



THE CLINICO-EPIDEMIOLOGICAL PROFILE OF HIV POSITIVE CHILDREN IN CENTRAL RAJASTHAN

Paediatrics

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ABSTRACT

Background: Assessment of clinico epidemiological characteristics of HIV infected children in central Rajasthan. **Methods:** All children registered at ART centre, those attending the centre for follow up and those admitted or attending OPD in pediatric department for the treatment of associated medical illness in one year period were enrolled for study. In our study HIV positive children were divided in two groups PRE ART (ART is not yet started) and ART (on the basis of their antiretroviral therapy status). ART was started in 18 months to 5 years old in patients with their CD4 count <500cells/mm³ and in more than 5years <200cells/mm³. All data pertaining to clinical and epidemiological characteristics were recorded. They were further classified into clinical staging as per WHO guideline and immunological staging based on CD4 count. **Results:** Maximum number (42.15%) of cases belonged to the age group of 1-5years. There was predominance of boys (62.81%). Maximum number of cases belonged to lower middle class (42%). 80% of cases belonged to rural areas. Vertical route (81.81%) was the most common mode of transmission in children. Mostly cases presented with fever (32.89% in PRE ART and 36.67% in ART group), cough (19.74% and 15.56% in PRE ART and ART respectively) along with failure to thrive. Tuberculosis (64.44% in ART group), ARI (67.10% in PRE ART group) and diarrhea (52.63% in PRE ART and 75.56% in ART group) were the commonest opportunistic infections. In PRE ART two third cases were in clinical stage II while in ART group half of the cases were in stage III. **Conclusion:** Majority of children with HIV presented with vague clinical manifestations like prolonged fever, cough, diarrhea, failure to thrive etc which are commonly encountered in pediatric practice. Hence high index of suspicion of HIV, early identification of the disease and proper management in children would help improving their quality of life as well as life span.

KEYWORDS

Pediatric HIV, CD4 count.

INTRODUCTION

HIV (Human immunodeficiency virus) and AIDS (Acquired immunodeficiency syndrome) have made a huge global impact permeating the social, cultural and economic fabric of almost all nations. In India too, ever since the diagnosis of the first case of the HIV infection in 1986, this problem has been growing at an exponential rate. This reflects the steady expansion of services to prevent transmission of HIV to infants and an increase (albeit slow) in access to treatment for children¹. In Rajasthan, first case of HIV was detected in Pushkar in mid-eighties and the state implemented HIV programme as part of NACP-I and NACP-II with 1284 AIDS cases till March 2005 and estimated HIV cases in Rajasthan come to about 88560. In the context of HIV in India, Rajasthan with an official Sero-prevalence of 0.5 percent can be described as a highly vulnerable, high-priority state.

INCLUSION CRITERIA:

1. Children between the age group of 18 months –18 yrs with HIV positivity
2. Parents or guardians who gave consent for the study.

EXCLUSION CRITERIA:

1. Children aged below 18 months because facility for PCR testing is not available presently in our institute.
2. Parents or guardians who did not gave consent.

METHODS

The prospective study was conducted on HIV infected children admitted in pediatric department and registered in Anti Retroviral Therapy (ART) Centre of JLN Medical College and Hospital, Ajmer from June 2017 to May 2018 on 242 HIV positive children. The study plan was cleared by the Institutional Ethical Committee and written permission was taken from nodal officer of ART center and parents for the study.

After confirming the infection on serological grounds, a thorough history of mother, father and children was taken and clinical examination was performed. Details noted were age, gender, socio economics status through kuppuswamy scale²⁻³, perinatal history, dietary history, development history, immunization history, nutritional status in <5yrs through IAP classification and in >5years through BMI, mode of acquisition of infection. Details of clinical examination also

included time of onset and duration of symptoms, evidence of nutritional deficiency, fever, hepatomegaly, splenomegaly, lymphadenopathy diarrhea etc. Clinical diagnosis was supplemented with laboratory investigations. HIV testing was done by ELISA .Presumptive diagnosis of tuberculosis was confirmed by chest X-Ray and laboratory investigations which included complete blood count, ESR, Mantoux test, CBNAAT, Urine and stool examination, serum chemistry and an opportunistic infection screen based on the clinical presentation. HIV positive children were divided in two groups PRE ART (ART is not yet started) and ART on the basis of their anti retroviral therapy status. ART was started in 18 months to 5 years old in patients with their CD4 count <500cells/mm³ and in more than 5years <200cells/mm³.

CD4 count was estimated by FACS- COUNT (fluorescent activated cell sorter) method (becton-dickinson). Immunological & clinical assessment was done in terms of CD4 count as per WHO classification.

STATISTICAL ANALYSIS

Data were recorded in pre-structured proforma and compiled in Master Chart and were analysed using suitable statistical method.

RESULTS

Total number of HIV positive cases included in our study were 242 of which 102 (42.15%) cases were in the age group of 1-5 years while 67 (27.69%) cases were in the age group of 6-10 years.

Mean age of distribution of HIV positive cases in PRE ART group was 7.01 year and in ART group 7.24 yr. In PRE ART group there were 60.53% males and 39.47% were females and in ART group 66.67% were males and 33.33% were females. There was predominance of boys (62.81%) as compared to girls (37.19%).

Table no 1: Age distribution of cases according to gender-

Age group (Yrs)	Gender			
	Male		Female	
	No.	%	No.	%
1-5	63	26.03	39	16.12
6-10	38	15.70	29	11.98
11-15	30	12.40	14	5.79
>15	21	8.68	8	3.31

Total	152	62.81	90	37.19
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Maximum number of cases belonged to lower middle class i.e. 42% and 23% of cases were from upper lower class. Distribution of cases according to residential areas was like in PRE ART group 84.21% cases belonged to rural areas while in ART group also maximum number of cases i.e. 80% of cases belonged to rural areas. In PRE ART group 77.63% HIV positive children were normal according to their nutritional status 8.55% were grade I while in ART group 80.00% were normal and 7.78% were in grade I. Majority i.e. 81.82% of HIV positive children had HIV positive mother. In about two third (64.04%) father's HIV status was positive. Common mode of transmission was by vertical route (81.81%), rest (34.30%) was unknown. In our study 97 (40.08%) mothers were found illiterate while 94 (38.84%) had primary education while (37.60%) fathers of HIV positive children had primary level education followed by 36.78% with secondary level education and about one fourth were illiterate. Illiteracy level was high among mothers.

Table no.2: Distribution of cases according to their presenting complains-

Presentation	PRE ART(n=152)	ART(n=90)
Fever	50(32.89%)	33(36.67%)
Cough	30(19.74%)	14(15.56%)
Diarrhea	27(17.76%)	5(5.56%)
FTT	36(23.68%)	13(14.44%)
Skin disease	1(0.66%)	0(0.00%)
Weight loss	0(0.00%)	10(11.11%)

Table no.3: Distribution of cases according to opportunistic infections-

Opportunistic infection	PRE ART(n=152)	ART(n=90)
ARI	102(67.10%)	0(0.00%)
Diarrhea	80(52.63%)	68(75.56%)
Pulmonary TB	0(0.00%)	58(64.44%)
Lymphadenopathy	42(27.63%)	0(0.00%)
Recurrent Pneumonia	0(0.00%)	52(57.78%)
Oral ulcer	18(11.84%)	28(31.11%)

Half of the cases (59%) HIV positive children were completely immunized 22% were not immunized and 17% were partially immunized.

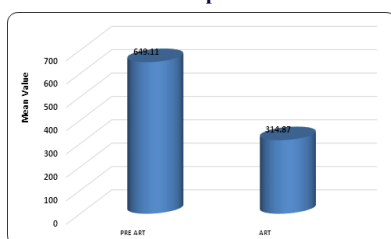
Table no 4: Distribution of cases according to revised WHO clinical staging-

Clinical stage	PRE ART(n=152)	ART(n=90)
I	48(31.58%)	0(0.00%)
II	99(65.13%)	23(25.56%)
III	5(3.28%)	46(51.11%)
IV	0(0.00%)	21(23.23%)

$X^2=142.11$, $DF=03$, $p=0.001$

In PRE ART group mean CD4 count was 649.11 and in ART group it was 314.87.

Figure 1-Mean CD4 count of HIV positive cases



DISCUSSION

Age distribution

Out of total 242 cases 102 (42.15%) of HIV positive children were in the age group of 1-5 years. Sixty three and thirty nine (26.03% & 16.12%) males and females cases respectively were in the age group of 6-10 years. Similar results were found by Rajasekaran et al4. Mean age distribution in their study was 7.31 yrs in boys and 6.74 yrs in girls. In

present study the mean age of presentation in PRE ART group was 7.01 years whereas in ART group the mean age was 7.24 years, as compared to the studies namely Agarwal et al5, Shah et al6, Gomber et al7 where they reported mean age of presentation 4.8 yrs, 4.7 yrs, 5.75 yrs, 7.12yr and 6.24 yrs respectively. The possible reason of this relatively higher mean age of presentation in current study could be due to lack of awareness of parents leading to delay in seeking medical advice and late referral to the ART registration because most (80%) of the patients were residing in remote and rural areas.

Gender distribution

Out of total enrolled on ART children, two- third (66.7%) were males and (33.3%) were females. Male to female ratio was 2:1 which is comparable to Agarwal et al5 who reported similar sex ratio 2.2:1 in their study.

In our study large majority of cases (82.64%) belonged to rural area and 17.36% belonged to urban area. The possible reason for rural dominance may be preponderance of rural population (75.13%) in Rajasthan (census 2011).

Educational status

In our study 97 (40.08%) mothers were illiterate, 94 (38.84%) had primary education and 51 (21.07%) were educated upto secondary level while 91 (37.62%) fathers of HIV positive children had primary level education, 89 (36.78%) with secondary level education and 62 (25.62%) were illiterate. Similarly, Deshpande et al8 and Yadav et al9 also found that females were more illiterate than males. This reflects the literacy rate in males and females in Rajasthan which is 79.19% and 52.12% respectively (census 2011).

Socioeconomic status

Maximum number of cases (42%) in our study belonged to lower middle class while 23% of cases were from upper lower class. Thakor N. et al10 found that lack of socioeconomic resources is linked to the practice of riskier health behaviors, which can lead to the contraction of HIV. These behaviors include earlier initiation of sexual activity and less frequent use of condoms.

Mode of transmission

In the present study vertical mode of transmission of HIV was found to be the major route (81.81%) of transmission of infection. Mourya k. et al11 from western Rajasthan found that perinatal transmission was the most common mode of acquiring HIV in pediatric age.

Immunization status

Half of the HIV positive cases (59%) in our study were completely immunized 22% were not immunized and 17% were partially immunized. Sensarma P et al.12 from Kolkata found similar results. Lack of education and awareness might be the possible reasons for poor immunization status.

Nutritional status

In the present study in PRE ART group 77.63% HIV positive children were normal according to their nutritional status and 8.55% were in grade I while in ART group 80.00% were normal and 7.78% were in grade I. Ambey R. et al13. from central India showed moderate and severe stunting (76.19%), moderate and severe underweight (71.42%), and moderate and severe wasting (38.09%) in <5 years HIV-positive children. Protein energy malnutrition leads to depletion of CD4 counts, and this is further intensified by the presence of HIV infection.

Clinical staging

In present study, most of pre-ART cases were in WHO clinical stage II (66.45%) followed by stage I (33.55%) while on ART cases they were in stage III (65.56%) followed by stage II (34.44%). This shows that pre-ART child presented with lower WHO clinical staging, while on ART child present with higher staging which is also statistically significant. A study conducted in Guru Teg Bahadur Hospital Delhi, reported similar result (WHO clinical stage III 46%, and in stage IV 28% cases).

Immunological profile

In PRE ART group mean CD4 count was 649.11 and in ART group it was 314.87 which was statistically significant (p value 0.001). In ART group CD4 counts were low as compared to PRE ART group because of high viral load.

Presenting complaints

In our study 32.89% of cases from PRE ART group presented with complain of fever, 23.68% with failure to thrive (FTT) and 19.74% with cough while in ART group 36.67% presented with fever 15.56% with cough. Gomber et al.⁷ also reported that most common presentation of HIV infected children was fever (83%), weight loss/ FTT (67%), chronic diarrhoea (39%).

Opportunistic Infections

In PRE ART group 67.10% of cases presented with ARI and 27.63% with lymphadenopathy. Among ART group 64.44% presented with pulmonary TB, 57.78% with recurrent pneumonia and oral ulcers in 31.11% cases. Kumar D et al.¹⁴ from Allahabad found lymphadenopathy as opportunistic infection in 34 (72.34%) cases. The most common opportunistic infection reported by Ravichandra K et al.¹⁵ in their study was pulmonary tuberculosis (28%) followed by oral candidiasis (12%).

CONCLUSION

To conclude the present study revealed that majority of children with HIV infection presented with varied and vague clinical manifestations mimicking common pediatric ailments like diarrhea, respiratory infections, malnutrition etc. Hence, early identification of the disease, by keeping high index of suspicion and confirming the diagnosis of HIV with the help of appropriate laboratory investigations like ELISA, CD4 count would help in proper management and improving the quality of life for HIV infected children.

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