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# Abdominal Tuberculosis in Children: A Cross-Sectional Study in Port Moresby General Hospital

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Pictured is a patient included in the research. Image taken with parent's permission.

# INTRODUCTION

- Abdominal Tuberculosis (ABT) is defined as a ***tuberculous infection of gastrointestinal tract, the peritoneum, abdominal lymph nodes, and of solid visceral organs (liver, spleen, pancreas)***. [3-6]
- ABT presents a significant **diagnostic challenge** in children as diagnosis is often delayed due its non-specific symptoms.
- Tuberculosis is a **global burden**. An estimated of more than **1 million children** are infected annually. [1]
- 30,000 new cases are detected in PNG. 30percent of these are Children >15 years of age. [2]
- TB abdomen recognized as **6<sup>th</sup> most common site of infection**. (2-6)
- The risk factors are poverty, younger age groups, malnutrition, HIV, over-crowding living conditions, close contact, and poor access to health care. [1-6]

# AIMS OF THE STUDY

1. To identify the common presenting symptoms and clinical findings in children that may be significant of TB Abdomen
2. And to assess the effectiveness of TB screening and diagnostic tools that are available.

# METHODOLOGY

- Study Design:
  - Descriptive Cross-sectional Study
- Study Period:
  - April 2024 to July 2024
- Study Site:
  - PMGH Paediatric Wards and Consultation Clinics
- Study Size:
  - 50 Patients.
- Data Collection:
  - Descriptive Data Form
- Ethical clearance: Issued by the PMGH Research and Ethics Committee and the UPNG SMHS to conduct this research. Parents/Guardians were consented.
- Data Analysis:
  - Microsoft Excel
  - Stata Version 8

## Exclusion Criteria

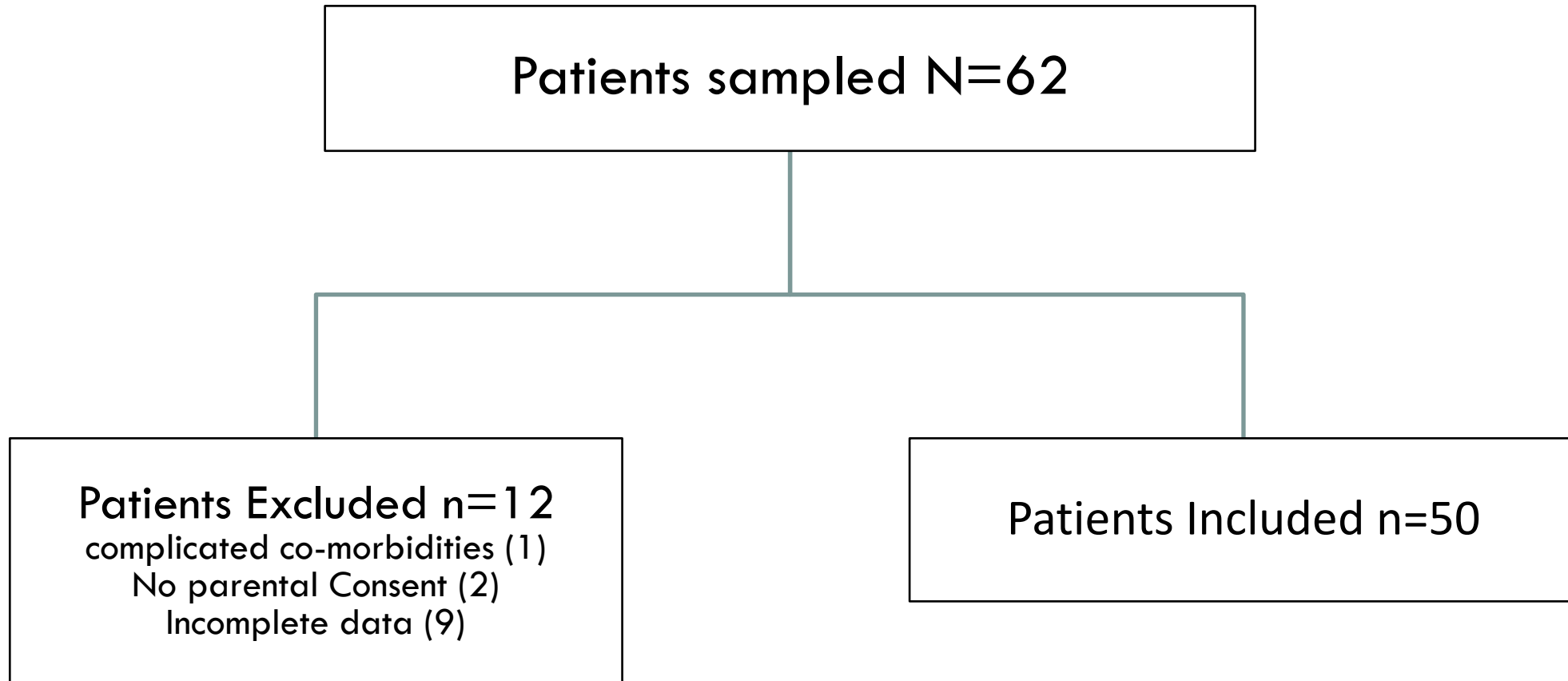
- Complicated co-morbidities
- Unconsented
- Inadequate data
- More than 4 weeks of Intensive Phase of Anti-TB treatment.
- No Diagnostics Investigations
- Age >16

## Inclusion Criteria

- Either Inpatient or Outpatient cases Diagnosed with TB Abdomen (Disseminated or EPTB).
- Less than 4 weeks of Intensives Phase Anti-TB treatment
- At least one confirmed Laboratory or Radiological findings of TB.
- Age <16 years old
- Informed Consent

# RESULTS

Flow chart 1: Patient Sampling



# Table 1: Demographics

Variables (n=50)	Freq. (%)	Median (IQR)
<b>Location</b>	50	
Moresby North West (NCD)	20 (40)	
Central Province	13 (26)	
Moresby South (NCD)	9 (18)	
Moresby North East (NCD)	7 (14)	
Gulf Province	1 (2)	
<b>Age (months)</b>	50	20 (12.5-60)
<59 months	38 (76)	
>59 months	12(24)	
<b>Gender (Male: Female)</b>	28:22 (56:44)	
<59 months of age (n=38)	24:14 (63:37)	
>59 months of age (n=12)	4:8 (33:67)	
<b>Socioeconomic Status (n=50)</b>	50 (100)	
Low Income	40 (84)	
Lower Middle Income	8 (16)	



## Table 2: Clinical Presentation

Variables	Freq. (%)	Median (IQR)
Symptoms	50	
Symptom Duration (in months))	50	2 (2-6.5)
Most Common Symptoms	50	
Persistent or Recurrent Diarrhoea	45 (90)	
Abdominal Swelling and Tightness	43 (86)	
Abdominal Pain	22 (44)	
Mucous/blood in Stools (Dysentery-like Diarrhea)	32(71)	
Chronic Cough	47()	
Constitutional Symptoms of TB	38 (76)	
Dysentery-like Stools	32	
<59 months of age (n=32)	29(92)	
>59 months of age (n=32)	3 (9)	
Past medical History	50	
Received BCG at Birth	43 (86)	
History Of TB Exposure	44 (88)	
History of Previous TB Treatment	2 (4)	

### Table 3: Clinical Findings (Objectives) and TB Score

Variables	Freq. (%)	Median (IQR)
Abdominal Signs	50	
Abdominal swelling	50 (100)	
Abdominal tightness	44 (88)	
Abdominal tenderness	28 (56)	
Ascites present	27 (54)	
Omental / mesenteric/ inguinal nodes present?	41 (82)	
Organomegaly present	1 (2)	
TB Score	50	16.5 (13.75-17.25)
Significant TB score (>7)	50 (100)	
TB score of 9-15	24 (48)	
Highest TB score of 16-20	26 (52)	

# Table 4:1 Investigations

Variables	Freq. (%)
Chest X-rays	50
Chest X-ray done	47 (94)
Chest X-ray Suggestive of PTB	47 (94)
Chest X-ray not done	3 (6)
Ultrasound	50
Ultrasound done	42 (84)
No Ultrasound	8 (16)
USS suggestive of TB (n=42)	17 (41)
Inconclusive USS Results (n=42)	25(59)
USS suggestive of TB Abdo (n=42)	14(33)
Neck USS done (n=42)	4(10)
USS suggestive of TBLN (n=4)	3 (75)
Neck USS not done (n=42)	36 (90)
Positive USS Findings	17
Evidence of ascites (n=17)	12 (70)
Evidence of omental or mesenteric nodes (n=17)	13 (76)
Evidence of bowel thickening (n=17)	5 (29)
Evidence of lymphadenopathy (neck) (n=17)	6 (35)

## Table 4.2: Investigations

Variables	Freq. (%)
Gene Expert	50
Gene Xpert Done	42 (84)
Gene Xpert Not Done	8 (16)
Gene Xpert Negative/No Result (n=42)	38 (76)
Gene Xpert Positive MTB (n=42)	4 (8)
Drug Resistance TB positive on Gene X-pert (n=42)	0 (0)

Table 5: Final Diagnosis, Co-morbidities and Treatment

Variables	Freq. (%)
Final Diagnosis	50 (100)
Disseminated TB	45 (90)
Extra-pulmonary TB	5 (10)
Co-morbidities/risk factors	50(100)
Malnutrition present	47 (94)
HIV Confirmed	3 (6)
Treatment	50 (100)
First-Line Anti-TB Rx	48(96)
Second-Line Anti-TB Rx (MDR-TB)	2(4)

# DISCUSSION AND LITERATURE REVIEW

- The findings of study indicate :
  - Abdominal TB is common in the form of disseminated TB.
  - More prevalent in the younger children <5 years of age. (1-6)
  - Abdominal distension, tightness, and tenderness were common findings.
  - Recurrent or Persistent Diarrhea are common also.
  - Significant number of cases with dysentery stools.
  - TB scores are significantly high.
  - Chest X-rays are important diagnostic tools
  - USS poses a challenge in diagnosis.

# DISCUSSION AND LITERATURE REVIEW (CONT'D)

- Similar studies suggest :
  - Abdominal TB in younger children is most likely results from *ingestion of infected sputum causing dissemination of TB from active pulmonary disease to the abdomen.* (3-6).
    - 0)
  - TB score is useful in screening patients and making a clinical diagnosis of TB in children. Ultrasound is also an important diagnostic tool to some extent. (2-6)
  - The yield for gene expert is very low, therefore, most cases are based on clinical findings suggestive of TB, high TB scores and at least one suggestive radiological finding. (2-7) Study done in PNG by S.K, Tom. et al, (2015) stated that *gene xpert sensitivity was sub-optimal and cannot be relied upon for diagnosing TB; that a detailed history and examination, standardized clinical criteria and radiographs remain the most appropriate way of diagnosing TB in a resource-limited country.* (8)
  - In other settings, MRI , CT, and Ultrasound guided advanced radiological investigations are available as diagnostic tools . (7)

# LIMITATIONS

- Short study period.
- Lost to Follow-up.
- Inconclusive Diagnostic Results.
- Clinical Bias.
- Other co-morbidities complicating the diagnosis.





# RECOMMENDATIONS

1. Review the Standard TB scoring system.
2. Improve Clinical Training
3. Multi-disciplinary approach.
4. Facilitate screening programs.
5. Improve on Laboratory Capacity.
6. Community Awareness.

# CONCLUSION

- Symptoms of persistent/recurrent diarrhea, dysentery-like stools, abdominal distension, tightness and tenderness were common clinical manifestations in children.
- TB scoring and Chest x-rays are effective diagnostic tools.
- Ultrasonography is also useful diagnostic tool.
- Poor socio-economic status is also a risk factor.
- Malnutrition and HIV are co-morbidities and important risk factors.
- There is need for further research, training, awareness and improvement of diagnostic facilities.

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**THANK YOU FOR  
YOUR TIME  
AND ATTENTION.**

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