The Time of Reactivation of Tuberculosis in Expatriates in the State of Qatar

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Abstract:

Objective: This is the first study to evaluate the time of reactivation of tuberculosis (TB) in the expatriates after the application of a screening program in 1984.

Method: Follow up analysis of expatriates who arrived in the State of Qatar in 1993. The number of expatriates, as well as the date of possible death and deportation was identified from the medical commission registry and the State of Qatar Central Statistical Organization. The rate of notification was obtained from the tuberculosis treatment unit registry.

Results: There were 32,134 applicants of which 23,842 (74.2%) were from the Indian subcontinent and Southeast Asia. The rest were from different parts of the world. Males account for 64.4% of the applicants. On arrival 669 (2.08%) applicants were found to be unfit, of which 67 (0.21%) were unfit due to tuberculosis and the rest for reasons other than tuberculosis. Active tuberculosis was found in 55 (0.17%).

Tuberculosis notification rate declined from 0.17% on arrival to 0.03% in the first twelve months. This was followed by an increase to a mean of 0.05% for the next two years, then decreased to a mean of 0.025% over the next three years.

Conclusion: The first 5 years of arrival still a high risk for reactivation of TB in the expatriates even though they have normal screening test on arrival. It is possible to improve this control of TB among high prevalence expatriates by application of preventive health care measures such as Mantoux skin testing, preventive therapy, and / or BCG vaccination for those aged under 30.

Key words: Tuberculosis, Reactivation, Expatriates, Qatar

Introduction:

Although tuberculosis in decline, it continues to be a significant cause of morbidity, mortality and health care expenditure in all over the world(1), including the State of Qatar. There is a common misconception among both the health care professionals and the general public is that tuberculosis is not a significant public threat in the State of Qatar.

Tuberculosis persists despite the fact that modern medical science has developed the tools to virtually eliminate the disease. TB is preventable if the established public health principles are adhered to. The increase incidence rates of TB in the Gulf Cooperation Council (GCC) States are mostly due to the influx of expatriates from countries where TB is endemic(2-5) and to less extent from high-risk individuals(6,7). The prevalence of infection with the human immunodeficiency virus (HIV)(8) is the least of all.

Qatar is a member of the GCC States. It is an oil rich country with high standard of living, with estimated population of 680,000, of which 25% are Qatar nationals and 75% are non-Qatar nationals (expatriates) most of whom were from Indian subcontinent(9).

The time of reactivation of tuberculosis in the expatriates has not been evaluated since the application of the overseas and on arrival tuberculosis (TB) screening guidelines in 1984. This included an overseas chest radiography, HIV testing and hepatitis serology in countries with high prevalence of tuberculosis and on arrival for all expatriates. The State of Qatar established these guidelines and provided health officers in the countries with high tuberculosis prevalence such as Pakistan, India, Indonesia, Filipino, Sri Lanka, Bangal and Nepal for humanitarian effort to reduce the emotional disappointment and expenses on the part of deported individual.

Here in our paper we evaluate the incidence of tuberculosis on arrival and follow up for 6 years after arrival in effort to evaluate and identify factor(s) that might help in improving our current screening programs.

Methods:

Data was collected from the medical commission and the
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State of Qatar Central Statistical Organization for number expatriates entered in 1993, date of possible death and deportation or leaving for good. Tuberculosis notification rate obtained from the Tuberculosis Treatment Unit Registry from 1993 through 2000. This is unique, as there is only one registry for the whole country, which has been well kept with complete patients' files. A physician performed full history and physical examination on each one of them. The following screening tests were done; HIV (ELISA), syphilis, hepatitis serology and chest radiology on arrival. The person with abnormal test(s) would be deported. A panel of a medical commission, radiologist, infection disease consultant and pulmonologist would review all abnormal chest radiography. Chest radiography was classified as normal or abnormal if there was a finding suggestive of active TB (B1) or inactive TB (B2). Sputum was evaluate for acid fast bacillus (AFB) in those with abnormal chest radiography. Those with any abnormality in the chest radiography suggestive of tuberculosis with or without active disease were deported after smear conversion with a supply of medication for 4 months. Those with extra-pulmonary tuberculosis were treated and followed up with out deportation.

Results:

There were 32,134 applicants on arriving to the State of Qatar in 1993. The mean age was 30 years with a range of 19 to 60 years of age. There were 20,887 (65%) males and 11,247 (35%) females. Eighty percent were labor workers and 20% were professionals. There were 17,406 (54.2%) from Indian subcontinent (defined as India, Pakistan, Bangladesh and Nepal), 7,939 (24.7%) from Arabia, 6,436 (20%) from South East Asia and 353 (1.1%) from the rest of the world.

There were 669 (2.08%) found to be unfit on arrival of which 67 (0.21%) were due to tuberculosis and the other due to other infectious disease such as HIV or hepatitis etc. Fifty-five (0.17%) were due to active tuberculosis and 12 (0.04%) were due abnormal radiography suggestive of old (inactive) tuberculosis.

Those 31,465 (98.7%) who were cleared by medical commission as tuberculosis-free based on the chest radiography were followed up for 6 years. The Tuberculosis notification rates (incidence) were; 0.035, 0.06, 0.06, 0.035, 0.035, 0.022 for the first 12 months, 13-24 months, 25-36 months, 37-48 months, 49-60 months and 61-72 months respectively. (Table 1 and Figure 1)

There were 94 (71%) pulmonary and 39 (29%) extra-pulmonary tuberculosis. Although there more pulmonary tuberculosis in the first 2 years and more extra-pulmonary tuberculosis in the 5 and 6 years this was not statistically significant (P= 0.08). (Table 1)

Table 1: Type of tuberculosis

<table>
<thead>
<tr>
<th>Type of Tuberculosis</th>
<th>Number of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTB Total</td>
<td>94</td>
<td>71</td>
</tr>
<tr>
<td>Smear Positive</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>Culture Positive</td>
<td>28</td>
<td>21</td>
</tr>
<tr>
<td>Culture Negative</td>
<td>33</td>
<td>25</td>
</tr>
<tr>
<td>EPTB Total</td>
<td>39</td>
<td>29</td>
</tr>
<tr>
<td>Pleural Fluid</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>22</td>
<td>16.5</td>
</tr>
</tbody>
</table>

Discussion:

In our paper there was a low incidence of active tuberculosis (0.17%) picked up by our screening on arrival than reported (0.45%) from UK (10). This increased to 0.2% for the first 12 months including on arrival which was less than reported (1.14% for the first 12 months) from Denmark(11). This probably due to the fact we are using a very limited screening program overseas by our health officer, involving chest radiography.
The first three years of arrival is a high risk time for the expatriates that seen in other study from USA and Canada\(^{7,12}\). This probably reflects the stress and poor social economic conditions on arrival that decreased by improvement in social economic conditions and adaptation with environment.

Therefore, adding Mantoux skin testing, may increase the rate of detecting active tuberculosis as this is a positive predictor of culture confirmed TB\(^{12}\). Also the fact that we were concern with pulmonary tuberculosis than extra-pulmonary tuberculosis on arrival.

In conclusion the incidence of tuberculosis in the expatriates on arrival was low due to the application of a very limited TB screening program (chest radiography on arrival) guidelines without preventive therapy. The first 5 years still a high risk for reactivation of TB in the expatriates. It is possible to improve this control of TB among expatriates by application of preventive health care measures such as Mantoux skin testing, preventive therapy, and / or BCG vaccination for those aged under 30 years especially those coming from areas with high prevalence of TB and further study is needed.

References: