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## Prevalence of Extrapulmonary Tuberculosis in Children, Zahedan, Iran

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**Abstract:** In order to determine the prevalence of extrapulmonary tuberculosis in children in Zahedan, this study was conducted. In this cross-sectional, retrospective study, all patients aged less than 18 years with tuberculosis disease were evaluated. Then prevalence of extrapulmonary tuberculosis in children determined. This study showed that extrapulmonary TB form 23% of all tuberculosis cases. Tuberculosis lymphadenitis was the most prevalent form of extrapulmonary TB (8%) and pericarditis was the less than other forms (2%). Extrapulmonary tuberculosis is more prevalent in Southeast of Iran than other region in this country.

**Key words:** Prevalence, extrapulmonary tuberculosis, children, Zahedan, Iran

**INTRODUCTION**

Tuberculosis is a major public health concern worldwide. Although the lung remains the commonest site of infection, extrapulmonary disease is becoming more prevalent, and the increase is more pronounced among young women and children and immigrants from countries with a high prevalence of tuberculosis<sup>[1-4]</sup>. The epidemiology of pediatric Tuberculosis (TB) is shaped by risk factors such as age, race, immigration, poverty, overcrowding and HIV/AIDS<sup>[5,6]</sup>. Once, infected young children are at increased risk of TB disease and progression to extrapulmonary disease. Primary disease and its complications are more common in children than in adults, leading to differences in clinical and radiographic manifestations<sup>[6,7]</sup>. Disseminated disease develops in the minority whose immune systems do not successfully heal the primary infection. The disease may occur within weeks after the primary infection, or may lie dormant for years before causing illness<sup>[1,3]</sup>. In disseminated disease, organs and tissues affected can include: the lining of the heart (pericardium), lining of the abdominal cavity (peritoneum), larynx, bronchus, cervical lymph nodes, bones and joints, organs of the male or female urinary and reproductive (genitourinary) system, eye, stomach, lining of the brain, spinal cord (meninges) and skin<sup>[1,5,7,8]</sup>. Several studies have been done in the different countries in the world to determine the prevalence of extrapulmonary TB<sup>[9-12]</sup>. In Iran, similar studies have been done in adults and children and results are different according to the regions<sup>[6,13,14]</sup>. In order to evaluate the prevalence of extrapulmonary TB in children in Zahedan, the present study was conducted.

**MATERIALS AND METHODS**

In this cross-sectional, retrospective study in a time period of 2 months, all patients aged less than 18 years who were treated for active TB at the Boo-Ali Hospital (Zahedan, Iran) between Jan 2000 to 2005 were identified. Then prevalence of extrapulmonary TB determined.

**RESULTS AND DISCUSSION**

Out of the 195 (131 female and 64 male) patients who treated for active tuberculosis, 83.2% were Iranian and 16.8% were Afghanian (Table 1). Among 195 tuberculous cases, 45 cases (23%) had extrapulmonary tuberculosis. Tuberculous lymphadenitis was the commonest form of extrapulmonary TB (8%) and pericarditis was less than other forms (2%). Out of total cases with ET, only 6 cases (2 male 4 female) were Afghanian. Four cases of Afghanian patients with ET had Pleural tuberculosis and

Table 1: Results in 195 children with tuberculosis

Race	Age		
	<6	7-12	13-18
Iranian	21	56	85
Afghanian	6	10	17
Female	19	47	65
Male	8	19	37

Table 2: Frequency of extrapulmonary TB according to infected organ, sex and age

Kind of diseases	Male number			Female number			Total
	<6	7-12	13-18	<6	7-12	13-18	
Lymphadenitis = 8%	0	2	4	3	2	5	16
Meningitis = 3%	0	1	1	1	1	2	6
Pericarditis = 2%	0	1	0	1	0	1	3
Pleuritis = 5%	1	2	2	1	3	3	12
Skeletal D = 2.5%	0	1	0	1	1	1	4
Ureogenital = 2.5%	0	0	2	0	0	2	4
Total cases	1	7	9	7	7	14	45

2 cases had lymphadenitis. The rate of Tuberculosis disease increased with increasing age ( 80% of cases had an age more than 6) and there were trends toward increased rate in female. Also there was an increased rate in female who had extrapulmonary TB (Table 2).

Extrapulmonary tuberculosis, present in 10 to 27% of all patients with tuberculosis, is more common among children, especially miliary TB, meningitis and bone-joint disease<sup>[1,6,7]</sup>. The diagnosis of this condition is often delayed because of its protein manifestations and this type is less easy than pulmonary tuberculosis to identify with the use of radiologic evaluation and bacteriologic confirmation<sup>[1,5-8]</sup> present Study showed that 23% of total patients had ET. Metanat *et al.*<sup>[6]</sup>, among 1700 tuberculous cases, 22% had extrapulmonary TB. In this study, tuberculous lymphadenitis was the commonest form of ET (11%). Mohammad-Poor<sup>[13]</sup> reported that, 11.1% of tuberculous patients in Torbat had extrapulmonary tuberculosis and pleural infection was more common than other forms. Other study showed that 19.2% of total tuberculous patients had ET. In this study, there was an increased rate in female gender who had extrapulmonary tuberculosis (53.7% versus 46.3%) and as present study lymphadenitis was common<sup>[14]</sup>. In Sarachek study in USA, 15% of tuberculous cases was extrapulmonary TB. The CDC reported an increase in the proportions of extrapulmonary TB in USA from 14.6% in the first five years (1977-1981) to 16.6% in the next five years (1982-1986), which was statistically significant ( $p < 0.0001$ )<sup>[4,6]</sup>. In the state of Tennessee, 11.3% of the total TB cases were extrapulmonary for the period, which remained unchanged from 1977-1981 and 1982-1986<sup>[1,4,6]</sup>. In western countries, despite decline in the past and recent increase in the incidence of pulmonary tuberculosis, the total cases of extrapulmonary TB also is increased<sup>[6-8,10]</sup>. In

one study in UK among pregnant women, 37% of all cases of ET was Tuberculous lymphadenitis<sup>[10]</sup>. Since 1981, AIDS epidemic has contributed to the increased mortality from mycobacterial infections. Incidence of extrapulmonary involvement seems to be high in this group of patients<sup>[4,6,8]</sup>.

With regard to this fact, although the prevalence of HIV in Iran is lower than western and neighbouring countries, but the prevalence of TB and ET is more common than these countries.

### CONCLUSIONS

In spite of the availability of effective anti-tuberculosis therapy and preventive therapy in the world, tuberculosis still remains a health care problem in countries. Therefore, elimination of risk factors is important for control of all kinds of tuberculosis.

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