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RESEARCH ARTICLE

CHILDHOOD TUBERCULOSIS: STUDY OF CLINICAL PROFILE OF TUBERCULOSIS IN PEDIATRIC PATIENTS AND CORRELATION OF CB-NAAT RESULT IN CLINICALLY SUSPECTED TUBERCULOSIS

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Key words:-
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Abstract

Introduction: Tuberculosis is a chronic infectious disease caused by predominantly Mycobacterium tubercle bacilli. Pediatric tuberculosis is among the top 10 causes of death in children. India accounts for one fourth of the global tuberculosis burden, standing one among the thirty high TB burden countries. Hence, children in India are at increased risk of acquiring TB infection and developing TB disease and death following infection. Latent TB infection in children may be reactivated in later life and become active adulthood tuberculosis and thereby a potent TB reservoir in the community.

Aim: To study clinical profile of tuberculosis in pediatric patients and correlation of CB-NAAT result in clinically suspected tuberculosisat tertiary care center.

Method: Prospective Observational study from1 August 2020 to 31 August 2022.

Result: Out of 52 patients cough was presenting symptom of 19(36.53%), fever was present in 25(48.07%), loss of weight >5% in last 3 month was present in 12(23.07%),fever(83.8 %) was most dominant symptom. Out of 52 patients, tachypnoea was presenting sign in 5(9.6%), ascites was present in 5(9.6%) and lymphadenopathy for more than 2 weeks were present in 25(48.07%). Out of 52 patients Anaemia was present in 42(80.76%), High ESR was present in 22(42.30%) and Mantoux test was positive in 16(30.76%).

Conclusion: Reliable diagnosis of tuberculosiscan be done by clinical parameters like presence of tachypnea, fever and lymphadenopathy. CB NAAT in correlation to clinical parameters is very useful for diagnosis of tubercular cases.

Introduction:-

Tuberculosis is a chronic infectious disease caused by predominantly Mycobacterium tubercle bacilli. Pediatric tuberculosis is among the top 10 causes of death in children. India accounts for one fourth of the global tuberculosis

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burden, standing one among the thirty high TB burden countries. Hence, children in India are at increased risk of acquiring TB infection and developing TB disease and death following infection. Latent TB infection in children may be reactivated in later life and become active adulthood tuberculosis and thereby a potent TB reservoir in the community. Accordingly, 2021 witnessed a 19% increase from the previous year in TB patients' notification—the total number of incident TB patients (new and relapse) notified during 2021 were 19,33,381 as opposed to that of 16,28,161 in 2020. In 2021, the vision of the National Strategic Plan for Elimination of Tuberculosis (NSP 2017-25) permeated to state and district levels yet again to encompass more objectives. [(1)]In spite of new rapid diagnostic methods, lack of gold standard test for confirming childhood tuberculosis remains an obstacle for the effective reporting of childhood TB, and hence these cases often remain under diagnosed and underreported.

As TB in children follows a recent infection, then a secondary reactivation, pediatric tuberculosis remains an indicator of its current transmission in a community.

Aims and Objective:-

1.To study of clinical profile of tuberculosis in pediatric patients.
2.To study correlation of CB-NAAT result in clinically suspected tuberculosis.

Materials and Methods:
Study Period:
1 August 2020 to 31 August 2022

Study Site:
Smt. Shardaben General hospital

Type Of Study:
Prospective Observational study

Inclusion criteria:
All clinically suspected indoor cases of childhood tuberculosis from 1 month to 12 years by below criteria during my study period were enrolled to the study.

Exclusion criteria
Inability to obtain an informed consent of the patient who is on anti TB treatment for more than 7 days.

All the study population was subjected to detailed history and physical examination following an oral consent from parents or guardian.

Young children (≤12 years) presenting with suspected TB were included in study from 1st August 2020 to 31 august 2022, at the inpatient facilities of the tertiary care teaching hospital.

Table 1:- Spectrum of presenting symptoms in suspected pediatric patients.

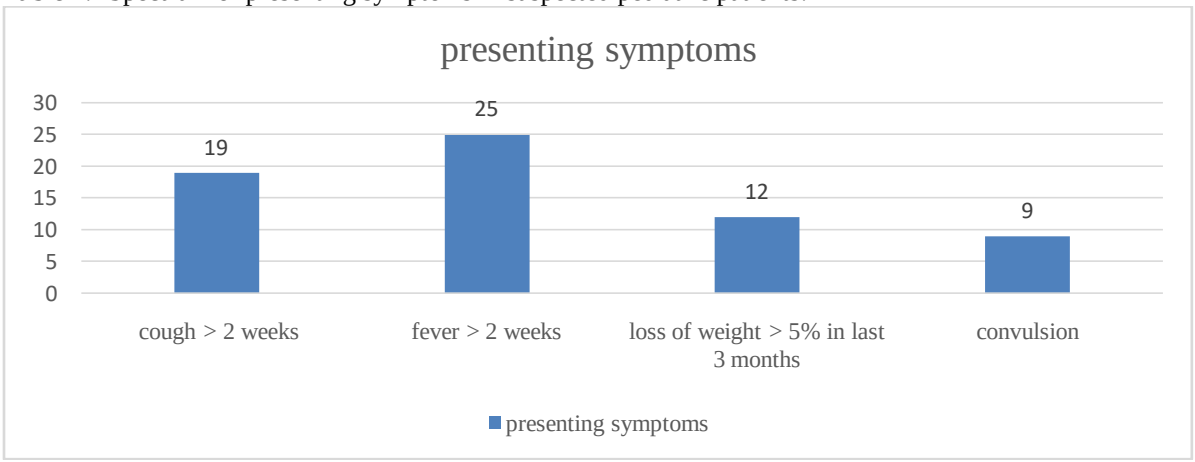

Table 2:- Spectrum of presenting signs in suspected pediatric patients.

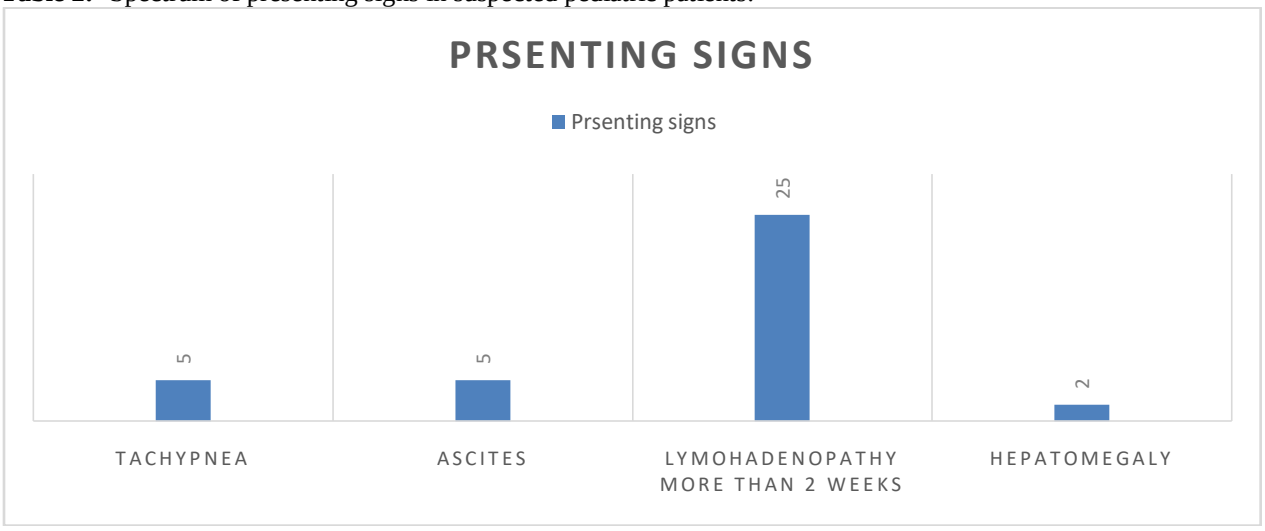

Table 3:- Spectrum of positive investigations in suspected pediatric patients.

Investigation	Total
Anaemia	42 (80.76%)
High ESR	22(42.30%)
Reactive HIV	0

Table 4:- BCG scar formation:

BCG scar	Total
Present	43 (82.69%)
Absent	09(17.30%)

Table 5:- History of active tuberculosis contact.

History of active TB contact	Total
Present	7(13.46%)
Absent	45(86.54%)
TOTAL	52(100%)

Table 6:- Spectrum of positive Mantoux test in suspected paediatric patients:

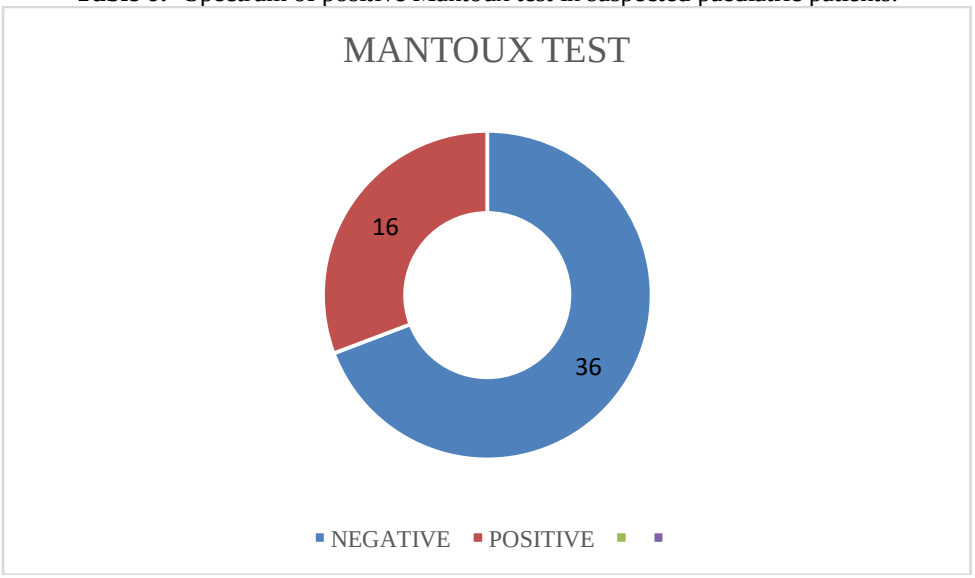

Table 7:- Statistical analysis of patient having detected CBNAAT and tuberculosis.

CBNAAT	Tuberculosis patients	Normal patients
Detected	8	0
Not detected	11	33

Table 8:-

CBNAAT	Results
Sensitivity	42.10%
Specificity	100%
Positive predictive value	100%
Negative predictive value	75%

Result and Discussion:-

In this study total 52 patients were enrolled during time period from august 2020 to august 2022, due to covid pandemic number of patients enrolled in this study are less.

Out of 52 patients cough was presenting symptom of 19(36.53%), fever was present in 25(48.07%), loss of weight >5% in last 3 month was present in 12(23.07%) and convulsion was present in 9(17.30%) patients. Similar findings were seen in Pushpa Panigatti et all. [18] in which fever (83.8 %) was most dominant symptom. Similar findings were seen in other studies (2), (3).

Out of 52 patients, tachypnoea was presenting sign in 5(9.6%), ascites was present in 5(9.6%) and lymphadenopathy for more than 2 weeks were present in 25(48.07%) & hepatomegaly was present in 12(23.06%).

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Among 19 patients of tuberculosis 8 had positive CBNAAT while 11 had negative CBNAAT, and 33 non tuberculous patient had negative CBNAAAT.

Among tuberculosis patients positive CBNAAT as investigation had sensitivity 42.1%, specificity 100%, positive predictive value 100%, negative predictive value 75% and accuracy 78.85% to diagnose tuberculosis.

Similar results were seen in Smith k, Starke J, Eisenach K, et al and Starke J, Ong L, Eisenach K et al studies have found that PCR based test have 40 to 60% sensitivity compared to clinical diagnosis. [4,5]

Conclusion:-

Diagnostic difficulties are the greatest challenge in childhood TB management due to lacking of studies. Also, TB can mimic other common childhood disease, including pneumonia, malnutrition, other bacterial and viral infections and HIV. That's why, accurate diagnosis of active tuberculosis,based on clinical criteria and investigations is the mainstay to start early treatment.Here, CBNAAT is helpful investigation in bacteriological confirmation of the tuberculosis.

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