ORIGINAL RESEARCH PAPER

Pediatrics

CLINICAL PROFILE OF TUBERCULAR CHILDREN WITH AND WITHOUT HIV INFECTION

KEY WORDS: HIV, Paediatric tuberculosis, Magnitude, seropositivit

Virendra K Gupta Department Of Pediatrics, NIMS & Research, Jaipur

Jasraj Bohra* Department of pediatrics, Govt. Hospital, Barmer *Corresponding Author

Jagdish Singh Department Of Pediatrics, SPMCHI, SMS Medical college, Jaipur

ABSTRACT

Objective: Tuberculosis was noted to be the most frequent cause of death amongst people living with HIV not only in India but all over the world.

Aims: This study was done to know the magnitude and differences in clinical profile of HIV infection in tubercular children.

Method: Hospital based cross-sectional & descriptive study, conducted at pediatric tertiary care centre. Study group included patients attending hospital during period Sept. 2011 to Sept. 2012, diagnosed with tuberculosis as per NACO guidelines and screened for HIV infection.

Results: Out of 315 tubercular children, 22 were HIV positive giving a magnitude of 6.98%, most patients were in the school going age (5-12yr) group (43.80%). The male to female ratio was1.27:1. Mean weight for age was 69.94%. Out of HIV positive cases Fever (81.81%), weight loss(81.81%) and weakness(81.81%) were most frequent complaints followed by cough(68.18%). Examination showed hepatosplenomegaly (41.81%) and lymphadenopathy (18.18%). Chest *X*-ray revealed miliary findings in 10.8%. Out of total number, 57.46% were rural patients. 52.06% of cases had one or more extra-pulmonary tubercular sites, and 03.17% disseminated or military tuberculosis. BCG vaccination was seen in only 34.92% cases.

Conclusion: Increasing magnitude of HIV seropositivity with positive patients more likely to suffer from pulmonary tuberculosis while HIV negative with extra pulmonary involvement. HIV-positive children suffer from prolonged symptoms. Health personnel need to recognize such dual infection and take proper steps to manage the epidemic. HIV screening should be carried out in patients with prolonged illness resistant to usual mode of treatment.

INTRODUCTION

Tuberculosis (TB) is a leading killer among people living with human immunodeficiency virus (HIV). At least one in four deaths among people living with HIV can be attributed to TB and many of these deaths occur in resource-limited settings[1].Children with HIV-infection are between five to ten times more likely to develop tuberculosis than HIV-negative children. One-third of the increased number of TB cases is attributed to the spread of the human immunodeficiency virus (HIV) epidemic [2]. TB was noted to be the most frequent cause of death amongst people living with HIV not only in India but the world over. There is no official data on the occurrence of the TB/HIV co-infection in India. However, the data garnered from studies on HIV seropositivity among pediatric TB patients in tertiary health care centre does provide an insight on the magnitude of the problem though it would be naïve to assume the data to be representative of the problem in the community.

METHOD

It was a cross-sectional & descriptive study, conducted in the department of pediatrics, Sir Padampat Mother and Child Health institute (SPMCHI) attached to SMS medical college Jaipur during a period of 1 year (Sept. 2011 to Sept. 2012) after being cleared by the Institutional Ethics Committee. Patients age of 6 week to 15 years, are fulfilling the criteria to diagnose tuberculosis (as per RNTCP & IAP Guidelines) included as study group. After going through a detailed clinical history, complete general physical and systemic examination and relevant investigation, we will confirm the diagnosis of tuberculosis (pulmonary or extra pulmonary). Patients those are fulfilling the criteria for diagnosis of tuberculosis, sample was send for diagnosing HIV infection and confirm it as per NACO Guidelines. Written and informed consent was obtained from the parent. Those who didn't give consent, excluded from the study.

All the data would be entered on Excel sheet and analyzed statistically using XL-stat software. Quantitative data would be analyzed with parametric tests (un-pair t-test) while Qualitative data with non- parametric tests (Chi- square (2) test and z-test for difference in proportions). The confidence interval for all the statistical analysis would be kept 95% & α error 5%. The Ethical Committee of institute approved the study.

RESULT:

During the study period a total of 649 children were diagnosed as tuberculosis, Of these , 334 (47%) met at least one exclusion criterion remaining 315 included in the study and sample send for HIV testing as per NACO guideline. Table 1 shows that out of 315 tubercular children ,176 are male and 138 are female patients showing male preponderence. In our study highest percentage of patients belonged to 1yr-5yr age group. In this study most of tuberculosis patients have extrapulmonary type(52.06%) followed by pulmonary (44.44%) and disseminated tuberculosis(3.50%).57.46% were rural patients, most patients were in the school going age (5- 12yr) group (43.80%). Mean weight for age was 69.95±14.03.

Table 2 shows that out of 315 tubercular children, 22 were HIV positive giving a magnitude of 6.98%.in HIV seropositive group 17 patients were pulmonary TB while only three patients with extrapulmonary involvement and two patient with disseminated or miliary tuberculosis. In other group of HIV seronegetive patients showed more involvement of extrapulmonary sites having 161 children out of 293. The second largest group was pulmonary involvement with 123 number of patients, only 9 patients (3.07%) with disseminated TB.

Table 3 depicts clinical profile of patients in HIV seropositive patients with tuberculosis , the common presenting

symptoms were fever, weight loss, fatigue / weakness present in around 81 %. In more than 59% of patients fever was present for more than 14 days ,followed by cough(68.18%), anorexia (59.10%) and loose Motion (45.45%). Other less common features were abdominal pain, night sweats, headache, dyspnea, altered sensorium, nausea and vomiting seen in 9 to 18 % of patients. In HIV seropositive patient important signs were pallor (68.18%), hepatosplenomegaly (31.82%) and lymphadenopathy (27.27%). There were no statistically significant difference in clinical profile between these two groups except loose motion which was more significant in HIV positive children (p-value<.001). In chest X-Ray predominant radiological lesion seen was consolidation seen in 45.45 % in HIV seropositive patients while in HIV seronegative individuals main lesion seen was hilar lymphadenopathy and infiltration in 25 to 26 %. Overall History of contact with tuberculosis was present in 47.94% ,BCG vaccination as assessed by the presence of BCG scar was seen in only 34.92% cases, Mantoux test positivity was 48.89% and sputum / Gastric aspirate positivity rate were only in 04.13% cases.

DISCUSSION

HIV seropositivity in the tubercular children in present study is 06.98%, which is higher in comparison to overall HIV seropositivity in incident TB cases in India (5%) and in Rajasthan (2%)[3]. High HIV seropositivity observed in tubercular adults in Mumbai (5.89%), and Pune (20.1%) is probably a reflection of the higher prevalence of HIV infection in general population in these regions[4,5]showed there is unequal presentation of magnitude of HIV infection in tubercular children in different age groups and region to region.

Mean weight for age, the two groups were comparable, HIV positive patient are more malnourished in comparison to HIV negative patients(p-Value <0.001).

A HIV seroprevalence rate of 18% is reported in children with miliary or neurotuberculosis[6]. High seropositivity has been reported in both children and adults with tuberculosis in several regions in the grip of HIV epidemic in Central and East African countries[7][8][9]. In contrast, we observed HIV positivity in 3/94 (3.19%) cases of disseminated and neurotuberculosis (TBM). Almost similar observation was also found in study done by T. Shahab et al (2003)[10]it was HIV positivity in 5/107 (4.7%) cases of disseminated and neurotuberculosis.

Clinically both HIV positive and HIV negative patients had similar complaints and this finding is consistent with other studies (T. Shahab et al (2003)[10], Kumar et al (2007)[11], Chintu et al (1993)[7], Hussain T et al(2007)[12]). This could be suggested as both tuberculosis and HIV infection leads to chronic ill health and wasting and both are associated with persistent cough and fever. This finding shows same symptoms of HIV positive tuberculosis patients as of HIV negative patients and thereby causing difficulties in clinical diagnosis.

It has also been reported that weight loss, lymphadenopathy, and herpes zoster were best predictors of AIDS diagnosis among tuberculosis patients in ranking order[13]. Similarly in this study those tuberculosis patients who reported having diarrhea and weight loss, were strongly associated with HIV seropositivity which is consistent with other studies[14].These clinical findings may assist in identifying patients with dual infection with tuberculosis and HIV infection.

In addition to these studies we found that a children diagnosed with tuberculosis having cough less than 2 weeks and predominant symptoms of diarrhea comes out to be HIV positive more frequently.

Although Mantoux test is a important diagnostic tool in children to diagnose tuberculosis in our study, 48.89% of the cases were Mantoux positive and only 18.18% of the HIV positive cases were Mantoux positive which is in agreement with the observations of Dhurat, *et al*[15]. A possible cause of this is non reactivity of the test in immunocompromised children makes it difficult to establish the diagnosis of tuberculosis in these HIV infected children.

CONCLUSIONS

In developing countries, with high burden of tuberculosis infection, poor living conditions, and HIV epidemic in the country like ours, the risk of developing clinical tuberculosis will be much higher and eventually additional burden to health services in the near future. There is no significant difference in clinical profile of HIV seropositive and HIV seronegative group, except few symptoms like diarrhoea, cough etc.

Tuberculosis and HIV co-infection effect to one another that would adversely affect the clinical scenario. So all tuberculosis patients need to be screened for HIV infections, such cases can be missed in patients with tuberculosis which eventually affect their survival rates.

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DECLARATIONS:

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Conflict of interest: None declared

Ethical approval: Not required

Table 1: Characteristics of study group

	Male	female	Total
Number of patient	176 (55.87%)	138 (44.13%)	315 (100%)
Age group			
6 wk-1yr	16 (05.08%)	11 (03.49%)	27 (08.57%)
1yr-5yr	58 (18.41%)	46 (14.60%)	104 (33.02%)
5yr-10yr	54 (17.14%)	43 (13.65%)	97 (30.79%)
>10yr	84 (15.24%)	39 (12.38%)	87 (27.62%)
Mean age ± SD	07.18±4.36	07.29±4.36	07.23±4.35
Distribution of tuberculosis			
Pulmonary	77 (24.44%)	63 (20.00%)	140 (44.44%)
Extra pulmonary	94 (29.84%)	70 (22.22%)	164(52.06%)
Disseminated	05(1.59%)	06(1.91%)	011(03.50%)
Total	176	139	315

Table 2: Result of study

	HIV +ve	HIV –ve	Total	P value
Hiv status	22	293	315	
Mean Weight/age	60.37±8.77	70.66±12.94	69.95±14.03	<0.001
Tuberculosis				
Pulmonary	17	123	140	0.003
Extrapulmonary	3	161	164	<.001
Disseminated	2	09	11	0.375

Table No.-3 Clinical profile of HIV seropositive and HIV seronegative patients

	HIV +Ve n=22		HIV –Ve n=293		Total n=315		Statistics	
Symptoms	**No.**	**%**	**No.**	**%**	**No.**	**%**	***2***	**p-Val.**
Pyrexia	18	81.81	243	82.94	261	82.86	0.46	0.49
up to 14D	05	27.27	34	11.60	39	12.38	1.42	0.23
>14 Day	13	59.10	209	71.33	222	70.48	0.94	0.33
Cough	15	68.18	154	52.56	169	53.65	1.42	0.23
up to 14Day*	02	09.10	22	07.51	24	07.62	57.4	**<.001**
>14 Day	13	59.10	132	45.05	145	46.03	1.11	0.29
Weight loss	18	81.81	186	63.48	204	64.76	2.26	0.13
Fatigue/Weak	18	81.81	192	65.53	210	66.67	1.76	0.18
Anorexia	13	59.10	187	63.82	200	63.49	0.04	0.82
Loose Motion	10	45.45	30	10.23	40	12.70	19.8	**<.0001**
Night sweats	04	18.18	25	08.53	29	09.21	1.27	0.25
Abdoman pain	04	18.18	64	21.84	68	21.59	0.02	0.89
Dyspnoea	03	13.64	74	25.26	77	24.44	0.93	0.33
Vomiting	03	13.64	85	29.01	88	27.94	1.70	0.19
Headache	03	13.64	63	21.50	66	20.95	0.36	0.54
Nausea	02	09.10	52	17.75	54	17.14	0.55	0.45
Alt.sensorium	02	09.10	45	15.36	47	14.92	0.23	0.62
Convulsion	01	04.45	78	26.62	79	25.08	4.19	**0.04**
Chest pain	01	04.45	78	26.62	79	25.08	4.19	**0.04**

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