Treating Patient, Not Disease: People-Centered Approach

7th TB Symposium – Ministry of Health of the Kyrgyz Republic and Médecins Sans Frontières

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Experiences on TB diagnosis among children

Bobojon Sharipov
Deputy Director RCTC
The gap in the diagnosis of TB in the pediatric population still remains.

According to this figure TB is underdiagnosed, in particular in children under 5 years.

WHO report
2017
Correlation of children with TB to total number of TB cases 2012-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Total (Всего)</th>
<th>Children (Дети)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>5484</td>
<td>599</td>
<td>10.9%</td>
</tr>
<tr>
<td>2013</td>
<td>5306</td>
<td>623</td>
<td>11.7%</td>
</tr>
<tr>
<td>2014</td>
<td>5017</td>
<td>560</td>
<td>11.1%</td>
</tr>
<tr>
<td>2015</td>
<td>5241</td>
<td>546</td>
<td>10.6%</td>
</tr>
<tr>
<td>2016</td>
<td>5243</td>
<td>622</td>
<td>11.8%</td>
</tr>
<tr>
<td>2017</td>
<td>571</td>
<td></td>
<td>10.8%</td>
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</tbody>
</table>
Total number of children with MDR TB from total number of MDR TB for 2013-2017

- MDR-TB increasing numbers of children diagnosed
- Lower proportion than overall TB
- What is the actual proportion of MDR cases we should find in children?

4.3%  5.3%  3%  6.1%  6.5%

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Quantity of children with pulmonary TB MT+ for 2017

But for MDR TB there are more children diagnosed in 15-17 year old.
Early Diagnosis

Positive Signs and Symptoms for TB

Assessment in the Clinic

Diagnostic Imaging

Bacteriological confirmation

Other diagnostic/supportive tests: history, TST, HIV status
Diagnosis in children usually relies on the passive case finding: symptomatic child attends the clinic

- **Persistent cough**, more than 2 weeks, shortness of breath
- **Fever/night sweat**
- **Weight loss / Failure to thrive**
- Tiredness/reduced playfulness/bad academic progress
- Loss of appetite / less breastfeeding
- **Signs of extrapulmonary TB are more frequent in children**
Leads to guide the decision on TB diagnosis in a symptomatic child

1. History:
   Presence of index case (not diagnosed?)

2. Diagnostic imaging:
   X-Ray – unspecific (primary TB vs reactivation),
   Lateral X-Ray, CT scan an option

3. Tuberculin Skin Testing:
   requires skilled personnel, not very cost efficient

4. Bacteriological confirmation

5. HIV status
Bacteriological confirmation in a child
How to obtain the appropriate sample?

**Sputum:** spontaneous expectoration comes only with certain age

**Sputum induction/Gastric lavage**

**Resistance of parents to any invasive procedure**

Easily obtainable materials like stool are not yet recommended by WHO for the testing by GenX

TB Lam (urine) currently recommended only for HIV positive with severe immunosuppression/severely ill
Practical experiences

• MSF closely collaborating with MoH is focusing on the pediatric case finding and treatment

• To improve the case detection rate, sputum induction was implemented in 2013

• To improve the case detection rate, contact tracing became one of core activities in 2016
Sputum Induction in the Pediatric TB Hospital in Dushanbe

- SI Started in 2013
  - No severe complications reported

<table>
<thead>
<tr>
<th>Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
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</thead>
<tbody>
<tr>
<td>Total # of patients undergoing sputum induction</td>
<td>526</td>
<td>753</td>
<td>1353</td>
<td>1502</td>
</tr>
<tr>
<td># patients smear positive</td>
<td>3</td>
<td>3</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Smear Positivity rate</td>
<td>0.5%</td>
<td>0.4%</td>
<td>1.6%</td>
<td>1.8%</td>
</tr>
<tr>
<td># of patients GenX positive</td>
<td>33</td>
<td>43</td>
<td>114</td>
<td>113</td>
</tr>
<tr>
<td>GenX Positivity rate</td>
<td>6.2%</td>
<td>5.7%</td>
<td>8.4%</td>
<td>7.5%</td>
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</table>
Despite introduction of sputum induction in 2013, significant increase in the number of DR TB cases came in 2016 and 2017 after contact tracing activities were started.
Early Diagnosis

- Active Case Finding - Contact Tracing
- Assessment in the Clinic
- Positive Signs and Symptoms for TB
  - Diagnostic imaging
  - Bacteriological confirmation
- Other diagnostic/supportive tests: history, TST, HIV status
Early diagnosis requires active case finding and a proper diagnosis

- Contact tracing is now routine activity performed by the nurses daily in the afternoon (mornings the teams are seeing existing patients)
- Sputum induction is a routine activity in pilot area; it is currently being implemented around the Tajikistan to enable early detection of TB among pediatric population
Summary

• Be vigilant
  – TB in children has different presentation and requires a high degree of suspicion

• Sputum induction can improve the detection rate BUT

• Early diagnosis relies heavily on timely active case findings (is more efficient than the general TST screening)

• Techniques allowing more suitable materials to be analyzed in children are in great need