

Demographic and Clinical Characteristics of Mortality Among Children with Tuberculosis in Malaysia



Maria Kamal¹, Lui Sze Chiang¹, Then Moli Othayamoorthy¹, Mohd Ihsani Mahmood², Asiah Kassim¹

1. Hospital Tunku Azizah, Kuala Lumpur.
2. Section for Tuberculosis and Leprosy, Disease Control Division, Ministry of Health Malaysia.

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INTRODUCTION Diagnosing tuberculosis in children is challenging; detection of *M. tuberculosis* in sputum is difficult, x-ray evidence is often non-specific, and tuberculin skin test is less sensitive than in adults. The risk of progression from primary infection is higher, and more rapid, compared to adults¹. Therefore, early recognition enables timely diagnosis and treatment of TB among children and prevents mortality. Our objective is to describe the characteristics of children who succumbed from TB in Malaysia.

MATERIALS/METHODS This is a retrospective study. Cases were identified through TB Surveillance System Malaysia (TBSS). This study includes children aged 16 years old and below who passed away from TB from 1st January 2018 to 31st December 2020.

RESULTS Eighty-five cases from all over the country were included in this study. Majority were from Sabah (43.5%), Selangor (16.4%) and Wilayah Persekutuan Kuala Lumpur (8.2%). Most of Non-Malaysia nationality TB deaths were from Sabah (n = 26, 72.2%). Median age of death was 8.9 years old (0.4 – 15.9). Duration of death from TB diagnosis was 8.5 days. Majority diseases were pulmonary TB (n = 45, 53%). Extra-pulmonary TB (n = 40, 47%) includes meninges, colon, peritoneum and the pharynx. Smear positive TB was only found in 31 children (36.5%). 80% of the mortality was HIV negative, and 12% had unknown retroviral status.

Characteristics	Frequency, n (%)
Gender	
Female	48 (56.5)
Nationality	
Malaysian	49 (57.6)
Others	36 (42.4)
Sabah	26 (72.2)
Selangor	4 (11.1)
WP Labuan	3 (8.3)
WP Kuala Lumpur	3 (8.3)
Age at death (years)	
< 5 years	25 (29.4)
5 – 14 years	46 (54.1)
≥ 15 years	11 (13.0)
Missing information	3 (3.5)
Median (Min, max)	8.9 (0.4, 15.9)
BCG scar	
Yes	55 (64.7)
Distance to nearest hospital (km)	
Median (min, max)	9.6 (1, 36)
Duration from diagnosis to death (days)	
Median (min, max)	8.5 (0, 280)

Table 1: Demographic and clinical characteristics of children who passed away from tuberculosis

State	Number of cases
Sabah	19
Selangor	5
WP Kuala Lumpur	3
WP Labuan	2
Sarawak	1

Table 2: States with children without/unknown BCG scar

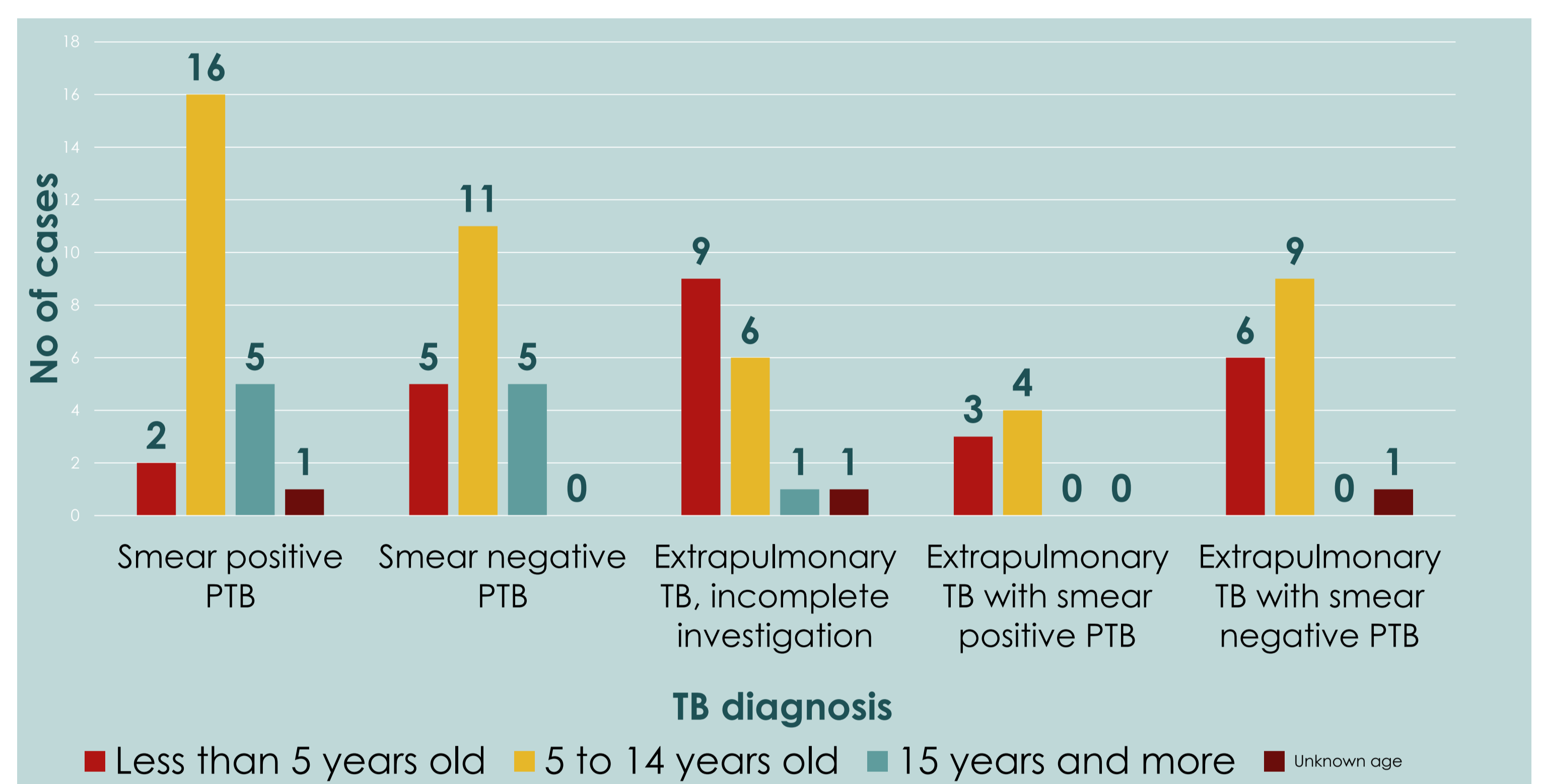


Figure 1: TB disease and age group

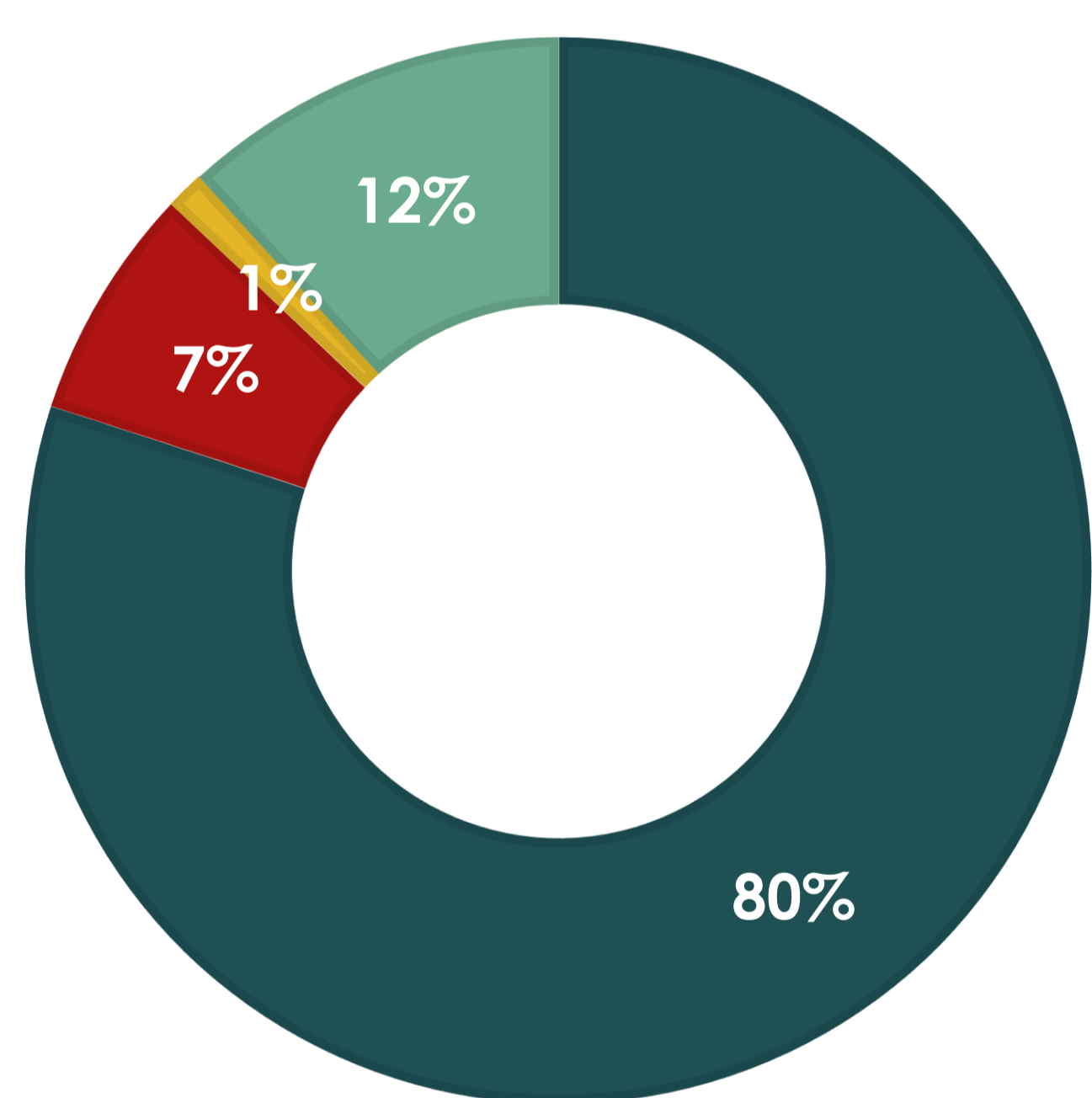


Figure 2: HIV status after diagnosis of tuberculosis

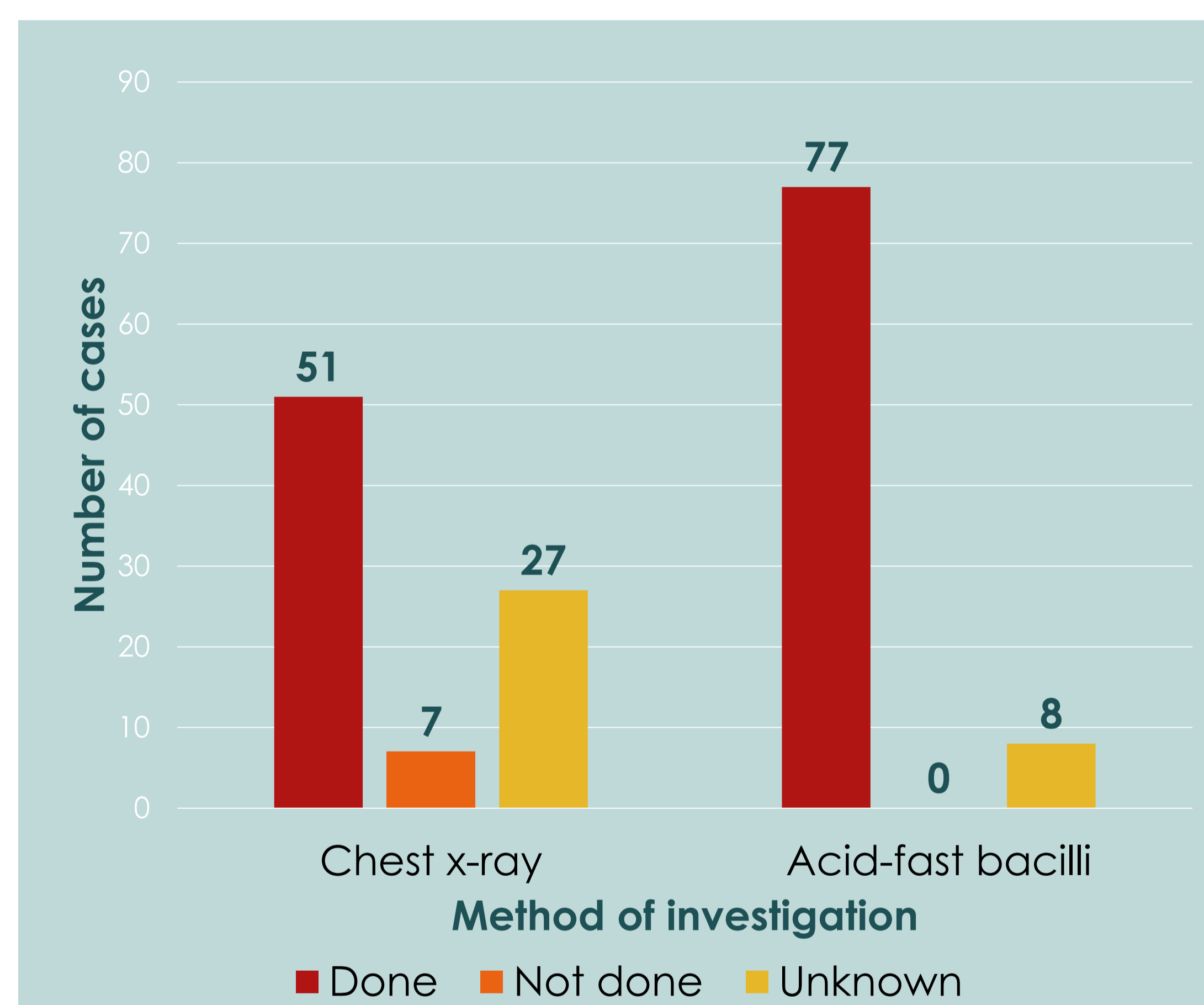


Figure 3: Mode of investigation to diagnose tuberculosis

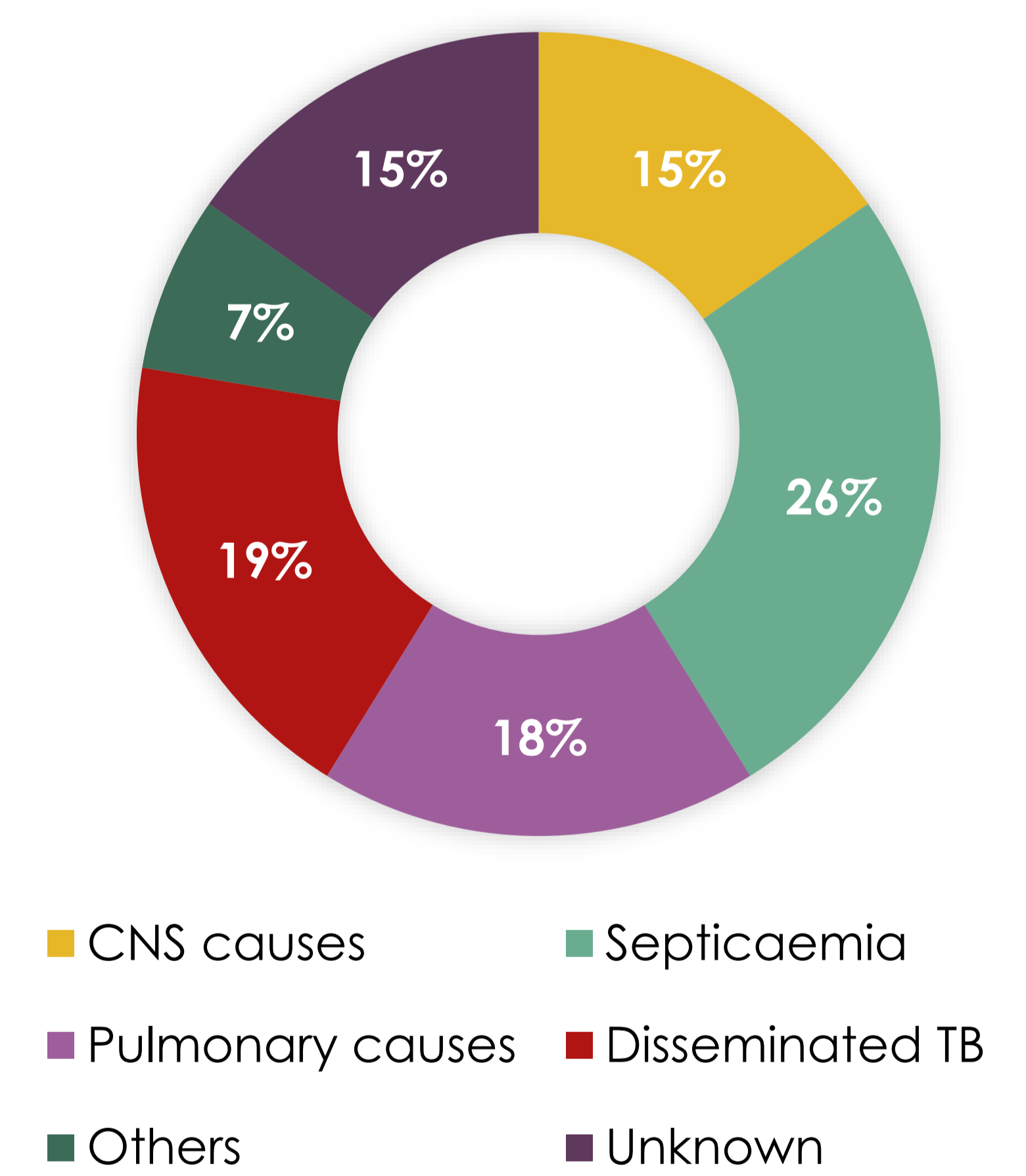


Figure 4: Cause of death by complications

DISCUSSION

Almost half of children succumbed had extra-pulmonary TB (EPTB), and median duration from diagnosis to death is less than ten days. This is suggestive of extensive TB disease with late diagnosis. 8.2% were detected via contact screening. Fifty-one (60%) cases had chest x-rays (CXR) done and all had abnormal findings. Acid-fast bacilli test from respiratory secretion were tested positive in 40.3% of those who had it done, and 84% of them were above 5 years old. For children, collection of respiratory secretion for AFB stain is challenging, as they can't cough out their sputum. There were no records from TBSS on whether or not patients had Tuberculin Skin Test (TST) performed. BCG scar was seen in about 65% of cases. This may reflect poor coverage of immunization among non-Malaysian in Sabah. The percentage of children with unknown HIV status indicates that some children did not have HIV status investigated. EPTB is defined as TB of organs other than the lungs². Out of all 40 patients with EPTB, about 43% did not have CXR performed. Early diagnosis of TB among children is important to prevent progression of the disease and mortality. This study highlighted the importance of early TB diagnosis and treatment among children in Malaysia. Awareness of the potential difficulty in diagnosing childhood TB is crucial to increase the index of suspicion among attending doctors.

CONCLUSION

Most TB mortality among children in Malaysia were related to late diagnosis and advanced state of the disease. Immediate measures are required to improve the mortality rate.

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REFERENCE

- Piccini P, Chiappini E, Tortoli E, Martino MD, Galli L. Clinical peculiarities of tuberculosis. BMC Infectious Diseases. 2014Jan8;14(Suppl 1).
- Management of Tuberculosis. 3rd ed. Putrajaya: Malaysia Health Technology Assessment Section (MaHTAS); 2012.