The Epidemiological Trend of Tuberculosis in Bahrain

By E.L. Fernandes* and R.A. Mahmoud**

ABSTRACT

A tuberculin survey of all new school entrants aged 6-7 years was conducted in March and April 1985, using the 5 TU of PPD – RT23. Out of a total 7,826 children tested, 143 (1.82%) were found to be reactors. The prevalence figures of previous surveys carried out in 1969 and 1981 were compared to determine the annual tuberculous infection rates.

The incidence rate of pulmonary tuberculosis among the Bahraini population is very low. With the continuous influx of expatriate labourers from neighbouring countries where the tuberculosis infection is very high, it was found necessary to conduct a tuberculin survey to determine the epidemiological trend of tuberculosis in Bahrain.

METHODS

Primary BCG vaccination in Bahrain is being given to children at school entry. Tuberculin testing at this age provides valuable data on the prevalence of tuberculous infection in this age group. The PPD material used in the previous surveys were of the 1 TU strength, while in this present survey the 5 TU PPD – RT23 was used. 0.1 ml of the test material was injected intradermally and the site was read 72 hours later. A reading of 6 mm or more was regarded as a positive reaction and the individual further investigated by chest X-ray examination.

RESULTS

Out of a total of 7,826 children tested, 143 (1.82%) were found to be PPD positive. The areas of residence of the reactors are shown in Table 1. A slight increase in the PPD positive was noted in the Northern Region and Riffa.

TABLE 1

Geographical Distribution of Tuberculin Reactors, Bahrain 1985

Area	*No. of Readings Recorded*	*No. of Reactors*	*%*
Manama	1386	17	1.2
Muharraq	1252	23	1.8
Jidhafs	534	8	1.5
Isa Town	1046	20	1.9
Sitra	913	13	1.4
Riffa	719	19	2.6
Western Region	570	10	1.7
Middle Region	340	6	1.8
N. Region	1066	27	2.5
Total	**7826**	**143**	**1.82**

The prevalence rates in the previous surveys of 1969 and 1981 were 6.1% and 1.4% respectively, and thus the annual percentage decrease in infection risk[1] was calculated to be 12.6% for the 12 year period (1969-1981) while for the 16 year period (1969-1985) it was 7.8%. The risk of infection was also calculated and was found to be 0.138% for 1981 and 0.211% for 1985.

DISCUSSION

The tuberculin test has shown itself to be a powerful epidemiological tool for the measurement of transmission of tuberculous infection. It is of particular value for assessing change (or the absence of change) in the level of infection in the area and provides the best single epidemiological index of the trend of the tuberculosis problem in a country[2].

The results of the tuberculin survey of unvaccinated school children showed a fall from 6.1% in 1969

* Head of Communicable Diseases Section
Public Health Directorate
Ministry of Health
State of Bahrain

** Director
Public Health Directorate
Ministry of Health
State of Bahrain

to 1.4% in 1981. The recent survey in 1985 showed a slight increase to 1.82%. It is worth mentioning that while the PPD material used in the earlier two surveys was of the 1 TU strength, the latter survey employed the 5 TU PPD.

TABLE 2

Number of Reported Cases of Pulmonary Tuberculosis and Rate per 100,000 Population – Bahrain 1980-85

Year	*Bahrainis*		*Non-Bahrainis*	
	No. of Cases	*Rate per 100,000 Populat.*	*No. of Cases*	*Rate per 100,00 Populat.*
1980	56	23.5	116	103
1981	66	27.7	123	109
1982	18	7.5	122	109
1983	33	13.0	182	138
1984	36	13.9	139	98.3
1985	39	14.7	121	79.7

TABLE 3

Distribution of Pulmonary Tuberculosis in Bahrainis by Age Group Bahrain, 1983 – 1985

Age Group	*Number of Cases*		
	1983	*1984*	*1985*
1 – 4 yrs	2	1	2
5 – 14 yrs	2	3	1
15 – 24 yrs	5	2	8
25 – 34 yrs	3	6	6
35 – 44 yrs	3	3	—
45 – 54 yrs	5	7	7
55 – 64 yrs	6	11	7
65 – 74 yrs	7	3	3
75 +	–	–	6
Total	**33**	**36**	**39**

The risk of infection has shown an increase from 0.138% in 1981 to 0.211% in 1985 (211 persons/ 100,000 population will be infected in 12 months). This slight increase could be due to the high strength of tuberculin material that was used in the 1985 survey. Nevertheless our figure of 0.211% is comparable to that in developed countries. Whereas in the developing countries the risk is of the order of 2-5% which is 20-50 times greater than in developed countries[3].

The increase in the incidence rate among the Bahraini population in 1985 is due to the high morbidity among the elderly group (Table 2,3), and which is due to the reactivation of an infection acquired early in life.

There was a drop in the rates of tuberculosis cases per 10,000 arrivals among Indians and Pakistanis in 1984 as compared to 1983 (Table 4).

TABLE 4

Rate of Tuberculosis Infection per 10,000 Arrivals to Bahrain in Selected Nationalities – 1983 – 1984

Nationality	*1983*		*1984*	
	No. of Cases	*Rate Per 10,000*	*No. of Cases*	*Rate Per 10,000*
Indians	124	21.1	105	17.0
Pakistanis	38	20.5	27	14.9

Bahrain will continue to administer BCG vaccination at school entry as per WHO recommendation[2].

At intervals of two to three years, a tuberculin survey of the new entrants to school will be carried out to determine the annual risk of tuberculous infection. In the intervening years when the children are not pre-tested with PPD, direct BCG immunisation will be given. A follow up of the children will be done to detect those having an accelerated reaction as the latter are with tuberculous infection[4].

CONCLUSION

A tuberculin survey of all new school entrants has been conducted in 1985 which showed a tuberculin positivity of 1.82%, the risk of tuberculous infection has shown an increase from 0.138% in 1981 to 0.211% in 1985.

REFERENCES

1. Styblo K, Meijer J, Sutherland I. The transmission of tubercle bacilli : its trend in a human population. TSRU Report No. 1. Int Un Tuberc 1969;42:45-47,88,103.

2. WHO Weekly epidemiological record No. 15; 15 April 1983:110.

3. Tuberculosis control. WHO Technical Report Services;671:10.

4. Udani PM, Maddocks I. Tuberculosis. In:Jellife DB, Stanfield JP, eds. Diseases of children in the subtropics and tropics. 3rd ed. London: Edward Arnold, 1978;307.