

Tuberculosis disease in asymptomatic children: clinical characteristics in a low-incidence country

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Introduction

- Asymptomatic presentation of TB disease is not uncommon in children.
- Asymptomatic TB disease is commonly diagnosed by screening or contact tracing, especially in low-incidence countries.
- The aim of this study was the evaluation of the diagnostic pathway of children with asymptomatic TB disease in Switzerland.

Results

- A total of 172 cases were reported to the SPSU with detailed data available for 161 (93%). Overall, 139 (81%) cases were included in the final analysis, reasons for exclusion were double reporting, latent TB or age older than 16years. Overall, 44 (32%) children with TB disease were asymptomatic at presentation.
- Asymptomatic children were observed across the entire age spectrum, but they were significantly younger compared to symptomatic children. **Figure 1 and Table 1**

- Diagnosis was confirmed by culture or molecular assay in 15/44 (34%) asymptomatic children, compared to 65/88 (69%) in symptomatic children (p<0.00). **Table 1**
- Asymptomatic TB disease was diagnosed
 - a) in 31/44 (70%) by chest radiography and immuno-diagnostics
 - b) in 11/44 (25%) by chest radiography only
 - c) in 2/44 (5%) by immuno-diagnostics only.Culture confirmation was reported in 15/44 and is displayed in **Figure 2** in greater detail.

Methods

- Eligible for this cross-sectional observational study, were children with TB disease from *M.tuberculosis*, *M.africanum*, *M.bovis*, *M.caprae* or “*Mycobacterium complex*” or children for whom a treatment with ≥3 anti-mycobacterial drugs was initiated.
- Data was collected between December 2013 and November 2019 through the Swiss Pediatric Surveillance Unit (SPSU).

	Symptomatic (N=95)	Asymptomatic (N=44)	Total (N=139)	p value
Age [years]	9.7	3.6	6.7	0.001
Median (IQR)	(2.7, 14.6)	(1.9, 9.4)	(2.6, 13.8)	
Gender male	55 (57.9%)	20 (45.5%)	75 (54.0%)	0.171
Confirmed by culture or molecular assay	65 (69.1%)	15 (34.1%)	80 (58.0%)	< 0.001
Abnormal chest radiography	83 (89.2%)	42 (95.5%)	125 (91.2%)	0.230
Index case known	49 (51.6%)	40 (90.9%)	89 (64.0%)	< 0.001
TST positive	38 (84.4%)	20 (69.0%)	58 (78.4%)	0.114
IGRA positive	48 (98.0%)	16 (76.2%)	64 (91.4%)	0.003
Origin Foreign-born	52 (55.3%)	12 (28.6%)	64 (47.1%)	0.004

Table 1: Baseline characteristics of the study population.

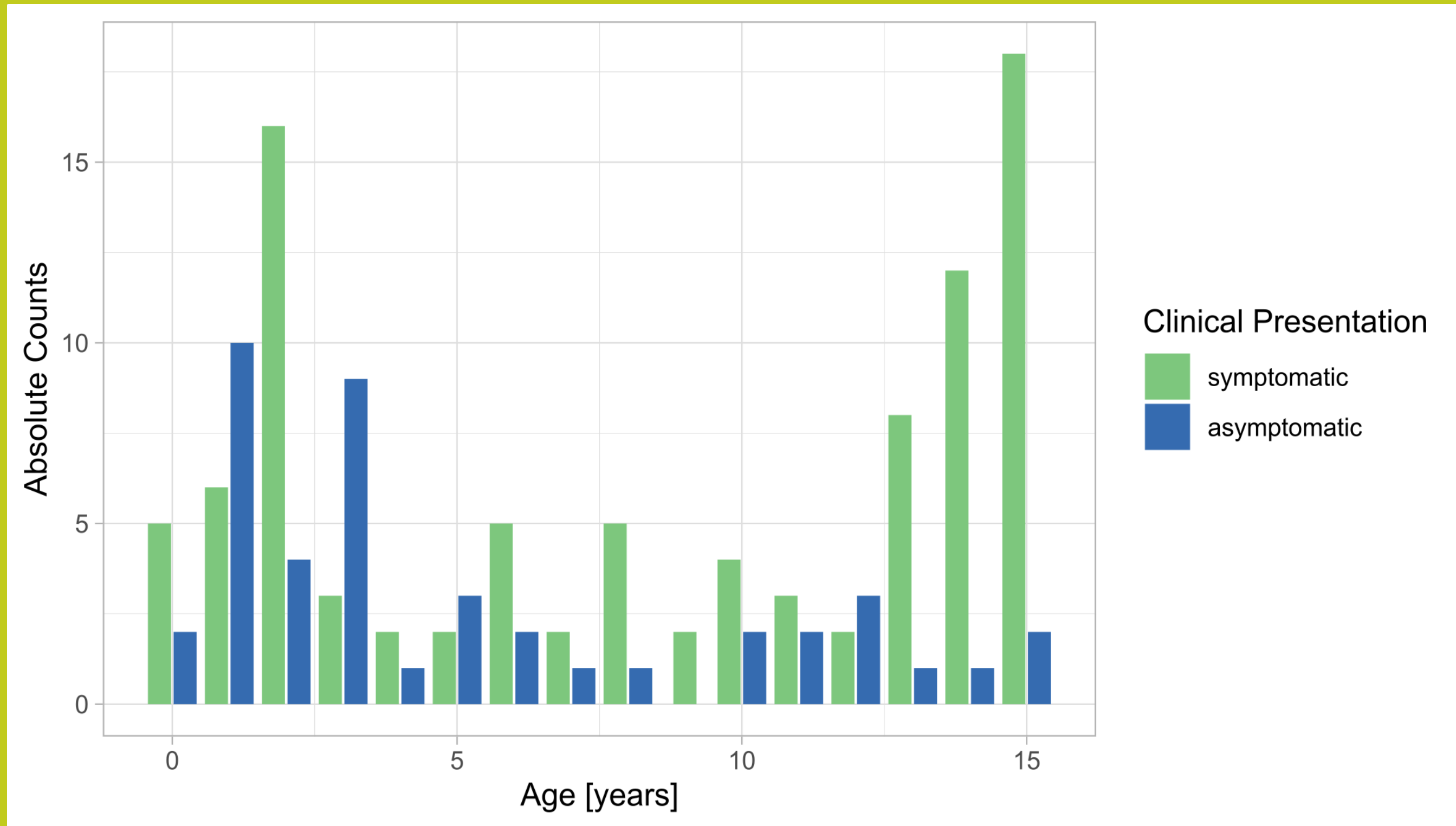


Figure 1: Age distribution of children with TB disease, stratified in symptomatic and asymptomatic initial presentation. Asymptomatic children with TB disease were observed over the entire age spectrum.

Conclusion

- A relevant proportion of children diagnosed with TB disease were asymptomatic at the time of diagnosis and in one third TB diagnosis was confirmed by culture or molecular assays.
- Screening children at increased risk for TB disease such as recently arrived asylum seekers and exposed children is key to early detection even in the absence of symptoms.

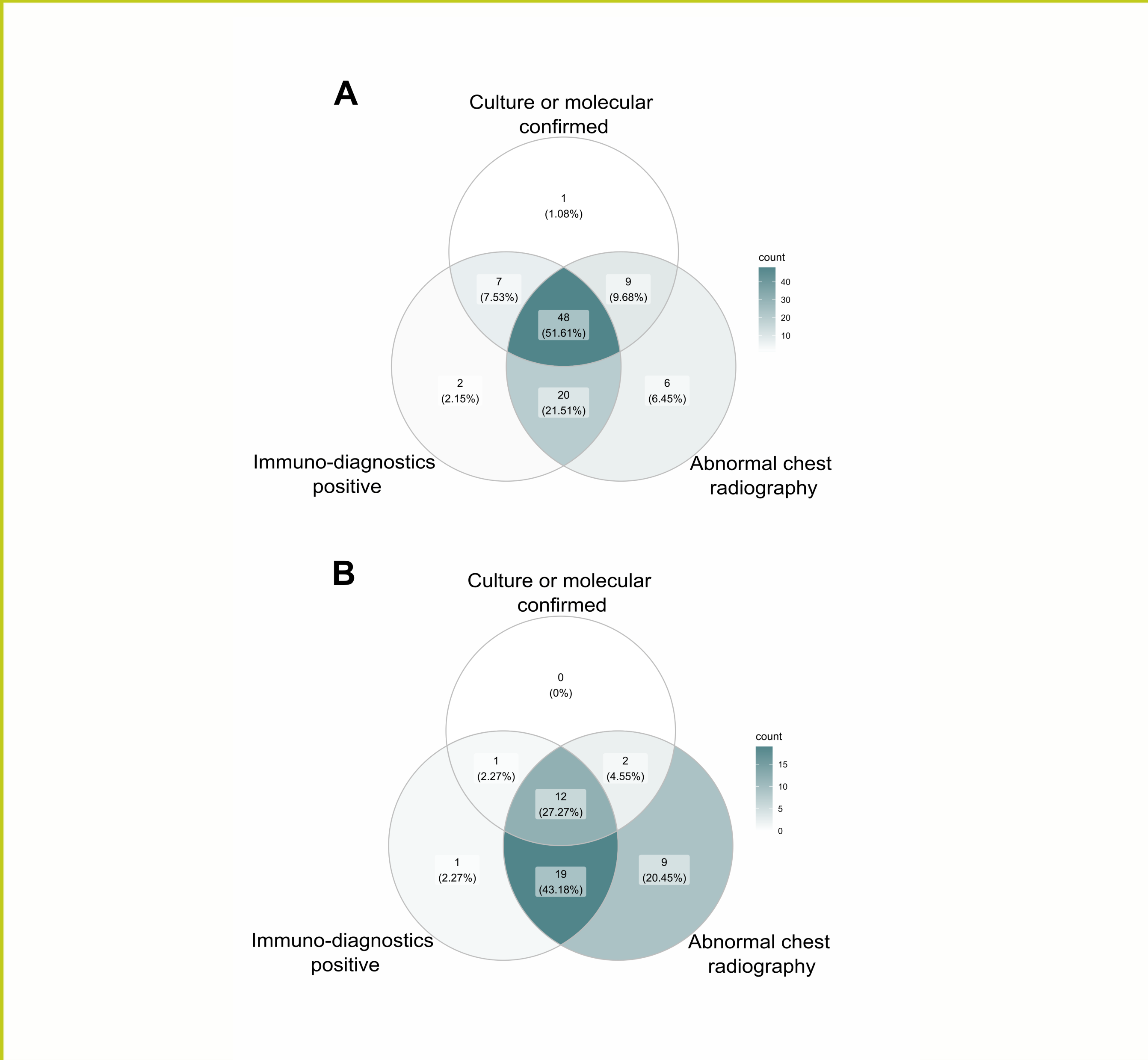


Figure 2: Venn diagram of symptomatic (A) and asymptomatic (B) children with TB disease and their diagnostic findings. Positive immuno-diagnostics was a composite definition of positive tuberculin skin test and/ or positive interferon-γ release assay test (QuantiFERON-TB or T-Spot.TB test). For symptomatic children a major proportion had abnormal findings in all three diagnostic tests done while in asymptomatic children a major proportion was diagnosed based on an abnormal chest radiography.