing with them. In our study we have shown 19 (17.4%) compare to the study by Christian et al. (2003) which showed the similar results.

Regarding the sex distribution majority of the tuberculous children are female. Males are the one whom index case detection are always difficult probably because of their more personal contact with other peoples, while in female index case detection are easier, probably because of our cultural tradition as females use to spend most of their time at home.

Studies conducted in 1960s and 1970s showed that house hold contacts of individuals with tuberculosis had higher risk of infection than individuals in the general population (Andersen, 1960; Raj and Nasir, 1966; Grzybowski et al., 1975). This was confirmed in several recent studies conducted among children in New York, Bostwana and Brazil in which contact with an tuberculous individual came out as a strongest risk factor for tuberculosis in children (Christian et al., 2003).

Majority of patients in our study had the contact history from family or nearby i.e 109 (67.9%), while in 51(31.8%) patients we have not been able to found the contact history. In the similar study Shamim et al had found the same results (Shamim et al 1998). While in the developed countries like Japan the history of contact was found to be present in 74% of cases as in a study by Takarmatsui et al. (1995).

In our study we showed that the level of infection in children was directly related to the intensity of exposure to the individual with infectious adult as assessed through both the geographic proximity to the individual with TB at night time and the extent of activities shared with individual during day time. This is in line with Christian et al. (2003). In our study 17 (20.48%) cases were sleeping in the same house but not the same room Christian found 23 (27.7%) subjects were sleeping with the index case in the same room but not in the same bed. Our study also showed that 43 (51.8%) had the history of sleeping with index case in the same bed and results were as found as shown by Christian that is (51%) of cases.

CONCLUSION

This study indicates that positive history of contact is important in making the diagnosis of childhood tuberculosis especially in our society in which tuberculosis is prevalent and adults are the main source of spread. If they are infected and does not seek treatment, they may pass it to on to others especially the children under 5 year of age.
MESSAGE

TB is a sign of endemic disease and transmission in the community as children mostly acquired the disease from adults. Thus a child with TB in a community represents a failure of the tuberculous control program in that community.

REFERENCES


Nelson Text Book of Pediatric 17th edn.


