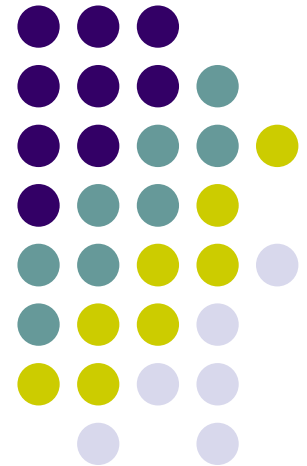


Childhood Tuberculosis in the Kilimanjaro region: lessons from the TB Program

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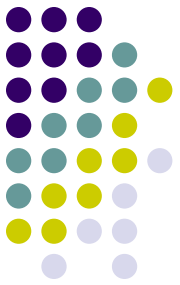
Introduction



- ❑ Tuberculosis (TB) remains a serious disease associated with high morbidity and mortality worldwide
 - ❑ 9 million cases, 2 million deaths per year
 - ❑ Accelerated by the HIV pandemic

- ❑ Children (less than 15 years of age) constitute 11% of all TB cases

- ❑ The TB burden in children has not been sufficiently studied. Policies and programs have been essentially adult focused, leading to less attention to the childhood burden



- ❑ Recently there has been an increased recognition of the contribution of childhood TB to the general burden of the disease
- ❑ There are limited data on childhood TB in Tanzania (% of childhood TB to the total TB burden, influence of HIV, treatment outcome based on HIV status)
- ❑ We need to establish and document baseline data, which will lay ground for planning and conducting TB studies in children
- ❑ In this study we analyzed a five-year data from Kilimanjaro region TB registry, to determine the magnitude of the disease in children

METHODS



- ❑ Retrospective registration-based study
Data on TB notifications 2002-2006
- ❑ The region consists of six districts; Moshi Urban, Moshi rural, Hai, Mwanga, Same, and Rombo.
- ❑ Data were retrieved from the archive at the RTLC's and DTLC's offices
- ❑ Case detection rates, proportion of pediatric TB cases, demographic distribution, mode of diagnosis, type of TB, treatment outcome and proportion of reported HIV infection were determined and related to different other variables e.g age, gender, location.
- ❑ Analysis was done using SPSS version 14 for Windows (SPSS Inc., Chicago, USA) .

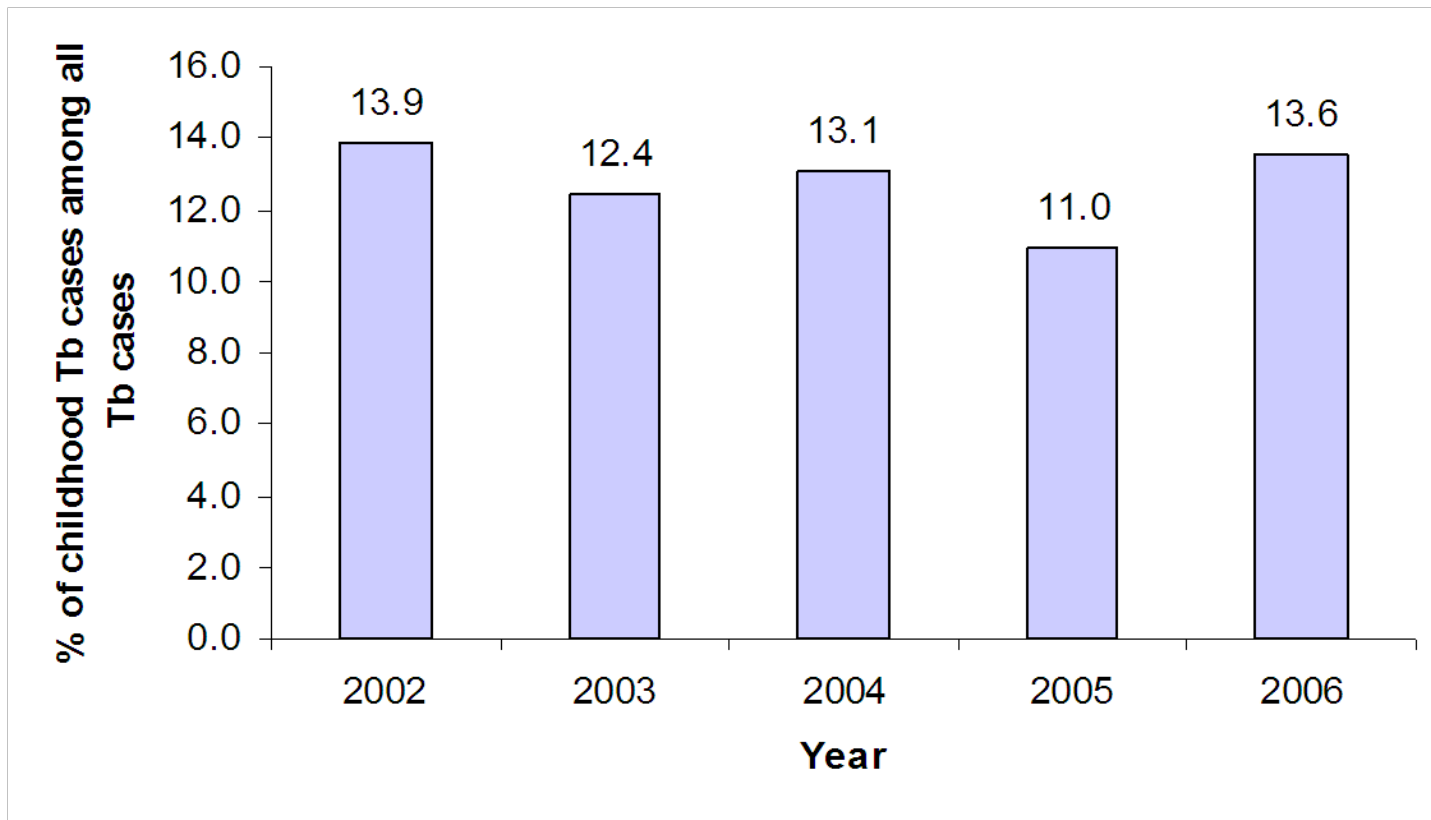
RESULTS



□ Proportion, case detection rate and geographical distribution of childhood TB

In the period 2002-2006 childhood TB constituted 13% (1615/12614) of the total TB burden in Kilimanjaro region

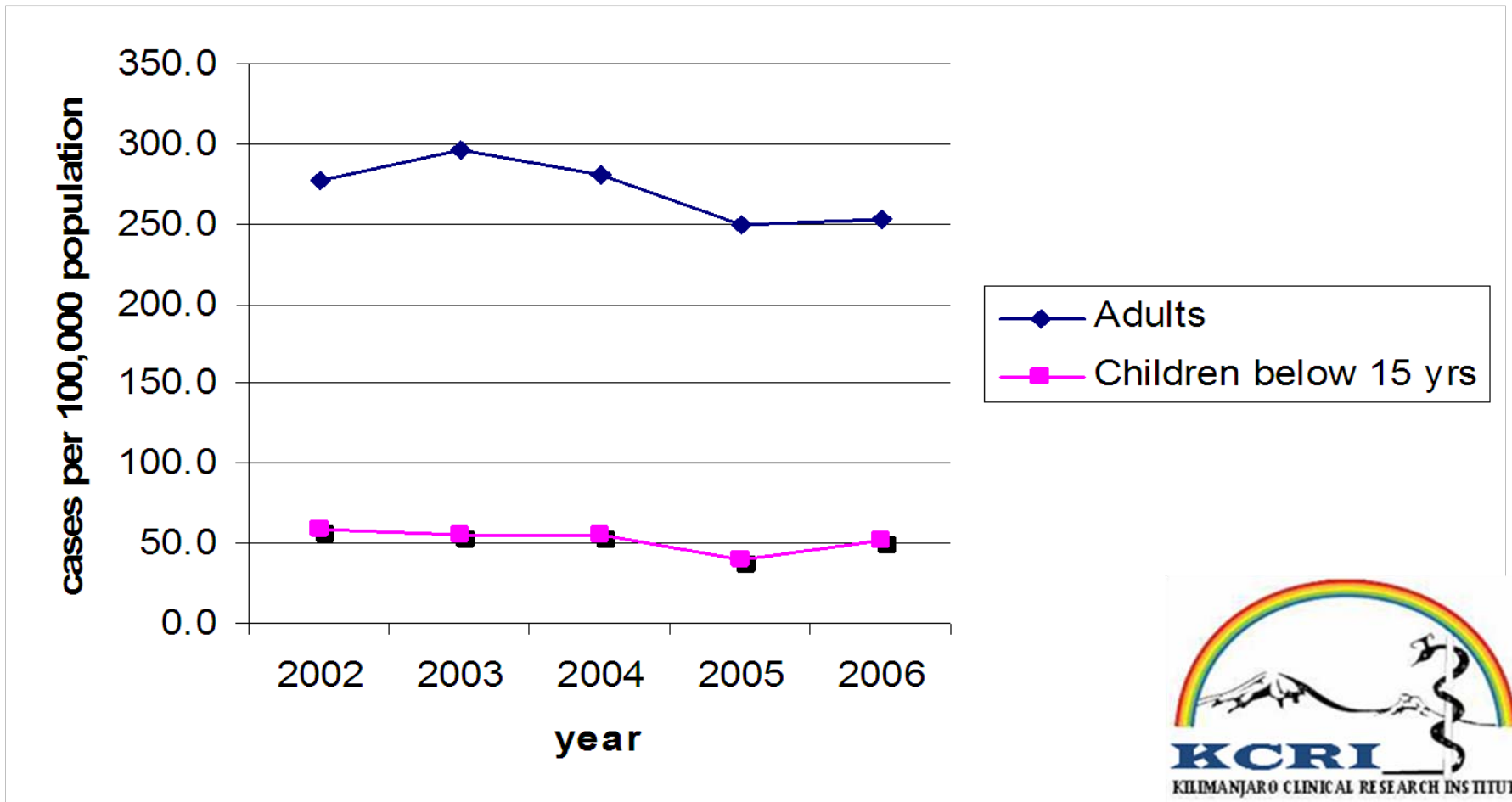
Fig.1



- Case detection rate of childhood TB ranged from 41 to 59 per 100,000 population per year (average: 52.8 per year). It was highest in 2002 and lowest in 2005.



Fig.2





- Average annual case detection rate was 147 for urban and 41.8 (per 100,000 population) for rural

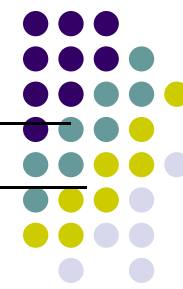
The difference was statistically significant ($\chi^2=118$, $p<0.001$)

- Similarly the proportion of childhood TB was significantly higher in urban compared to rural populations (14.9% against 12.1% respectively; $\chi^2=16$, $p<0.001$)

Gender and age distribution of TB in Children

- Of all the 1615 childhood TB cases, 875 (54.2 %) were males.
- Age distribution was positively skewed, with younger age (0-5yrs age group) accounting for 49.3% (797/1615) of all childhood Tb cases. The median age was 5.0 years, with interquartile range 1.75 – 9 years

Table 1: Type of TB and AFB smear results



Type of TB (n=1615)		N	(%)
	Pulmonary smear -	1120	(69.3%)
	Pulmonary smear +	94	(5.8%)
	EPTB unclassified	263	(16.3%)
	TB Adenitis	73	(4.5%)
	Miliary TB	20	(1.2%)
	Pleural effusion	14	(0.9%)
	TB Meningitis	10	(0.6%)
	TB spine	7	(0.4%)
	TB peritonitis	6	(0.4%)
	TB arthritis	4	(0.2%)
	TB pericarditis	1	(0.1%)
	Brain tuberculoma	1	(0.1%)
	Pericardial effusion	1	(0.1%)
*AFB smear results (n=402)	AFB +	94	(23.4%)
	AFB-	308	(76.6%)

*This was 24.9% of all cases. 47.8% (772/1615) had no smear done and 27.3% (441/1615) had no record on AFB results.

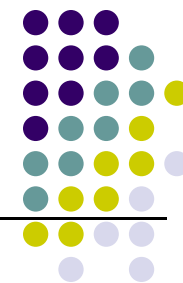




Table 2: Treatment outcome (N=1602)

Treatment outcome	Number (%)			
	All types	PTB Smear +	*PTB Smear -	EPTB
Died	175 (10.9%)	6 (6.5%)	133 (11.9%)	36 (9.1%)
Completed/cured	1168 (72.9%)	67 (72.0%)	801 (72.0%)	300 (75.8%)
Transfer out	147 (9.2%)	13 (14.0%)	97 (8.7%)	37 (9.3%)
Default	112 (7.0%)	7 (7.5%)	82 (7.4%)	23 (5.8%)
Total	1602 (100%)	93 (100%)	1113 (100%)	396 (100%)

Table 3: Outcome by type of TB, Smear results, age, and gender



		Death rate
Type of TB (n=1343)	PTB	139(13.8%)
	EPTB	36 (10.7%)
		OR(95%CI)= 1.33(0.9-1.97), p=0.145
Smear status (n=1343)	AFB+	6(8.2%)
	AFB- or not done	169(13.3%)
		OR(95%CI)= 0.58(0.25-1.37), p=0.209
Gender (n=1602)	males	102(11.7%)
	Females	73(10.0%)
		OR(95%CI)= 1.2(0.86-1.65), p=0.26
Agegroup (=1343)	<5yrs	94(14.4%)
	>5yrs	81(11.8%)
		OR(95%CI)= 1.2(0.92-1.73), p=0.154

Childhood TB and HIV infection



- 91 children out of all 1615 (6%) were tested for HIV and 82% (75/91) were positive

HIV status and Mortality

- TB Treatment outcome was recorded in 89% (81/91) of children whose HIV status was known. In the HIV seropositive group 24.2% (16/66) died whereas 6.7% (1/15) died in the HIV seronegative group. (OR=4.48, 95%CI 0.55-36.78)
- Only three children (4%, n=75) were reported to be on antiretroviral treatment

DISCUSSION



- ❑ Generally TB in Kilimanjaro region is a major public health problem
 - ❑ 2006 case rate of 166.6 per 100,000 population, only slightly above the national figure of 164
 - ❑ %of childhood TB, 13.6% was above the WHO estimate of 11%
 - ❑ Case detection rate of childhood TB (52.8per 100,000) is higher than other reports; 51-Malawi, 13 to 15- Thailand, and 1.5-USA

- ❑ High burden justifies need of giving Childhood TB special consideration by the TB control program, and regular studies



- ❑ The observed smear positivity and case detection rates would increase by improving diagnosis through improving the existing diagnostic tools, introducing and evaluating new tools such as induced sputum, laryngeal swabs and nasopharyngeal aspiration and active case finding

- ❑ Only 5.8% were lab confirmed TB, the remaining were presumptively treated
 - ⇒ Laboratory diagnosis/confirmation would reduce overtreatment and wrong diagnosis

- ❑ Default rate (7%-Kili, 6% WHO) higher than all age (4.1%)
 - ⇒ Adherence may be a serious problem in pediatrics popn
 - ⇒ Need to be assessed to identify determinants and ways to improve

CONCLUSION



- ❑ This study has shown that the proportion of childhood TB in this region is higher than the WHO global estimates
- ❑ The proportion of children who undergo microbiological diagnosis for TB and the subsequent AFB smear positivity are far less than in adults
- ❑ HIV testing in children with TB is still less common
- ❑ TB treatment outcome in this region is poorer than all-age outcome
- ❑ These findings argue for specific TB control strategies to be designed for children

Acknowledgements



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