Original Article

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A Study on Clinical Features of pulmonary Tuberculosis in Pediatric Age Group in Rural Medical College

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Abstract

Introduction: Tuberculosis is a specific infectious Disease, mycobacteriumTuberculosis which is acid-fast bacilli will cause tuberculosis The disease primarily affects the lungs. It also affects meninges, Intestine, Liver, Joints, Heart, Skin, lymph glands, and called extrapulmonary tuberculosis. Tuberculosis isa very common problem in India and developing countries and African countries. In India 2 million population is affected annually among these 5% patients are in pediatric group 0-16 years. The aim of the study ids to study the prevalence clinical profile of pulmonary tuberculosis in rural medical college. **Subjects and Methods:** We have examined 140 children, out of these 140, boys were 78 and girls were 62. The age group is between 1year to 16 years. We have conducted this study for 7 months from March 2020 to Nov. 2020, In the department of pediatrics in association with the department of pulmonology in kaminani medical college. **Results:**We have included 140 Childrens in this study boys were 78 and girls were 62. The Commonage group is between 10 yrs -16yrs. Bilateral. Lesions were noted in 25 cases. The lesions noted are infiltration, fibro cavitary lesions, and consolidation and pleural effusion, and empyema. **Conclusion:**Pulmonary tuberculosis is a very common infectious disease in India, especially in rural areas, the younger age group is more commonly involved. Still, mortality is high in the rural part of India. **Study design:** It is an analytical study conducted in rural area to know the prevalance and the pattern of clinical features of pulmonary tuberculosis in children who are residing in different areas with different socio-economic back groud. In our area the population density is not high. It is a cluster of small village. Where proper medical facilities are not available prevalance in India is 10% - 22%, In our area the prevalance is 26% -28%.

Keywords: Mycobacterium, pulmonary tuberculosis, cavity, BCG, Fibrosis, mortality, morbidity.

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Introduction

Tuberculosis is an infectious disease and the microorganism which causes tuberculosis is acid-fast bacillus called as mycobacterium tuberculosis and 56.75% cases occurs in Asian countries like India Bangladesh and Mayanmar and 29.50% cases occurs in African countries like Zimbabwe, Uganda and Tanzania.[1]

In India 24 Lacs people are effected 2012. 5-6 % of newly infected TB cases are in the age group of 2 to 14 years. The pre disposing factor are poor living condition under nutrition, poverty, overcrowding and more than 70% of patient are living in slum areas and rural and agency areas.[2]

Worldwide more than 10 lac children are effected and nearly 1 lac death occurs annually. Tuberculosis meningitis & Milliary TB may be the major causes for mortality

Primary tuberculosis is sometimes asymptomatic in children middle and lower lung. Zones are commonly involved in primary tuberculosis in children. Ghon's focus is usually peripheral lesion and may be associated with enlarged lymphnodes which involve hilar and paratracheal.[3] Most children acquire the organism from adults in their surroundings. The Estimated lifetime risk of developing tuberculosis for a young child infected with mycobacterium tuberculosis disease for a young child infected with M.Tubarculosis as indicated by a positive tuberculin test is about 10%. About 5% of those infected are likely to develop the disease in the 1^{st} yr. After infection and the remaining 5% during their lifetime. Nearly 8-20% of deaths caused by tuberculosis occur in children. The infection is spread by the tuberculosis patients who discharge tubercle bacilli in his sputum or narocophoryngeal secretions during Bouts of coughing or sneezing etc. Such patients are open or

infective cases.[4] The rate of infection in children increases. To 5-6times in HIV infected patients. Adolescent children, especially girls are prone to develop active tuberculosis during puberty. Undernourished children are more susceptible to develop tuberculosis probably due to depressed immunological defenses. A malnutritions patients who do not respond to dietary therapy should be promptly investigated for tuberculosis.[5] Children with immune deficiency are more likely to develop disseminated disease. Pulmonary tuberculosis resulting from endogenous reaclivations of foci of infection is un common in children. The incubation period is various from 4 to 8 weeks. Clinical features in children include in primary infection are mild fever, anosexia, weight loss. decreased activity. The cough may be absent in most of the cases In progressive primary disease high-grade fever and cough and hemoptysis; cavitating lesions are common in children. In miliary the commonest site is apex of lung (puhl's Lesion) form high-grade fever, Cough, shortness of breath and hepatosplenomegaly are seen.

Subjects and Methods

We have conducted this study in the department of pediatrics at Kamineni Medical College. Narkatpally in association with the pulmonology department. This study has been conducted for 7 months from March 2020 to Nov 2020. Total 140 numbers of children are indcluded in this study. Out of these 140 childern 78 are boys 62 are girls. The age group involved in this study is between 1yr and 16 yrs.Children who are diagnosed previously and already on ATT are excluded in this study only newly diagnosed cases are included. Informed consent has been obtained from parents by giving requisition form in their local language. College Ethical committee approval has been obtained. After case full history taking and clinical examination. We have advised investigation which includes, complete blood picture, ESR, Random blood sugar pleural fluid analysis in case of pleural effusion.

Results

In the table no.I different age groups involved were mentiond. The maximum number of cases belongs to 10 years and 16 years 58no. cases(83.5%) in boys and 43 no. of cases(68.26%) cases in girls. In table no. II, the patients belongs to different living areas were mentioned more than 60%(42no.) of childern are living in slum areas and agency areas, in boys and in the girls. (32 no.) 52% are from slum and agency areas.

The different clinical features are mentioned in the table no. III cough fever which is low grade, loss of weight and loss of appetite are commonly seen and growth retardation also seen in young childeren and different types of lesions on X-ray chest are mentioned in table no. IV.

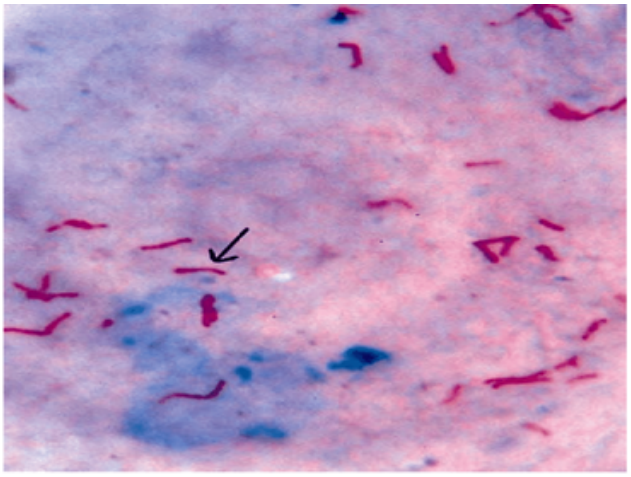

Figure 1: AFB Staining.

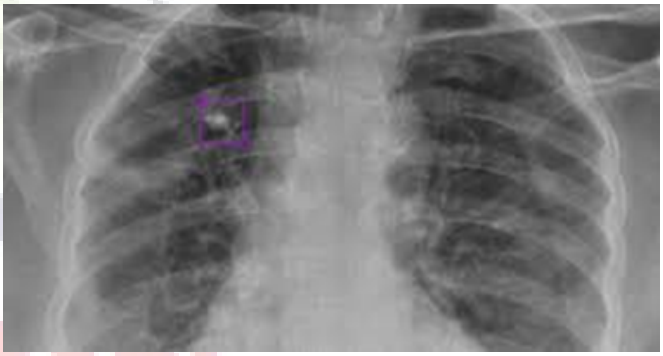

Figure 2: X ray of Chest PA view showing small cavity lesions in child of 14 yrs age.

Figure 3: Right upper lobe cavity with military mottling.

Table 1: Different age group.

S.No	Age in Yrs	No. of Pts. Boys(72)	Percentage	No. Of Pts. Girls(68)	Percentage
1	1 – 5 yrs	14	17.94%	9	14.52%
2	6 – 10 yrs	21	26.92%	15	24.19%
3	11 – 12 yrs	19	24.35%	23	37.09%
4	13 – 16 yrs	24	30.76%	15	24.19%

Table 2: Different living areas

S. No	Living area	No. of Pts Boys (72)	Percentage	No. Of Pts. Girls (68)	Percentage
1	Slumdwellars	24	30.76%	14	22.58%
2	Agency areas	18	23.07%	19	30.65%
3	Rural areas	15	19.23%	17	27.41%
4	Semi Urbans	21	26.92%	12	19.35%

Table 3: Clinical Features.

S. No	Clinical Features	No. of Pts Boys (72)	Percentage	No. Of Pts. Girls (68)	Percentage
1	Fever	69	88.46%	59	95.16%
2	Loss of weight	65	83.33%	58	93.54%
3	Cough	59	75.65%	51	82.75%
4	Anorexia	58	73.56%	49	79.03%
5	Others	41	52.86%	37	59.67%

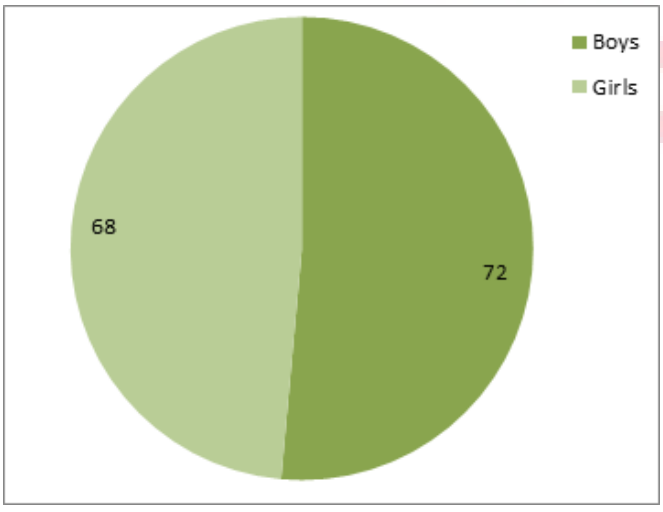

Chart 1: **Sex Ratio Total -140**

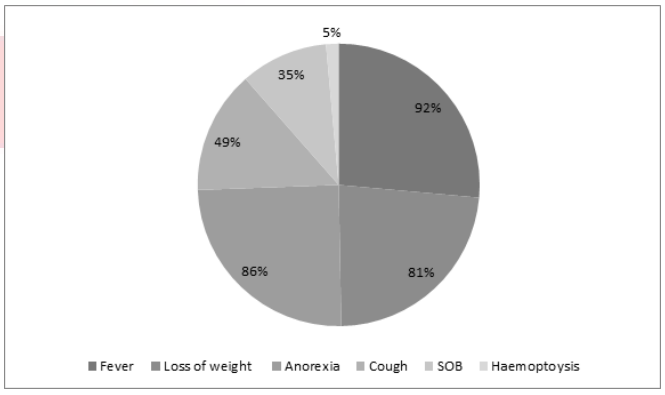

Chart 2: **Clinical features.**

In our study we included 140 children out of these 140, 72 are boys and 68 are girls. The age group included in this study is between 1yr and 16yrs. More number of cases is between 10yrs and 16yrs. The study conducted by Kumar et al shows almost similar results (12yrs and 16yrs). The percentage of children in this age group is almost 32%.[6]

The common clinical features noted in our study in order of frequency are fever, loss of weight, cough, anorexia, shortness of breath, and hemoptysis low-grade fever is seen in most of

Table 4: Different Lesions

S. No	Types of lesion	No. of Pts Boys (72)	Percentage	No. Of Pts. Girls(68)	Percentage
1	Primary complex	40	51.28%	37	59.67%
2	Infitrative	22	28.20%	19	30.64%
3	Cavitory lesions	10	12.82%	8	12.90%
4	Others	46	7.69%	4	6.45%

the cases of pulmonary tuberculosis, and high-grade fever is seen in miliary-type and other complications like empyema. One study, conducted by Y.K Amdekar shows that cough is not seen in many cases 37% of children have cough in that study.[7] In our study, we observed that infiltrative lesions are most common after pulmonary primary complex, which appears as an airspace consolidation of variable size, usually unifocal and homogenous. The diagnosis of tuberculosis in children is usually based on clinical signs and symptoms of X-ray chest, tuberculin testing, and history of contact with adult patients. Acid-fast staining is positive in not more than 30% of children and it depends on the extent of the lesion.

Discussion:

In India every year nearly 1-2 million new cases are recoded children affected are 12-18% and worldwide highest burden of death rate is nearly 8-10%.[8] The prevalence of HIV is young children in India is not knowns The prevalence nationally in adults is 0.4%.

Diagnosis of tuberculosis in young children is challenging as they are less likely to produce adequate specimens for microscopy and culture and more likely to present with extrapulmonary TB and paucibacillary nature of childhood TB. In our study, we observed that only In 32% of patients mycobacterium was recovered. It is low when compared with the studies conducted by B.J. Marasn Et al.[9] Unilateral lesions like Infiltretive, consolidation and cavitary lesion are noted in more than 85% of cases are noted on X-rays chest these changes are nearly correlating with the studies conducted by SA George Et al.[10] We have noticed 2.5% of patients are multidrug resistance tuberculosis (MDRTB). A recent cross-sectional study by shah and Chilkar from Mumbai reported that 7% of Children had MDR TB.[11]

The pathophysiology is when tubercle bacilli may lodge in pulmonary alveoli and cause inflammation with hyperemia and congestion. Initially, the polymorphonuclear leukocytes infiltrate at the site of the lesion. The phagocytic ability of these cells is poor and they are soon eliminated further course of infection depends on immune response. Hematogenous dissemination of M. tuberculosis occurs early in the course of the disease, which occurs when the bacilli find their way into the bloodstream through lymph nodes. The main pathophysiology involved in pulmonary tuberculosis is hyperemia and inflammatory longestion of alveoli because of TB bacilli which lodges at alveoli and infillration of polymorphs leukocytes will occur at alveoli level. Progressive primary disease occur as one of the complication of primary complex in which enlarged caseous cavities will be seen.

Haematogenous spread of TB bacilli will cause milliary Tb in childrens it is because of primary infection. The main lesion are yellowish & granulomas of 1-2mm in diameter which resembles millet seeds.the clinical features are fever gen. weakness, night sweats, weight loss. Hepatospenomealy & lymphedinopathy also seen choroid tubercles in eye are seen n nearly 25% of cases, in 5-8% of cases meningismus is also seen.

Conclusion

Pulmonary tuberculosis is very common. The common age group in children is between 10-14 years. Extra pulmonary tuberculosis is also very common, Malnutrition, Overcrowding appears to be predisposing factors for the spread of the disease.Infiltrative lesions are more common than fibro cavitary lesions.

References

1. ;.
2. Govt, India. RNTCP Status report ministry of health and family welfare. India; New Delhi; 2008.
3. ; 2014.
4. Swamathan S, Rekha B. Pediatric Tuberculosis: Global Overview and Challenges. Clin Infect Dis. 2010;50(3):184–194. Available from: https://doi.org/10.1086/651490.
5. Kabra SKR, Lodha V, Sath. Tuberculosis in children has changed in the last 20years. Indian J Pediatr. 2002;69(1):5–10.
6. Kumar D, Couple, Prasad. vol. 50. pediatric II, editor; 2013.
7. K Y;.
8. Chitkara AJ, Vashistha VM. Pertussis outbreaks in the developed world: Are acellular pertussis vaccines ineffective? Indian Pediatr. 2013;50:1109–1112. Available from: https://dx.doi.org/10.1007/s13312-013-0298-3.
9. Marasis BJ, Hesseling AC, Gie RP, Schaaf HS, Beyers N. The burden of childhood tuberculosis and the accuracy of

community-based susviattence data. Int J Tuberc Lung Dis. 2006;10(3):259–263.
10. George SA, Ko CA, Kirchner HL, Starke JR, Dragga TA, Mandalakas AM. The role of chest radiographs and tuberculin skin tests in tuberculosis screening of internationally adopted children. Pediatr Infect Dis J. 2011;30(5):387–391. Available from: https://doi.org/10.1097/inf.0b013e3182029486.
11. Shah I, Chilkar S. Clinical profile of drug resistant tuberculosis in children. Indian Pediatr. 2012;49(9):741–744. Available from: https://doi.org/10.1007/s13312-012-0158-6.

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