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ASSOCIATION BETWEEN TYPES OF TUBERCULOSIS OF PRESUMPTIVE TUBERCULOSIS IN CHILDREN BELOW 12 YEARS AT TERTIARY CARE RURAL HOSPITAL."

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ABSTRACT

Background: Tuberculosis is a chronic infectious disease that can affect any organ of the body. Estimated 2.2 lakh children are affected with tuberculosis in India each year. It is major public health problem in India . Tuberculosis is caused by one of several mycobacterial species that belong to the mycobacterium tuberculosis complex. Tuberculosis initially lodges in the lungs, enlargment of Primary TB regional lymph node on chest radiograph, which may be associated with Ghon's focus, is the hall mark of Primary TB. Area involved in children are most common like lung and airways, Lymphnode, CNS and Bones. Clinical manifestation of Tuberculosis in children are Pulmonary Tuberculosis, TB Lymphadenitis, Tubercular meningitis and Milliary Tuberculosis .The clinical presentation of Tuberculosis (TB) in the paediatric age group differs from that in adults, which makes TB a particular challenge in the former: Children are more likely to develop extrapulmonary TB and severe disease. Clinical and radiological manifestations are heterogeneous .

Aim: To Study the presumptive Tuberculosis in children below 12 years at tertiary care rural hospital.

Objectives

1. To diagnose Tuberculosis as per NTEP 2020 PROTOCOL
2. To study the clinical profile and nutritional status of these patients
3. To find out confirmed cases of Tuberculosis from presumptive cases .

Materials & methods:

Our study was an Observational,Descriptive Cross Sectional Study of 120 patient conducted for a duration of a 2 years (JUNE 2022- MAY 2024), Written informed consent was taken from all patient . A predesgined study proforma was used to collect the data and to performe detailed patient examination. In all presumptive Tuberculosis children diagnostic algorithm will followed according to NTEP Guideline 2020.

1. Cough >2 weeks
2. Fever >2weeks
3. Weight loss >5% or no weight gain in past 3 months despite adequate nutrition or failure of nutritional rehabilitation in babies with SAM
4. With or without contact with patient with pulmonary TB in past 2 years

Result : In this study there were 120 children with presumptive cases below 12 years were taken by inclusion and exclusion criteria, among which 75 children were confirmed TB and 45 were not confirmed TB . 94.6% were pulmonary TB and 5.3% were extra pulmonary TB. 46.7% were SAM in age group 6 month to 5 years. Mantoux test was positive in 33.3%.

Conclusion : Children who are malnourished are more prone to disease

Keyword: Contact Tracing, Malnutrition, Mantoux test, ESR, CHEST X- RAY , CBNAAT.

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INTRODUCTION

Tuberculosis

Tuberculosis is a chronic infectious disease that can affect any organ of the body. Estimated 2.2 lakh children are affected with tuberculosis in India each year. It is major public health problem in India. Tuberculosis is caused by one of several mycobacterial species that belong to the mycobacterium tuberculosis complex.1 Tuberculosis initially lodges in the lungs, enlargement of Primary TB regional lymph node on chest radiograph, which may be associated with Ghon's focus, is the hall mark of Primary TB. Area involved in children are most common like lung and airways, Lymphnode,CNS and Bones. Clinical manifestation of Tuberculosis in children are Pulmonary Tuberculosis, TB Lymphadenitis, Tubercular meningitis and Miliary Tuberculosis .The clinical presentation of Tuberculosis (TB) in the pediatrics age group differs from that in adults, which makes TB a particular challenge in the former:3

- The risk of develop disease following infection is greater in children, and the latency period is shorter compared to adults
- Children are more likely to develop extra pulmonary TB and severe disease.
- Clinical and radiological manifestations are heterogeneous and often nonspecific.
- Collection of samples for microbiological testing is more difficult in children, and the disease is often paucibacillary.
- Undernutrition is a serious co-morbidity in patients with active TB in India, and increases the risk of severe disease, drug toxicity, drug malabsorption and relapse after cure.

The clinical and radiographic manifestations are less specific in children compared to adults, and are often confused with bacterial pneumonia. Microbiologic confirmation of disease is limited by the paucibacillary nature of TB in children; in general, TB cultures and newer rapid molecular tests are positive in the minority of children, generally <25–40% of children with TB disease. (4,5,6,7)

PRESUMPTIVE PAEDIATRIC TB

Presumptive TB refers to children suspected to be suffering from TB based on any of the following symptoms: persistent fever, cough for more than two weeks, loss of weight in 5% children in 3 months or not gaining weight despite of adequate nutrition. A definite weight loss (≥5% loss in the past three months) or failure to gain weight in the past three months despite adequate nutrition with no other apparent cause should prompt detailed history, examination and investigation, including investigations for TB.

Moreover, presumptive TB cases (Pulmonary or Extra pulmonary) would often have known contact with an infectious TB patient. In a symptomatic child, contact with a person with any form of active TB within the last two years may be deemed significant.

Table 1: Age wise distribution in children with presumptive TB

Age groups	Confirmed (n=75)	Not confirmed (n=45)	Total (n=120)	P value
0-5 years	65 (86.66%)	42 (93.33%)	107 (89.16%)	0.4
6-10 years	8 (10.66%)	3 (6.66%)	11 (9.16%)	
10-12 years	2 (2.66%)	0	2 (1.66%)	

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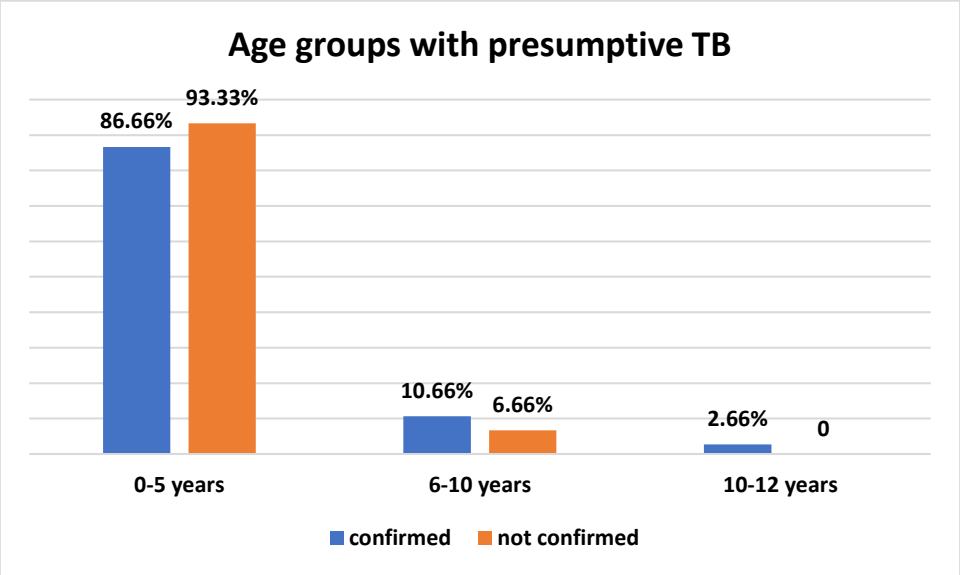

Figure 2: Age wise distribution in children with presumptive TB

The age group distribution between the confirmed (n=75) and not confirmed (n=45) groups shows that the majority of cases are in the 0-5 years age group, with 65 confirmed and 42 not confirmed, totaling 107 out of 120 individuals. In the 6-10 years age group, there are 8 confirmed and 3 not confirmed cases, making a total of 11. The 10-12 years age group includes 2 confirmed cases and none in the not confirmed group, totaling 2 cases.

The P value of 0.4 indicates that the differences in age group distribution between the confirmed and not confirmed groups are not statistically significant.

Table 2: Gender wise distribution in children with presumptive TB

Gender	Confirmed (n=75)	Not confirmed (n=45)	Total (n=120)	P value
Male	49 (65.33%)	24 (53.33%)	73 (60.83%)	0.16
Female	26 (34.67%)	21 (46.67%)	47 (39.17%)	

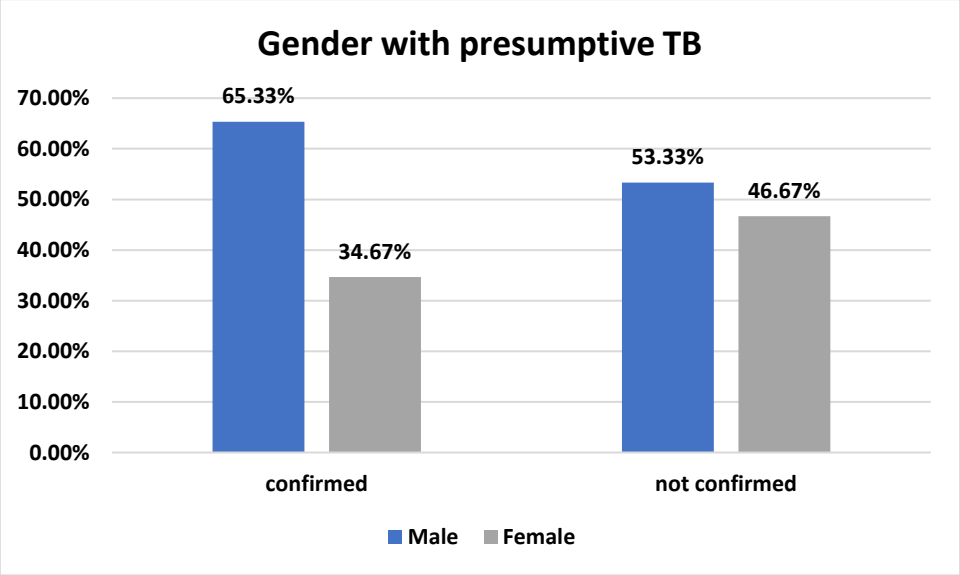

Figure 3: Gender wise distribution in children with presumptive TB

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Table 3: Association between the types of TB with presumptive TB

Types of TB	Confirmed (n=75)	Not confirmed (n=45)	Total (n=120)	P value
Pulmonary	71 (94.66%)	0	71 (59.16%)	**<0.01**
Extra pulmonary	4 (5.33%)	0	4 (3.33%)	
Not TB	0	45 (100%)	45(37.5%)	

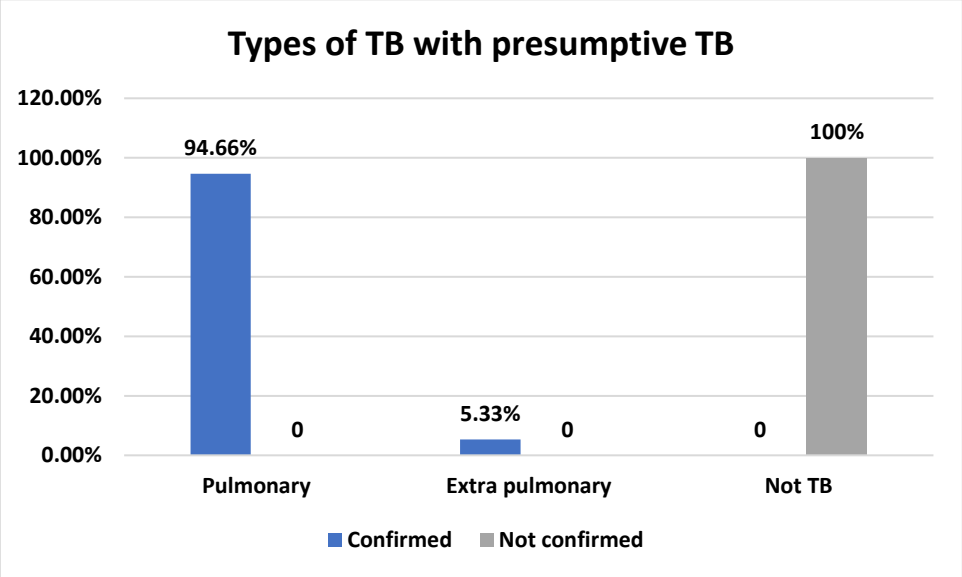

Table 2: Association between the types of TB with presumptive TB

The distribution of tuberculosis (TB) types in the confirmed tb (n=75) and not confirmed tb (n=45) cases highlights a significant distinction. Among the confirmed cases, 71 were diagnosed with pulmonary TB and 4 cases of extrapulmonary TB, all in the confirmed tb. 45 cases were categorized as not having TB. The total number of pulmonary TB cases were 71, extrapulmonary TB cases were 4, and non-TB cases were 45 out of the 120 individuals. The P value for pulmonary TB was less than 0.01, indicating a statistically significant difference between the groups.

Table 4: Distribution of the types of TB among confirmed TB

Types of TB	Confirmed TB (n=75)	Percentage (%)
Pulmonary	71	94.66%
Extra pulmonary TB Lymphedinitis	2	2.66%
Tuberculous meningitis	1	1.33%
Tuberculous pleural TB	1	1.33%

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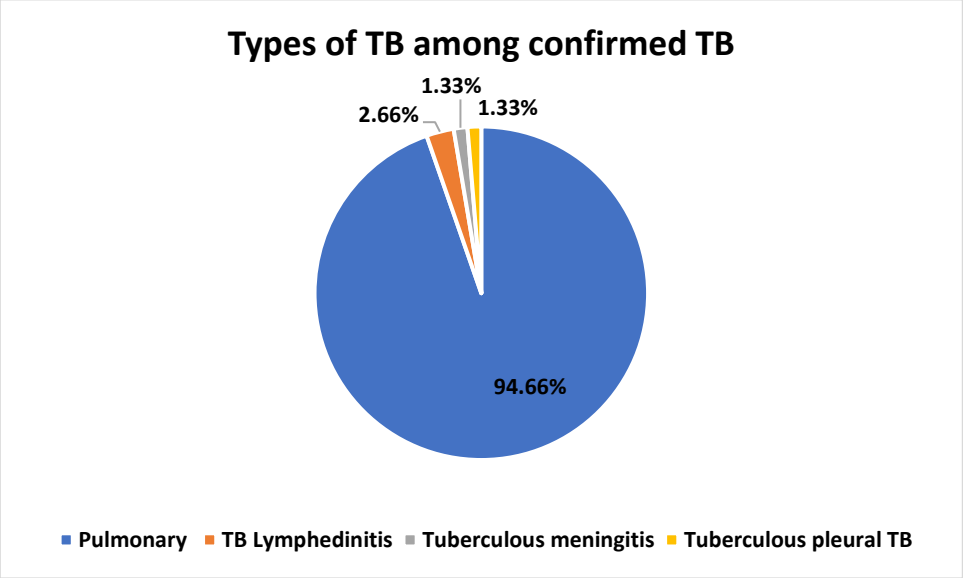

In a study of 75 confirmed tuberculosis (TB) cases, the majority were diagnosed with pulmonary TB, accounting for 71 cases or 94.66% of the total. Extra-pulmonary TB was less common, with 2 cases (2.66%) of TB lymphadenitis, 1 case (1.33%) of tuberculous meningitis, and 1 case (1.33%) of tuberculous pleural TB.

TABEL 1 .COMPARISION OF AGE WISE DISTRIBUTION IN CHILDREN WITH CONFIRMED TB AMONG THE VARIOUS STUDIES

AGE	0-5Y	6-12Y
VERMA et al[8]	77.9%	42%
ANURADA et al[9]	28.2%	25.8%
KSOO.ET.AL[10]	30.33%	20%
RAIZADA et.al[11]	4.2%	51.4%
TRIPATHI et.al[12]	50%	50%
PRESENT STUDY	86.66%	13%

In present study, found a 86.6% incidence of children involved with age of less than 5 years in TB confirmed case, consistent slight equal with the findings of verma et al.[8]

In present study, found a 13% incidence of children between the age group 6-12 years in TB confirmed case, consistent with the findings of Khoos et al.[9]

However studies Tripathi et al.[10] and RAIZADA et al[185] reported higher incidence of confirmed TB in the age group between 6-12 years in contrast with the present study as they included only diagnosed cases of tuberculosis and higher age group i.e more than 12 years .

TABEL 2. COMPARISION OF GENDER WISE DISTRIBUTION IN CHILDREN WITH PRESUMPTIVE TB AMONG THE VARIOUS STUDIES.

SEX	MALE	FEMALE
KHOOS et al.	35.3%	40.6%
MALIK et al.	57%	43%
RAIZADA et al.	33.7%	66.2%
MORETO et al.	33.3%	66.7%
LOPEZ et al.	44.2%	55.8%

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TRIPATHI et al.	41.2%	57.5%
PRESENT STUDY	65.33%	34.67%

In the present study, 65.3% were confirmed cases for male gender while 34.6% were female, in our study male preponderance were higher in confirmed TB as cases were done in rural area. In our study male incidence were 65.3% in confirmed tb, consistent with the findings of Malik et al. However , Moreto et al.[14] and Raizada et al. [15] reported a significantly higher incidence of confirmed TB in female.

TABEL 3. COMPARISION OF DIFFERENT TYPES OF TB AMONG VARIOUS STUDIES

STUDY	PULMONARY TB	EXTRA PULMONARY
Anuradha et al.[9]	**70.6%**	**25.80%**
Bhanu et al.[10]	**27%**	**30%**
Moreto et al.[11]	**40.7%**	**29.6%**
Tripathi et al.[12]	**25%**	**63.7%**
Verma et al.[13]	**16.8%**	**76%**
Present study	**94.66%**	**5.33%**

In present study out of 75 TB cases , 94.6% incidence of pulmonary TB and 5.3% incidence of extra pulmonary were observed. Pulmonary tb cases (94.6%) were observed with higher incidence, As we included cases as per NTEP 2020 protocol in our studies Extra pulmonary TB (5.3%) cases in our study were less observed. Anuradha et al.[9] also had higher incidence of pulmonary tb were observed. However, two other studies by Verma et al[10] and Triparthi et al [11] reported significantly higher incidence of 63.7% and 76% , as they included children under five years and didn't follow NTEP 2020 protocol for patient categorization.

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