International Journal of Medical and Health Research
ISSN: 2454-9142
Received: 16-03-2020; Accepted: 14-04-2020; Published: 21-04-2020
www.medicalsciencejournal.com
Volume 6; Issue 4; 2020; Page No. 23-25

Nutritional and clinical status in exclusively breastfed babies of HIV positive mothers receiving antiretroviral therapy

Pawan Kumar Barolia[1*], Sunil Gomber[2], Prerna Batra[3], MMA Faridi[4], Shukla Das[5]

[1] Senior Resident Department of Pediatrics, Aiims Hospital, Jodhpur, Rajasthan, India

[2] MD, DNB, Director-Professor, Department of Pediatrics, University College of Medical Sciences (University of Delhi) and GTB Hospital, Delhi, India

[3] Associate Professor, Department of Pediatrics, University College of Medical Sciences (University of Delhi) and GTB Hospital, Delhi, India

[4] MD, Department of Pediatrics, University College of Medical Sciences (University of Delhi) and GTB Hospital, Delhi, India

[5] MD, Professor, Department of Microbiology, University College of Medical Sciences (University of Delhi) and GTB Hospital, Delhi, India

[*] Corresponding Author: Pawan Kumar Barolia

Abstract

Aim: The present study was conducted to evaluate nutritional and clinical status in exclusively breastfed babies of HIV positive mothers receiving antiretroviral therapy.

Material and method: The present study was conducted among 30 pairs of mother and infant in the Department of Pediatrics, University College of Medical Sciences and associated Guru Teg Bahadur Hospital, a tertiary care centre in Delhi. CD4 cell count and viral load using RT PCR was done at the time of presentation in all these unbooked HIV positive mothers. These mothers were started on triple drug ART at the time of delivery. Anthropometry i.e. weight, length, height, chest circumferrence was done in infants at recruitment and each follow up visit. For weight measurement, an electronic weighing machine of sensitivity of ±5 gm was used.

Results: Infants in HIV positive and negative groups show a consistent increase in the anthropometric parameters. The increase was more in HIV negative group but this increase was not significantly different in the two groups

Conclusion: It can be concluded from the results of the present study that nutritional care of the babies suffering from HIV positive must be given attentive care.

Keywords: antiretroviral therapy, HIV, transmission, anthropometry

Introduction

In India around 2.3 million people are living with HIV infection in which 3.5% are children [1]. Around 21000 children are still infected every year [2]. They mainly acquired the infection from their mother [2]. The estimated risk and timing of mother to child transmission (MTCT) in the absence of intervention (as per NACO guidelines 2006) during pregnancy is 5 to 10%, during labour and delivery is 10 to 15%, during breastfeeding is 5 to 20%, overall without breastfeeding is 15 to 25%, overall with breastfeeding up to 6 months is 20 to 35% and overall with breastfeeding up to 18 months is 30 to 45% [3].

So, breast feeding carries a large amount of risk of HIV-1 transmission. It can be prevented if feeding pattern fulfills the AFASS (acceptable, feasible, affordable, safe, sustainable) criteria. Unfortunately, resources limited countries have failed to fulfill the criteria of AFASS. Hence children are either on breastfeed or mixed feed. The mixed feed is more dangerous and has greater risk of transmission of HIV -1 than exclusive breastfeeding. Exclusive breast feeding has been shown to lower the risk of postnatal HIV transmission compared with mixed feeding but does not eliminate risk [4, 5]. In order to reduce the risk of HIV transmission through breastfeeds, there has been recently a novel approach of administration of antiretroviral (ARV) drugs to mother as well as to the child until the continuation of breastfeeding period [6, 7]. Due to irregular feeding among the babies, it is important to evaluate their nutritional status. Hence the present study was planned to evaluate nutritional and clinical status in exclusively breastfed babies of HIV positive mothers receiving antiretroviral therapy

Material and Method

This observational case series was conducted in anti-retroviral clinic of department of paediatrics and department of obstetrics & gynaecology of a tertiary care teaching hospital between November 2010 and April 2012. All unbooked mothers who were detected positive for HIV when they reached our hospital for delivery and their babies were enrolled in the study. Babies born with birth weight of less than 1 kg, less than 32 weeks and those born with gross congenital anomalies were excluded. Written informed consent was taken from the parents and ethical clearance was taken from the institutional ethical committee. During study period of 18 months, 30 pairs of mother and infant were enrolled. Infant's recruitment was done at birth.

Treatment protocol: CD4 cell count and viral load using RT PCR was done at the time of presentation in all these unbooked HIV positive mothers. These mothers were started on triple drug ART at the time of delivery, along with Nevirapine (NVP) in doses of 2 mg/kg/day for six weeks along with exclusive breastfeeding to the baby. These

mothers were also counseled for exclusive breastfeeding for 6 months. Those who were not willing to breast feed were given replacement feed.

Anthropometry: Anthropometry was done in infants at recruitment and each follow up visit. For weight measurement, an electronic weighing machine of sensitivity of ±5 gm was used. The child in nude was placed on the scale so that the weight was distributed equally about the centre of the pan. When the child was lying or suspended quietly, weight was recorded to the nearest 5 gm. For length measurement, the subject was laid in supine position on the flat surface of the infantometer. The crown of the head was made to touch the stationary vertical head board. The patient's head was held with the line of vision aligned perpendicular to the plane of the measuring surface. The shoulders and buttocks were placed against the flat surface of the infantometer, with the shoulders and hips aligned at right angles to the long axis of the body. The legs were extended at the hips and knees and laid flat against the flat surface of the infantometer and the arms rested against the sides of the trunk. It was ensured that the legs remain flat on the infantometer with the movable board against the heels. The length was recorded to the nearest 0.1 cm. Chest circumference was measured at the level of the 4thcostosternal (rib) joints, counting the number of ribs from above. The measurement was made in a horizontal plane to the nearest 0.1 cm at the end of a normal respiration. Head circumference was measured with the infant held or seated on the lap of the mother or care-taker. The tape was positioned just above the eyebrows and placed posteriorly to give the maximum circumference. It was pulled sufficiently tight to compress hairs and yield a measure that approximates cranial circumference. The measurement was recorded to the nearest 0.1 cm.

Follow up: All the babies were subjected to DNA PCR test at 6 weeks of age. Test was repeated in infants, who were detected positive once, before labeling them positive. ART was started in DNA PCR positive infants. A repeat DNA PCR was done in negative babies, 6 weeks after cessation of breastfeeding in breastfed babies. RT-PCR was again done 6 weeks after cessation of exclusive breast feeding.

Statistical analysis

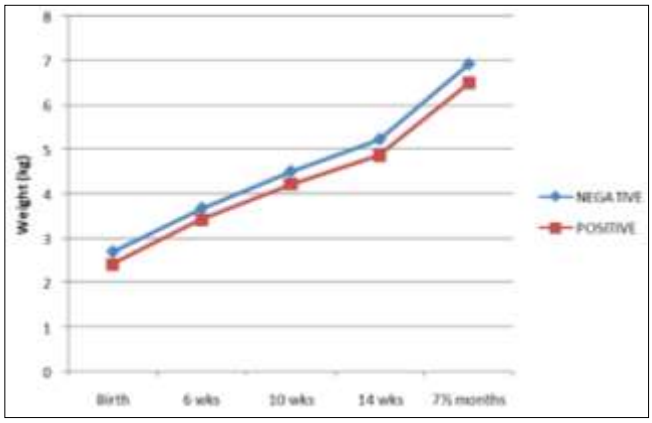
Statistical analysis was performed by SPSS version 24 (IBM, Armonk, NY, USA) for data storage, tabulation, and the generation of descriptive and inferential statistics. The results will be considered statistically significant if the *p* value will be less than 0.05.

Results

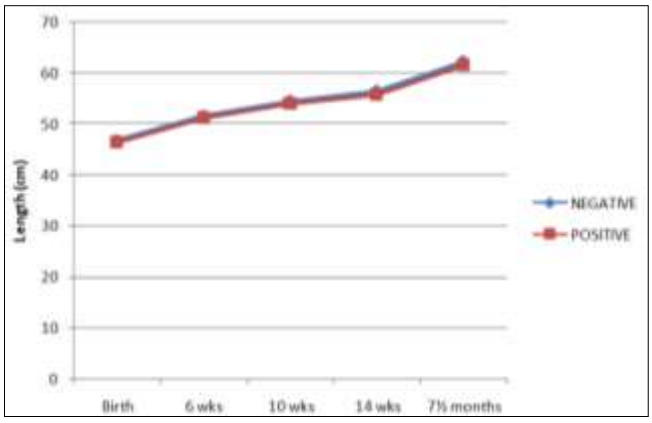
Out of 19 mothers on ART, 15 chose to exclusive breastfeeding and 4 mothers put their babies on top milk which was powdered milk. All 7 mothers from ARV group and 4 from SdNVP group chose exclusive breastfeeding for their babies. Out of 30 babies, 14 babies had birth weight < 2.5 kg, and remaining 16 had birth weight >2.5 kg. Nutritional status in babies born to HIV infected mothers was assessed by anthropometric estimation of the babies which was done at birth, 6, 10, 14 weeks and 7.5 months of age. The mean weight, length and head circumference of HIV positive and HIV negative babies were comparable at birth. Table 1 shows the mean ± SD of different anthropometric parameter at birth, 6, 10, 14 weeks and 7.5 months of age. Infants in both groups show a consistent increase in the anthropometric parameters and this increase was not significantly different in the two groups (graph 1-3). Three babies, two from HIV positive group and one from HIV negative group developed pneumonia, which was treated with antibiotics. The diagnosis of pneumonia was made by treating physician on clinical ground and laboratory investigations. None of the baby was found to have positive blood culture. There was no other significant illness during follow up period.

Table 1: Mean ± SD of different anthropometric parameters in HIV positive and negative babies at birth, 6, 10, 14 weeks and 7.5 months of age

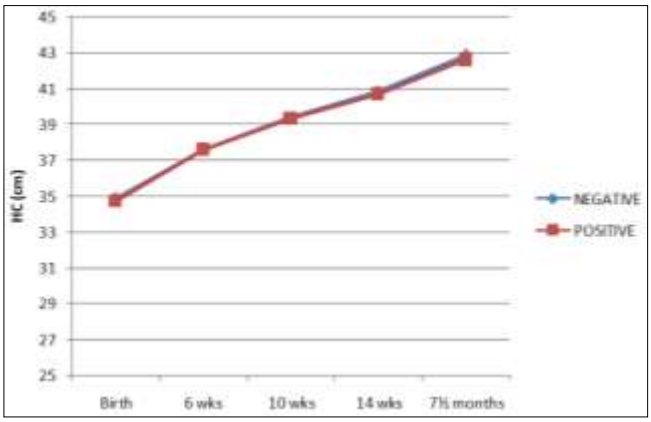
Infants Age	Weight (Kg) Mean±SD		Length (cm) Mean±SD		Head circumference (cm) Mean ±SD	
	Positive	Negative	Positive	Negative	Positive	Negative
Birth	2.41 ± 0.113	2.69± 0.121	46.38 ± 0.451	46.76 ± 0.361	34.70 ± 0.150	34.82 ± 0.105
6 weeks	3.42 ± 0.145	3.67± 0.143	51.10 ± 0.368	51.56 ± 0.399	37.57 ± 0.272	37.58 ± 0.137
10weeks	4.21 ± 0.176	4.50± 0.149	53.91 ± 0.472	54.48 ± 0.385	39.30 ± 0.269	39.40 ± 0.154
14weeks	4.87 ± 0.186	5.22± 0.138	55.68 ± 0.486	56.45 ± 0.392	40.66 ± 0.249	40.84 ± 0.157
7.5 months	6.49 ± 0.231	6.91± 0.221	61.43 ± 0.544	62.20 ± 0.558	42.59 ± 0.186	42.81 ± 0.166



Graph 1: Weight Gain in HIV Positive and Negative Babies at the 6, 10, 14 Weeks and 7.5 Months of Age



Graph 2: Increase in Crown Heel Length of HIV Positive and Negative Babies at 6, 10, 14 Weeks and 7.5 Months of Age



Graph 3: Increase in Head Circumference of Positive and Negative Babies at 6, 10, 14 Weeks and 7.5 Months of Age

Discussion

The present study was conducted in the Department of Pediatrics, University College of Medical Sciences and associated Guru Teg Bahadur Hospital, a tertiary care centre in Delhi. All the mothers were counseled for exclusive breast feeding as per WHO guidelines 2010 and the study protocol. Despite all our efforts, four mothers were not convinced for exclusive breastfeeding, as they were previously counseled for replacement feeding during different antenatal visits. However, none of them gave mixed feeding even during follow up. In a previous prospective study conducted by Coutsoudis *et al.* [8] where HIV positive mothers were counselled for adopting feeding practices, 398 out of 547 adopted exclusive breastfeeding, but at 3 months of age, only 103 out of 398 were exclusively breastfeeding their babies. So, our study and previous study reflects that skilled counselling session were required whole period of lactation period to sustain exclusive breastfeeding.

In our study, infants who were receiving exclusively breastfeeding and those who were on top feeding showed similar transmission rate at 7.5 of age (38.5% v/s 25% p=1.00). This result was in line of previous study, which was conducted by Coutsoudis et[8] al in 1998, which showed that HIV transmission rate in EBF and formula feeding at 3 months of age was almost similar 8.3% v/s 13.2% respectively (p=0.22).

In our study, we compare the weight, length and head circumference of the infants in DNA PCR positive and negative infant at recruitment and follow-up. The infants in both groups show a consistent increase in the anthropometric parameters and this increase was not significantly different in the two groups for all the parameters. As there is scarce literature available on the present study, therefore we were not able to compare the results with previous studies.

Our strength of the study is that we had single observer (self) for clinical and anthropometric assessment. The limitation of our study is less sample size so we recommend further study with large sample size to see actual impact of maternal antiretroviral prophylaxis during lactation period in order to reduce transmission through breast milk.

Conclusion

It can be concluded from the results of the present study that nutritional care of the babies suffering from HIV positive must be given attentive care.

References

1. UNAIDS. 'Press Release: 2.5 million people in India living with HIV, according to new estimate', 2007.
2. UNGASS. UNGASS Country Progress Report 2008 India, 2008.
3. NACO Guidelines for HIV Care and Treatment in Infants and Children. Section A: Management of Infants and Children with HIV Infection and Paediatric Antiretroviral Therapy, 2006.
4. Coovadia HM, Rollings NC, Bland RM, *et al*. Mother-to-child transmission of HIV-1 infection during exclusive breastfeeding in the first 6 months of life: an intervention cohort study. Lancet. 2007; 369:1107-1116.
5. Kuhn L, Aldrovandi G, Sinkala M. High uptake of exclusive breastfeeding and reduce post-natal HIV transmission: prospective results from the Zambia exclusive breastfeeding study. 4th International AIDS Society Conference on HIV Pathogenesis, Treatment and Prevention, Sydney, Australia, 22-25 July, 2007. Abstract TuAX103.
6. Kourtis AP, Jamieson DJ, de Vincenzi I. Prevention of human immunodeficiency virus-1 transmission to the infant through breastfeeding: new developments. Am J Obstet Gynecol. 2007; 197(Suppl 3):S113-S122.
7. Becquet R, Newell ML. Prevention of postnatal HIV infection: infant feeding and antiretroviral interventions. Curr Opin HIV AIDS. 2007; 2:361-366.
8. Coutsoudis A, Pillay K, Spooner E, Kuhn L, Coovadia HM. For the South African Vitamin, A Study Group. Influence of infant-feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa: a prospective cohort study. Lancet. 1999; 354:471-476.