

A Study of Prevalence of HIV Infection in Children Attending Pediatric Department

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Research Article

Abstract: Introduction: The increase in pediatric HIV infection has had a substantial impact on childhood mortality both in industrialized countries and developing countries. Pediatric HIV is a major world health problem which is progressing at an alarming rate. **Aims and objectives:** a) To study the prevalence of HIV infection in children. b) To study various presenting signs and symptoms in pediatric HIV patients. **Methodology:** The present study was carried out in the department of pediatrics from January 2008 to June 2009. All the patients attending the pediatric department i.e. OPD and IPD were enrolled in the study. Out of these patients suffering from HIV were diagnosed. The study population included was patients who were already HIV positive or diagnosed later on investigation on suspicion of the clinical features. **Results:** A sum of 24828 children attended pediatric department during study period. Amongst those 144 were found to be HIV reactive. Hence the prevalence of HIV infection during the study period was 0.58%. Vertical transmission was seen in 98.62% and infection via blood transfusion in 1.38%. Male to female ratio was 1.93:1. On first presentation fever was the most common symptom. On examination severe malnutrition (PEM Gr III and IV) was the most common finding (59.02%) followed by pallor (51.38%), respiratory signs (47.22%). **Conclusion:** prevalence of HIV in children attending pediatric department was 0.58%. Fever was the most common complaint reported by the study population and malnutrition was also most commonly associated finding in pediatric HIV patients.

Keywords: HIV Infection, pediatric.

Introduction

HIV means Human Immunodeficiency Virus. HIV is the virus that causes AIDS (Acquired Immunodeficiency Syndrome). AIDS was first recognized and described as a clinical entity in mid 1981 when Gottlieb in Los Angeles described a cohort of gay men with *Pneumocystis carinii* which was rare previously and Friedman-Kien in New York described a cohort of gay men with previously rare Kaposi's sarcoma¹. According to Merchant R *et al*², as the world enters the third decade of the acquired

immunodeficiency syndrome epidemic, the evidence of its impact is undeniable. Infection with the human immunodeficiency virus – the causative agent, is now a major public health problem for both developing and developed countries as it has dramatically increased the global burden of disease. The global impact of HIV epidemic has been so dramatic and devastating that it has been described as the “epidemic of current century”. The increase in pediatric HIV infection has had a substantial impact on childhood mortality both in industrialized countries and developing countries^{3,4}. Pediatric HIV is a major world health problem which is progressing at an alarming rate⁵. It has now become a pandemic⁶. The number of children infected with HIV is increasing rapidly in countries where HIV has spread widely in adults, as most women who become infected are in reproductive age group and the major sources of infection to children is through mother to child transmission⁷. The increasing number of opportunistic infections is leading to rise in the morbidity and mortality in Pediatric HIV. Thus the present study was undertaken to estimate the prevalence of HIV in pediatric patients attending the department (OPD and IPD).

Aims and objectives

- To study the prevalence of HIV infection in children.
- To study various presenting signs and symptoms in pediatric HIV patients.

Material and method

Study design: The present study was carried out in the department of pediatrics from January 2008 to June 2009. All the patients attending the pediatric department i.e. OPD and IPD were enrolled in the study. Out of these

patients suffering from HIV were identified using following criteria.

Inclusion criteria

1. Age between 18 months to 12 year with reactive ELISA test.

2. Presence of at least 2 major and 2 minor signs in absence of known cause of immunodeficiency.

Major Signs.	Minor Signs
<ul style="list-style-type: none"> • Loss of weight / failure to thrive which is not known to be due to medical causes other than HIV infection • Chronic diarrhea (intermittent or continuous for over 1 month) • Prolonged fever (intermittent or continuous for over 1 months) 	<ul style="list-style-type: none"> • Repeated common infections • Pneumonitis, otitis media, pharyngitis • Generalised lymphadenopathy • Oropharyngeal candidiasis • Persistent cough for over a month • Disseminated maculopapular dermatosis • Confirmed maternal HIV infection.

3. Infants and children < 18 months with clinical suspicion of HIV infection were confirmed by as using the criteria for presumptive diagnosis of severe HIV disease in infants and children < 18 month of Age.

A presumptive criterion of diagnosis of severe HIV disease

- The infant is confirmed HIV antibody positive and
- Diagnosis of any AIDS indicator condition(s) like Pneumocystitis Carinii pneumonia, oesophageal candidiasis, cryptococcal meningitis, cerebral toxoplasmosis, HIV wasting and Kaposi's sarcoma can be made. Or
- The infant is symptomatic with two or more of the following
 - Oral thrush
 - Severe pneumonia
 - Severe sepsis.

Other factors that support the diagnosis of severe HIV disease in the HIV sero positive infant include

- Recent HIV related maternal death or advance disease in HIV positive mother

In above condition confirmation of the diagnosis of HIV infection should be made as soon as possible.

Exclusion criteria

1. Children below 18 months of age due to diagnostic difficulty and who do not qualify the presumptive diagnostic criteria.
2. Children of PPTCT +ve mother who after 18 months of age shows negative result after 2 ELISA tests, 3 months apart.

Thus there were 5,626 admissions in pediatric ward during study period and 19,202 cases visited OPD with a sum of 24,828 during study period. Amongst those 144 were found to be HIV reactive.

Methodology

Written and informed consent of all parents and care takers was taken before performing the tests and examination. Importance of test was explained to the parents. HIV was diagnosed by using following spots kits. 1. HIV comb (P.mitr's and Co. Pvt. Ltd., New Delhi), 2. Tri-Dot, 3. Callipus as rapid screening test and

then ELISA was done. All those who are positive by ELISA were confirmed by repeat test after 3 months. All children who were thus confirmed HIV seropositive were included in this study. A detail history, physical examination, Anthropometric assessment and investigations was carried out as in all cases and entered on predesigned and pretested proforma. The data thus obtained was studied and the observations and results are tabulated and analyzed.

Precautions taken during investigations

Full precautions were taken by using AIDS KIT containing disposable gown, face mask, cap, gloves, goggle, etc.

Results

The present study was carried out at tertiary center in rural and tribal area in department of Pediatrics from January 2008 to June 2009. The study population included was patients who were already HIV positive or diagnosed later on investigation on suspicion of the clinical features, attending OPD or IPD of Pediatric department. There were 5,626 admissions in pediatric ward during study period and 19,202 cases visited OPD with a sum of 24,828 during study period. Amongst those 144 were found to be HIV reactive. Hence the prevalence of HIV infection during the study period was 0.58%.

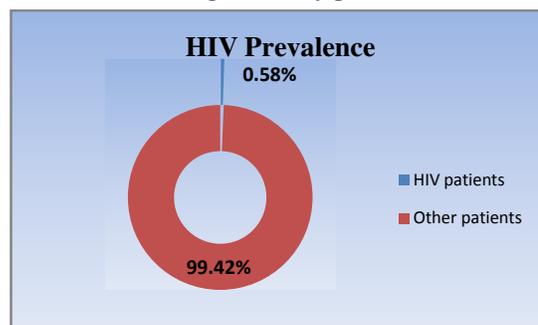


Table 1: Distribution of patients according to age, sex and area of residence

Sr. no	Variable	No of patients	%	
1	Age	<18	7	4.86
		>18-36	43	29.86
		>36-60	39	27.08
		>60-120	44	30.55
2	Sex	Male	95	65.97
		Female	49	34.02
3	Residence	Urban	98	31.94
		Rural	46	68.06

It was observed that the majority (61.80%) cases were below 5 yrs of age. Males (65.97%) outnumbered females (34.09%) with M:F ratio of 1.93:1. Maximum numbers of patients were from rural area (68.06%) whereas remaining were from urban area.

Table 2: Distribution of patients according to various factors associated

Sr. no	Variable	No of patients	%	
1	Mode of transmission	Perinatal (vertical)	142	98.62
		Blood / blood Product	02	01.38
		Others	00	00.00
2	Mode of delivery	Home delivery	89	61.80
		Normal Hospital delivery	33	22.91
		LSCS/ Instrumental Hospital delivery	09	6.25
		Not known	13	9.02
3	Complaints*	Fever	81	56.25
		Cough	68	47.22
		Not gaining weight	58	40.27
		Diarrhea	54	37.50
		Skin rash	40	27.77
		Ear discharge	25	17.36
		Oral Ulcers	22	15.57
		Parotid swelling	12	8.33
Bleeding tendencies	02	1.38		

*Multiple responses were obtained

In the present study predominant route of transmission of HIV to the child was by perinatal (vertical) transmission (98.62%) whereas in only 1.38% cases mode of transmission was through blood/ blood product. In the present study it was observed that maximum numbers of children suffering from HIV were delivered at home (61.80%) followed by normal hospital delivered (22.91%) and LSCS /instrumental delivered (6.25%) cases. While studying symptomatology of pediatric HIV on first presentation it was observed that majority (56.25%) had fever as main complaint followed by cough (47.22%), not gaining weight (40.27%), diarrhea (37.50%), skin rash (27.77%), ear discharge (17.36%), oral ulcers (15.57%) and parotid swelling (8.33%).

Table 3: Distribution of patients according to various signs identified

Sr.no.	Signs	No. of cases	Percentage (%)
1	Severe malnutrition (Gr.III and IV)	85	59.02
2	Pallor	74	51.38
3	Respiratory signs	68	47.22
4	Lymphadenopathy	64	44.44
5	Skin manifestations	48	33.33
6	Febrile	43	29.86
7	Hepatosplenomegaly	39	27.08
8	Hepatomegaly	38	26.3
9	Signs of vitamin deficiency	36	25
10	Dental Caries	30	20.83
11	Oral Thrush	26	18.05
12	CSOM	19	13.19
13	Splenomegaly	15	10.4
14	Parotitis	12	8.33
15	Clubbing	11	7.63
16	CNS manifestations	7	4.86
17	Ascities	3	2.08
18	Bleeding tendencies	2	1.38

* Multiple responses were obtained

In present study severe malnutrition (Gr.III and IV) (59.02%) was the most common examination finding. It was followed by pallor (51.38%), respiratory signs (47.22%), lymphadenopathy (44.44%), skin manifestations (33.33%), febrile (29.86%), hepatosplenomegaly (27.08%), hepatomegaly (26.3). signs of vitamin deficiency (25%), Oral thrush (18.05%), CSOM (13.19%), splenomegaly (10.4%), Parotitis (8.33%) were the other observed signs.

Discussion

The present study was carried out in department of Pediatrics from January 2008 to June 2009. There were 5,626 admissions in pediatric ward during study period and 19,202 cases visited OPD with a sum of 24,828 during study period. Amongst those 144 were found to be HIV reactive. Hence the prevalence of HIV infection during the study period was 0.58%.The reported prevalence by Lahiri S *et al*⁸ in hospitalized children is less than 1%,hence the prevalence in present study is comparable. But it is far lower than that reported (1.4%) by Diack S *et al*⁹. In present study 61.80% children presented below 60 months (5 years) of age. The median age of presentation in this study was 4 yrs. The youngest patient being 3 months and oldest was 132 months. Similarly it has been seen by Madhivanan P *et al*¹⁰ and in an Ethiopian study by Abubacker *et al*¹¹ median age was 3.8 yrs. The maximum median age was reported by Pol R

*et al*¹² as 5.75 yrs. In the study by Asnake S, Soloman A⁵ median age reported was 2.8 yrs. But in the study by Sirisanthana V¹³ the median age seen was 3 months which is very low as compared to present study and other Indian studies (Lodha R *et al* 2000 and 2006)^{6,15} this was because in his study all the patients were less than 12 months old and only one case was 48 months old. This study reveals a progressive increase in number of children diagnosed to have HIV infection and opportunistic infection. The increase in number of cases diagnosed could be due to increasing prevalence of infection or increasing awareness of disease. Also there are increased referrals of child for screening after the parents are diagnosed to have HIV infection. In the present series male outnumbered females with M: F ratio of 1.93:1. This ratio is comparable to study by Madhivanan P *et al*¹⁵ and Shahab T *et al*¹⁶ but is slightly higher than that seen by Pol R *et al*¹² in Karnataka. Other authors have reported as 3.6:1 and 2.5:1 respectively by Lodha R *et al* (2006 and 2000)^{6,14}. This male preponderance might be due to the social structure of our society especially in rural area where male are given better care than female from where this study is done. In present study maximum (68.05%) cases were from rural area and remaining was from urban area. In contrast, in study by Asnake S, Soloman A⁵ the urban prevalence was more than rural prevalence as more than 90% cases were from urban areas which were correlating with the report by Disease prevention and control Department of Ethiopia. The rate of perinatal transmission in the present study was 98.62%. and it was comparable with Diack *et al*⁹, Pol R *et al*¹² but is slightly higher than the report by Merchant RH *et al*² 86.6%, Verghese V P *et al*¹⁸ 87% and in Lodha R *et al*¹⁴, Dhurat R *et al*¹⁹, Lodha R *et al* (2000)⁶ 74.6%, 74.5% and 70.4% respectively. In other studies by Parthasarathy P *et al*²⁰, Merchant RH *et al*² and Madhivanan P *et al*¹⁰ the perinatal transmission was 70%, 71% and 67% respectively. Transmission by blood or blood products in presents study was 1.38% which is very much low as compared to 19.3%, 21.8% and 29.6% in studies by Lodha R *et al*¹⁴ (2006), Dhurat R *et al*¹⁹ and Lodha R *et al*⁶ respectively. This gross difference in present study is probably because of good blood products screening which has been made mandatory by FDA since 1985 and those who received blood in their studies with high incidences of blood transmission might have received blood during window period. When symptomatology of pediatric HIV on first presentation was studied it was observed that majority had fever (56.25%) as main complaint followed by cough (47.22%), not gaining weight (40.27%), diarrhea (37.50%), skin rash (27.77%), ear discharge (17.36%), oral ulcers (15.57%) and parotid swelling (8.33%). Finding were comparable to an Ethiopian study

by Asnake S, Soloman A⁵ and Emodi IJ, Okafor GO²¹. Also in Indian studies by Parthasarathy P *et al*²⁰ and Lodha R *et al*²² who had reported fever as main complaint. Not gaining weight (48.2%) was also common complaint in these patients. This is in accordance with Dhurat R *et al*¹⁹ who had 48.6% patients with not gaining weight and Kaul D, Patel J²³ 45.1% and Verghese VP *et al*¹⁸ had 58% patients with not gaining weight. In the present study, skin rash were complained by 27.7% cases and on examination skin lesions were observed in 33.3% cases, thus emphasizing a role of detail clinical examination in HIV patients. The skin lesions were in the form disseminated scabies, pyoderma, pruritis, dermatitis, herpes, warts and molluscum contagiosum. The results observed in this study corroborates with that reported by Madhivanan P *et al*¹⁵. But the study from Delhi by Kaul D, Patel J²³ reported low incidences as compared to present study, probably because this was retrospective case paper analysis, hence there might be under-reporting. Recently Pol R *et al*¹⁷ reports skin manifestation were more and more recognized and has been found in almost 60% pediatric HIV patients from Karnataka. Severe malnutrition in present series was observed in 92 (63.8%). Similar findings were also reported by Pol R *et al*¹⁷ in 54.9%, Emodi IJ, Okafor GO²¹ in 57% and Verghese V P *et al*¹⁸ in 58% cases. Merchant RH *et al*² reported malnutrition only in 27% cases in their series. Malnutrition as a finding was seen in 100% cases by Lodha R *et al*⁶ and Diack *et al*⁹ in 89% which was very high figure as compared to present study and necessitating early nutritional intervention in HIV infected children. Thus the clinical features of HIV in pediatric population were like other common illnesses in pediatric age group; hence a high degree of suspicion is required to ascertain the diagnosis.

Conclusion

The HIV prevalence in present study was **0.58%**, thus indicating that amongst every 200 patients seen in either OPD or IPD, one is likely to be HIV positive. Fever was the most common complaint reported by the study population and malnutrition was also most commonly associated finding in pediatric HIV patients.

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