

Clinical profile of HIV positive children

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Abstract

Backgrounds: HIV infection has become a pandemic affecting both industrialized and developing countries. The increase in pediatric HIV infection has had a substantial impact on childhood mortality both in industrialized countries and developing countries. The present research was carried out to study the clinical profile of pediatric patients admitted with HIV infection.

Method: Total 55 cases of aged 1 month to 12 years, detected to be HIV-positive (on triple ELISA test) were enrolled in the study. HIV status of patients 18 months of age was confirmed by DNA-PCR testing. The demographic data of the patients, clinical features, investigations and outcome were recorded.

Results: The majority [34 (61.81%)] of cases were in below 5 years of age with male predominant 38 (69.09%). The predominant route of transmission of HIV to the child was by perinatal transmission [51 (92.72%)] while four cases (7.27%) were infected via blood transfusion. Clinical features at presentation in 49 symptomatic cases included protein-energy malnutrition (89.79%), fever >1 month (55.10%), weight loss >1 month (51.02%), persistent generalized lymphadenopathy (22.44%) and skin manifestations (75.51%). The gastrointestinal (61.22%) and respiratory (57.14%) were the most commonly involved organ systems. Opportunistic infections were tuberculosis (21 cases), candidiasis (8 cases), *Pneumocystis carinii* pneumonia (3 cases), herpes zoster (4 cases) and giardiasis (1 case). The mortality of the study was 9.09%.

Conclusions: Perinatal transmission is the most common mode of acquiring HIV in the pediatric age group. Most patients have protein-energy malnutrition. Tuberculosis should be regarded as the indicator disease for HIV infection in children.

Keywords: Human Immunodeficiency Virus (HIV), ELISA, DNA-PCR, Tuberculosis, Giardiasis.

1. Introduction

HIV means Human Immunodeficiency Virus. HIV is virus that causes AIDS (Acquired Immunodeficiency Syndrome) also known as SLIM disease. Since its first description in 1981, AIDS has spread like wild fire to engulf all the continents of the world to assume proportion of a pandemic. Initially children were not identified as the principle victims of the AIDS epidemic. However, with more data becoming available, the gravity of the problem is being better understood and HIV infection in children and adolescents is being recognized as a major issue [1]. The World Health Organization estimates that approximately 34 million people are living with human immunodeficiency (HIV) infection in 2012, among which 3.2 million were

children with a prevalence of 0.8%. [2]. Vertical transmission (mother to child) is the main route by which childhood HIV infection is acquired, the risk of perinatal acquisition being about 25% [3,4]. Perinatal transmission of infection accounts for 80–90% of pediatric HIV disease [3,4].

India has the third largest number of people were living with HIV (PLHIV) and their estimated number in 2011 was 2.09million. Children less than 15 years of age accounted for 7% (0.145 million) of all HIV infections [5]. The proportional contribution of the number of children living with HIV (CLHIV) out of the total PLHIV population was estimated to be 6.3% in 2007 and 7% in 2011 [6].

Dysfunction of immune system and resultant illnesses is more rapid in HIV infected children as compared to adults. HIV affects virtually all the systems of the body and presents with varied clinical manifestations. Children with AIDS present with disease patterns that are different in nature, severity and/or frequency as compared to immunocompetent children. The clinical presentation varies with the degree of immune-suppression, ranging from asymptomatic infection to AIDS characterized by severe immuno-suppression and recurrent severe opportunistic infections.

The present study aimed to detail the clinical profile of pediatric HIV-infected patients admitted to a tertiary care referral hospital in an urban city of India.

2. Materials and Methods

The current hospital based prospective study was carried out in 55 cases of HIV attending the pediatric OPD and IPD. Ethical considerations were met through Intuitional Ethical Committee. Children were tested for HIV if they had one or more of the following manifestations: prolonged unexplained fever, chronic diarrhea, generalized lymphadenopathy, recurrent systemic infections, septicemia or failure to thrive. Informed consent was obtained from the parent/guardian for the HIV testing with appropriate pre and post-test counseling. ELISA testing for HIV antibodies was performed for establishing the diagnosis. If detected to be positive, confirmation was done by two more ELISA tests. Children <18 months of age underwent confirmation by DNA-PCR testing. HIV status of the parents and siblings of the affected children was also requested.

A special proforma was designed to record the following information: demographic data, history at presentation, clinical examination findings, relevant investigations, outcome and HIV status of siblings and parents. Special investigations were performed if clinically indicated. Pulmonary tuberculosis was diagnosed on the basis of positive Mantoux test, chest radiograph, and screening of family members for tuberculosis, nonresponse to conventional antibiotic therapy and good response to antitubercular drugs. Additionally, tuberculosis of the lymph nodes was diagnosed on the basis of aspiration cytology or excision biopsy while abdominal tuberculosis was diagnosed on the basis of findings on ultrasonography of the abdomen and also barium studies. HIV encephalopathy was diagnosed on the basis of clinical features, neuro imaging findings, CSF (cerebrospinal fluid) studies and exclusion of other processes causing similar clinical manifestations. HIV cardiomyopathy was recognized by virtue of the color Doppler findings. Patients were treated symptomatically based on their clinical presentation. Opportunistic infections were treated

adequately and appropriate prophylaxis was administered for prevention of recurrence of opportunistic infections.

3. Observations and Results

From Table 1 it is seen that majority (61.81%) cases in this study were below 5 years of age. Maximum cases 18 (32.72%) were between 5-10 years of age and 5 cases (9.09%) were below 18 months. Males 38 (69.09%) outnumbered the females 17 (30.90%).

Table 1: Age/sex distribution in HIV

Age group in months	Male (%)	Female (%)	Total no of cases
<18	3 (7.89%)	2 (11.76%)	5 (9.09%)
>18-36	8 (21.05%)	7 (41.17%)	15 (27.27%)
>36-60	7 (18.42%)	7 (41.17%)	14 (25.45%)
>60-120	17(44.73%)	1 (5.88%)	18 (32.72%)
>120	3 (7.89%)	0 (0%)	3 (5.45%)
Total	38 (69.09)	17(30.90%)	55 (100%)

The predominant route of transmission of HIV to the child was by perinatal transmission [51 (92.72%)] while four cases (7.27%) were infected via blood transfusion. Perinatal transmission was seen in 45 (88.23%) cases who presented below 5 years of age for the first time. Of them, 17 (37.77%) were symptomatic even before 18 months of age (Table 2). Mean age of presentation was 5.5 years. Median age of presentation was 4.8 years and mode was 3 years.

Table 2: Age of presentation in perinatal transmission

Age group in months	No. of Patients	(%)
<18	17	37.77
>18-36	16	29.09
>36-60	12	21.81
>60-120	7	12.72
>120	3	5.45
Total	55	100

Clinical features in the 49 symptomatic study subjects (at presentation) were given in Table 3. Their organ/system specific manifestations were presented in Table 4. The most common clinical manifestations included- protein-energy malnutrition, 44 cases (89.79%), fever >1 month, 27 cases (55.10%); weight loss >1 month, 25 cases (51.02%); skin manifestations, 37 cases (75.51%); hepatomegaly, 25 cases (51.02%); tuberculosis, 21 cases (42.85%); and recurrent/chronic diarrhea, 14 cases (28.57%), (13 bacterial and 1 case of giardiasis). Children with thalassemia major who were symptomatic included a 12-year-old female child with weight loss, generalized lymphadenopathy and chronic otorrhea and the second being a 5-year-old male child with similar manifestations except for chronic otorrhea.

Table 3: Clinical features at presentation in symptomatic patients with HIV infection

Feature		No. of Patients (n=49)	(%)
PEM (IAP Classification)	Grade I	44	89.79
	Grade II	4	8.16
	Grade III	13*	26.53
	Grade IV	17*	34.69
Skin manifestations	Nutritional deficiencies	25*	51.02
	Pyoderma	2	4.08
	Scabies	2	4.08
	Measles	1	2.04
	Varicella	1	2.04
	Herpes zoster	4	8.16
Eczema	2	4.08	
Fever >1 month		27	55.10
Weight loss >1 month		25*	51.02
Chronic otorrhea		14*	28.57
Persistent generalized lymphadenopathy		11**	22.44

PEM =protein-energy malnutrition. IAP =Indian Academy of Pediatrics (Classification: Grade I: 71–80%; Grade II: 61–70%; Grade III: 51–60%; Grade IV: <50% of weight for age). *Included one case of thalassemia major; **included two cases of thalassemia major. Some patients had more than one clinical feature.

Table 4: Organ/system specific manifestations in symptomatic patients with HIV infection

System	No. of Patients (n=49)	(%)
Gastrointestinal system	30	61.22
Chronic diarrhea	14*	28.57
Giardiasis	1	2.04
Hepatitis	1	2.04
Esophagealcandidiasis	1	2.04
Hepatomegaly	25**	51.02
Abdominal tuberculosis	5	10.20
Respiratory system	28	57.14
Pneumonia	9	18.36
<i>Pneumocystis carinii</i> pneumonia	3	6.12
Lymphoid interstitial pneumonia	1	2.04
Pulmonary tuberculosis	21	42.85
Pulmonary arteriovenous fistula	1	2.04
Cardiovascular system	8	16.32
Congestive cardiac failure	3	6.12
Pericardial effusion	1	2.04
Central nervous system	8	16.32
HIV-encephalopathy	5	10.20
Meningoencephalitis	1	2.04
Bacterial meningitis	1	2.04
Hematological manifestations	26	53.06
Anemia	25	51.02

*Included one case of thalassemia major; **included two cases of thalassemia major.

Five patients died (of whom four had HIV-encephalopathy with multisystemic involvement and one had pyogenic meningitis). Age at death ranged from 40 to 60 months. Ten patients were readmitted during the study

period for weight loss, persistent fever, repeated bacterial infections and nutritional rehabilitation. None of these patients died. The remaining 40 patients were being followed on an outpatient basis and did not require readmission during the study period.

4. Discussion

Majority of children 34 (61.81%) included in this study were below 5 years (60 months) of age and 18 (32.72%) children were between 5-10 years (60-120 months). This study correlates with Lahiri *et al*, who found majority of children 71(58.9%) presenting below 5 years of age [7]. In present study, children who got infection by blood transfusion presented nearly after 9 years for the first time which was similar to study conducted by Sehgal *et al* [8]. This study reveals a progressive increase in number of children diagnosed to have HIV infection and opportunistic infections. 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 children for screening after the parents are diagnosed to have HIV infection. Male to female ratio in the present study was 1.78: 1 where males outnumbered females, this ratio was comparable to other studies [9-11]. This male preponderance might be due to the social structure of our society especially in rural areas where males are given better care than females.

As in the previous series, perinatal transmission was the most common mode of transmission in our study, (92.72%) [12-15]. Transmission by blood or blood products was seen in 7.27% cases which was very much low as compared to previous studies [12,13,16]. This gross difference in present study was probably because of good blood products screening which has been made mandatory by FDA since 1985 and the studies with high incidences of blood transmission might have had cases who received blood transfusion during the window period.

The clinical features of HIV in pediatric population is like other common illnesses in pediatric age group, hence a high degree of suspicion is required to ascertain the diagnosis. In current study, clinical features in HIV-infected children had some similarities and few differences from the previous Indian studies [12–14,17-19]. Hepatomegaly was seen in 51.02% of cases and was one of the most common manifestations. Hepatomegaly can be caused by the replication of the HIV within the reticuloendothelial system and early onset lymphadenopathy and hepatomegaly in the first 3 months of life is associated with rapid disease progression [20]. Diarrhea was the presenting manifestation in 14 children, 28.57% (13 had bacterial diarrhea and 1 had giardiasis). Infections causing diarrhea in HIV infected children include rotavirus, *Shigellae*, *Campylobacter*, *E. coli*, cryptosporidiosis, isosporiasis, cytomegalovirus and

atypical mycobacteria [14,20]. However, we could not demonstrate any unusual organisms in our patients. We encountered tuberculosis in 21 cases (42.85%). Tuberculosis in various forms—pulmonary and extrapulmonary— has been reported commonly in HIV-infected children [12-14,17,19]. One cannot depend on the Mantoux (tuberculin) test as it may be falsely negative in patients with HIV [19]. Only four of eight children diagnosed to have tuberculosis had positive Mantoux test in the study by Daga *et al* [19]. Only three patients had positive Mantoux test in our study. As in other studies, lacks of culture facilities have made it difficult for us to study the presence of atypical mycobacteria and resistance pattern in HIV-infected children [14]. Five patients were died during the study period. Hence the mortality rate of present study was 9.09%.

5. Conclusion

Perinatal transmission is the most common mode of acquiring HIV in the pediatric age group. Most patients have protein-energy malnutrition. Gastrointestinal and respiratory system manifestations are common. Tuberculosis should be regarded as the indicator disease for HIV infection in children.

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