

Health Status of Orphan Children Infected with Human Immunodeficiency Virus

Chandra Mani Pandey*, Jai Prakash**

*Consultant Paediatrician, S.N. Children Hospital, Department of Paediatrics, M.L.N. Medical College Allahabad, UP.
**Adolescent Health Counselor, M.L.N. Divisional Hospital, Allahabad, UP.

Abstract

Introduction: Children are infected with Human Immunodeficiency Virus mostly through vertical transmission. In vast majority of cases, their father and mother both are HIV positive and sooner or later these children become orphan. Though, there is significant decrease in new cases of HIV, both in children as well as in adults, but the number of orphan children is increasing. These children are exposed to variety of adversities which affects their health and survival. To study the health status of HIV infected orphan children and how does it differ from their non orphaned counterparts, this study was undertaken. *Methods:* This is an hospital based observational study, in which HIV positive children diagnosed as per NACO HIV testing guidelines, between age 18 months to 15 years were included. Their orphan status was decided by history given by their caregivers/ guardians. Thorough clinical examination and required investigations of both, orphan and non orphan HIV positive children was done and their health status, morbidity and mortality were assessed. *Result:* Out of 140 children, 47 were orphan and 93 non orphan. Mean age of double orphan children was 11.6 0 (SD±1.42) years and single orphan children was 9.13 (SD±2.66) years. Grandparents, aunts and maternal uncle were the care givers of these orphan children. Severe anaemia and severe under nutrition was more common in orphan children than in non orphan. In 27.66% orphan children severe immune suppression was noted as compared to 12.90 % in non orphan children. Recurrent serious opportunistic infections were more common in orphan children than in non orphan. Out of six deaths, five children were orphan. No significant difference was noted in socio economic distribution, treatment adherence and follow up.

Keywords: Health Status; HIV Infection; Orphan Children.

Introduction

Children are mostly infected through vertical transmission, from their mothers, either during pregnancy and intra partum period or during breast feeding [1]. Prevalence of HIV infection is decreasing globally and so in India also. Incidence of new HIV infection in children is also decreasing. 58% reduction in number of HIV infected children (< 15 years of age) has been reported during 2002-2013 worldwide [2]. According to UNICEF India (<http://www.unicef.org/india/children>) there are 220,000 children infected by HIV in India while NACO (<http://www.nacoonline.org>) gives this figure to be 70,000. Number of orphan children due to HIV/AIDS is increasing. Roughly 1,500,000 – 2,500,000 children have been orphaned by AIDS and about 6,000,000 – 10,000,000 have HIV positive parents (<http://www.childlineindia.org.in>). Over the period of time these children will lose their one or both parents and will be orphaned. According to an estimate, only 2% children in developing countries were orphan before AIDS era but this number has increased to 7 – 11% with HIV/AIDS epidemic [3]. An 'orphan' is defined as a child who has 'lost one or both parents' - United Nations. These are the children who are the most vulnerable to become the victim of variety of diseases, environmental

Corresponding Author: Chandra Mani Pandey, 31/13, Church Lane, Allahabad - 211002 Uttar Pradesh.
E-mail- pandeycm@rediffmail.com

Received on 16.01.2017, Accepted on 30.01.2017

hazards, neglect and exploitations. To study the health status, routine care and follow up, morbidity and mortality in these children and to compare it with HIV infected non-orphaned children, this study was under taken.

Methods

This is a hospital based observational study, carried out at S.N. Children Hospital, Department of Paediatrics, M.L.N. Medical College Allahabad, UP, during the period April, 2005 - October, 2012. Children between the ages 18 months - 15 years, who were freshly diagnosed HIV positive as per NACO HIV testing guidelines, were included in the study. Children below the age of 18 months and previously diagnosed HIV positive children were not the part of this study. These children were selected from ART Center, S.R.N. Hospital and S.N. Children Hospital Allahabad, UP. Both hospitals are the associated hospital of M.L.N. Medical College Allahabad. Parents and / care givers were counseled by qualified counselors. Informed and written consent was taken to interrogate and examine the children. Detailed history was taken and thorough clinical examination of every child was done. Complete Blood Count (CBC) and CD4 count of every child was done. Investigations for Opportunistic Infections (OI) were carried out where ever required. Every child was classified for WHO clinical and immunological staging. Data was recorded on pre structured proforma. Orphan status of children was decided by history obtained from care givers. The children who lost their both parents were called 'double orphan' and those who lost their one parent were termed as 'single orphan' as per definition given by UNICEF. These children were assessed for their nutritional status, Haemoglobin level, CD4count and CD4%, immunological staging, presence of opportunistic infections, morbidity and mortality. They were also assessed for treatment compliance and follow up visits. Every child was followed up minimum for 18 months. Those who failed to appear in the follow ups for six months they were labeled as 'lost to follow up'.

Statistical analysis- Simple percentages were used

to describe nominal data, mean and standard deviations were used to describe normally distributed data. Z proportion test was used to compare two independent groups and p values were calculated.

Result

A total of 140 HIV positive children between ages 18 months to 15 years were the part of this study. 97.86% children were infected through vertical transmission. Out of these, 10 children lost their both parents and 37 lost either father or mother. 93 children had their both parents alive. Age and sex wise distribution of these children has been shown in table 1. Mean age of double orphan children was 11.60 (SD±1.42) years and single orphan was 9.13 (2.66) years. 36.16% orphan children were significantly under nourished (weight for age is <60% of expected) while in non orphan group 19.34% children were in state of significant under nutrition. Severe anaemia (Hb%≤7gm) was noted in 14.80% orphan children while in non orphan it was 5.37%. In both the groups around 80% children were in lower socio economic status according to B. G. Prasad's modified classification, as shown in Table 2. On the basis of WHO clinical staging 82.98% orphan children were in stage II and III and 81.71% non orphan children. Distribution of children on the basis of WHO immunological staging (Table 3) shows that 27.66% orphan children were in stage IV as compared to non orphan children where it is 12.9% only. Table 4 shows p values for different comparison groups. 25.53% orphan children had recurrent attacks of serious opportunistic infections while 19.35% non orphan children had such OIs. Out of total six deaths, five children were orphan. OIs responsible for death were cryptococcal meningitis, tubercular meningitis, encephalopathy, milliary tuberculosis and severe bronchopneumonia with fungal infection, one in each case. Four (8.51%) orphan and Five (5.37%) non orphan children were lost to follow up. Grand parents, aunts and maternal uncles were the care givers of orphan children. At the end of 18 month, 70.56% orphan children and 72.75% non orphan children were noted to be regular in follow up and treatment adherence.

Table 1: Age and Sex wise distribution of orphan and non orphan children

Age in years	Male		Female	
	Orphan (number)	Non orphan (Number)	Orphan (number)	Non orphan (Number)
1.5-05 yrs.	00	29	00	12
05-10 yrs.	19	16	06	20
10-15 yrs.	15	12	07	04
Total	34	57	13	36

Table 2: Socio Economic Class of orphan and non orphan children.

S.E Class	Orphan		Non orphan	
	n - 47	%	N - 93	%
I - Upper class	03	06.38	02	02.15
II - Upper middle	06	12.76	18	19.35
III - Lower middle	17	36.17	32	34.40
IV - Upper lower	17	36.17	35	37.64
V - Lower class	04	08.52	06	06.46

Table 3: Immunological staging of children.

Immunological staging	Orphan		Non orphan	
	n - 47	%	N - 93	%
I	15	31.91	35	37.65
II	05	10.64	22	23.65
III	14	29.78	24	25.80
IV	13	27.67	12	12.90

Table 4: Comparison of different conditions between two groups and their p values

Conditions	Orphan n - 47	Non orphan n - 93	p Value
Significant under nutrition	36.16	19.34	0.0247
Severe anemia	14.80	05.37	0.017
Severe immune suppression	27.60	12.90	0.0479
Severe OIs	25.33	19.35	0.0214
Mortality	10.63	01.07	0.011
Follow up	70.56	72.75	0.072

All p values < 0.05 are significant.

Discussion

Majority of the children acquire the HIV infection from their mothers and mothers get it from their husbands on most of the occasions. Though, significant decrease in morbidity of HIV infection have been noted due to availability and use of anti retroviral treatment and prophylaxis for OIs [4,5], yet over a period of time parents die and children are orphaned. Number of orphan children due to AIDS/HIV is increasing [3]. In our study, out of 140 HIV infected children, 47 (33.57%) were orphan, 26.42% single orphan and 6.8% double orphan. Ira Shah [6] has reported 40% HIV infected children were orphan, out of which 7.5% were double orphan. We found 100% orphan children were over the age of five years. Unicef report also says that 95% of all orphans are over the age of five years. Mean age of children when single parent died was 9.13 (SD \pm 2.66) years and when both parents died was 11.60 (SD \pm 1.42) years in our study. Ira Shah (6) in her study has reported mean age when mother had died was 5.6 ± 2.2 yrs, when father had died 7.08 ± 3.5 years and when both parents had died was 10.9 ± 2.4 years ($p = 0.04$). In our study 36.16% orphan children were significantly under nourished while this number was 19.34% in non orphan children. Lack of parental care adversely affects the nutritional status of children. This view is

also supported by Bicego et al [7] and Deininger et al [8] where they noted that orphans were particularly disadvantaged in terms of nutritional status and growth. Like many other studies [9,10] we also noted that anaemia was a common finding in children of both the groups but severe anaemia was more common (14.80%) in orphan than in non orphan where it was 5.37%. Under nutrition and anaemia is a common association in HIV infected children [11]. Around 80% children of both the groups were from lower socioeconomic status. We found that 57.44% orphan children were in immunological stage III and IV while 38.70% non orphan children were in III and IV immunological stage. It reflects that more of orphan children were immunologically compromised and this explains why these children had recurrent serious OIs as compared to non orphan children. In our study we noted that 25.53% orphan children had recurrent serious opportunistic infections as compared to non orphan children where this figure was 19.35%. Many other studies have also reported that orphan children are more vulnerable to health problems than non orphaned [7,12-14]. Muller and Abbas [15] 1990, also noted that lack of parental protection opens door for child abuse, neglect and illnesses. We observed that mortality was high in orphan children as out of six deaths, five children were orphan. This could be due to poverty, lack of care, neglect and delay in seeking treatment for OIs.

Deininger et al [8] also found that orphans are at increased risk of illnesses and death. Orphans have greater barrier to care due to social and economic constraints leading to lesser survival [4]. In our study we noted that 31.91% of orphan and 30.10% of non orphan children were on ART. In a study of global information and advice on HIV & AIDS 32% of children with HIV were receiving ART [17] At the end of 18 months, 70.56% orphan and 72.75% non orphan children were noted to be regular in follow up and adherent to ART. This difference is not significant. In other studies also [16], over 75% to 80% children reported perfect adherence to ART. Ira Shah [6] in her study has reported that there was no statistical difference in follow up ($p=0.48$) or initiation of ART ($p=0.04$) in orphaned and non orphaned children.

Conclusion

There was no significant difference in socioeconomic status, treatment adherence and follow up visits in HIV infected orphan and non orphan children but there was significant difference in their nutritional and immunological status. More orphan children were severely under nourished, severely anaemic and severely immune compromised than non orphan children. Double orphaned children were worst sufferer. Morbidity and mortality was higher in these children. We conclude that along with regular follow up and treatment adherence, nutritional and emotional support is an important factor to maintain good immunological status to avoid recurrent serious opportunistic infections and there should be someone like mother and father to provide affectionate routine care at home.

Acknowledgement

We gratefully acknowledge the help provided by Dr. Neha Mishra, Lecturer, Bio-statistics, Department of Community Medicine, M.L.N. Medical College, Allahabad, for statistical analysis of data.

References

1. Bertolli J, St.Louis ME, Simonds RJ, Nieburg, et al. Estimating the timing of mother to child transmission

of human immunodeficiency virus in a breast feeding population in Kinshasa, Zaire. *J Infect Dis* 1996; 174:722-26.

2. UNAIDS (2014) 'The Gap Report'
3. Foster G. Supporting community efforts to assist orphans in Africa. *N Engl J Med* 2002; 346:1907-10.
4. Nyandiko WM, Ayaya S, Nabakwe E, Tenge C, Sidie JE, et al. Outcomes of HIV-Infected Orphaned and Non-Orphaned Children on Antiretroviral Therapy in Western Kenya. *JAIDS* 2006(Dec); 43(4):418-25.
5. Tudor-William G, Head S, Weigel R, et al. A palatable four drug combo for HIV infected infants. Paper presented at: XIV International AIDS Conference; Barcelona; 2002 Abstract MoOrB 1129.
6. Shah I. Prevalence of Orphans among HIV Infected Children- a Preliminary Study from a Pediatric HIV Centre in Western India. *J Trop Pediatr* 2008; 54(4): 258-60.
7. Bicego G, Rutstein S, Johnson K. Dimensions of the emerging orphan crisis in sub-Saharan Africa. *Social Sciences and Medicine* 2003; 56:1235-47.
8. UNICEF(2003), Deininger, Garaic and Subbarao. 'Africas orphaned generations' NewYork: United Nations Childrens Fund Analysis for various countries documented by Subbarao and Coury (2003).
9. Claster S, Biology of Anaemia, differential diagnosis and treatment options in human immunodeficiency virus infection. *J Infect Dis* 2002(May); 185(suppl 2): s 105-9.
10. Belperio PS, Rhew DC. Prevalence and outcome of anaemia in individuals with human immunodeficiency virus: a systematic review of literature. *Am J Med* 2004(Apr); 116(suppl 7A):27s-43s.
11. Merchant RH, Oswal JS, Bhagwat RV, Karkare J. Clinical profile of HIV infection. *Indian Pediatr*.2001 Mar; 38(3):239-46.
12. UNICEF/UNAIDS. Children on the Brink 2002: A joint report on Orphan Estimates and Program strategies. Jul, 2002. www.unicef.org/publications/index_4378.html
13. Makame V, Ani C, Grantham-McGregor S. Psychological well-being of orphans in Dar El Salam, Tanzania. *Acta Paediatr*. 2002; 91:459-65.
14. Leyenaar JK. HIV/AIDS and Africa's orphan crisis. *Paediatr Child Health* 2005(May-Jun); 10(5):259-60.
15. Muller O, Abbas N. The impact of AIDS mortality on children's education in Kampala, Uganda. *AIDS Care*. 1990; 2(1):77-80.
16. Aidsmap (2012, 27 July) 'HIV treatment for children: how programmes are improving diagnosis and retention'
17. UNICEF (2015) Annual Report.