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Original Research Article

Incidence of Dehydration Fever in Newborns at Tertiary care level in South RajasthanSuresh Goyal¹, Rajendra Chandel^{*2} and Sunny Malvia³¹Senior Professor & Head, ²Assistant Professor, ³Resident, Department of Pediatric Medicine, RNT Medical College, Udaipur, Rajasthan, India

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Assistant Professor,
Department of Pediatric Medicine,
RNT Medical College, Udaipur, Rajasthan, India***Article History:****Received:** 19/05/2017**Revised:** 25/05/2017**Accepted:** 11/06/2017**DOI:** <https://doi.org/10.7439/ijbr.v8i6.4172>**Abstract****Objective:** To find the incidence of dehydration fever in newborn.**Method:** It is hospital based prospective study at tertiary care level in south Rajasthan and includes all newborns delivered at our hospital during study period of 12 months with birth weight >2 kg and at presentation, axillary temperature was >37.5, weight loss of >10% of birth weight. Data were collected on a questionnaire and analyzed.**Result:** A total of 17965 newborns were delivered during study period. Out of these 248 newborns presented with dehydration fever. At presentation, the mean age was 4.19 days (range 2-14 days), mean birth weight was 2629.23 grams (range 2010-3700 grams), mean weight at admission was 2277.33 grams (range 1790-3100 grams) and mean weight loss 13.32% (range 10.34-20.69%). The incidence of dehydration fever was 13.80 per 1000 live births.**Conclusion:** Dehydration fever has significant incidence in newborn and should be considered while taking care of newborns.**Keywords:** Incidence, Newborn, Dehydration fever.**1. Introduction**

Fever during the neonatal period is considered an alarming sign of systemic infection. Affected babies are usually admitted to hospital for a complete sepsis work up and treated with antibiotics. Fever in newborns may be because of various causes. Dehydration fever is one of the most common non-infectious causes of fever in newborns.

Dehydration fever is observed in healthy breast feeding newborn infants on 3rd and 4th day of life and is believed to result from dehydration caused by inadequate milk intake. Rehydration leads to resolution of fever and is a key to diagnosis of dehydration fever [1].

The hyperosmolar state represented in form of hyponatremia can be very dangerous and can lead to brain shrinkage, venous thrombosis, subdural capillary haemorrhage and even death.

The incidence of dehydration fever varies from country to country and even in same country because of variable demographic and environmental features.

Escobar GJ *et al* found an overall incidence of dehydration was 2.1 per 1000 live births [2]. Lee KS *et al* reported a dehydration rate of 0.58 per 1000 live births [3].

There are a few literatures available about dehydration fever, so we planned this study to find out the incidence of dehydration fever in newborns.

2. Materials & Methods

This hospital based prospective study was conducted in department of pediatric medicine, RNT Medical College, Udaipur, Rajasthan over a period of 12 months from July 2015 to June 2016.

Approval from institute ethical committee was obtained prior to the study (reference no. RNT/STAT./IEC/2016/2103). Written informed consent was taken from parents.

The study was conducted on all the term and near term neonates aged 1 – 28 days, >34 weeks of gestation, birth weight > 2 kg, weight loss >10% of birth weight, axillary temperature >37.5°C, and given informed consent. Newborn with congenital anomalies, birth asphyxia, < 2 Kg at birth, <34 weeks of gestation and having evidence of sepsis were excluded.

A total of 17965 newborns were delivered in our hospital during study period. Out of these 248 newborn presented with dehydration fever that fulfilled the inclusion criteria.

Data were collected in a questionnaire containing detailed neonatal information (age in days, sex, gestation age, birth weight, admission weight, number of urination and defecation per day) and details of maternal information (mother's age, weight, height, gravida, parity, mode of delivery).

Maternal breast size, nipple condition (retracted, fissured), breast feeding position, attachment, time of first breast feeding, frequency of breast feeding, soft breast after feeding, time duration of each breast feed were recorded.

Each neonate was thoroughly examined. Daily weight measurement was done using electronic weighing scale sensitive up to 10 grams of weight. Axillary temperature was measured using digital thermometer. Gestational age was calculated by LMP and New Ballard scoring for gestational age. Dehydration was labelled if weight loss >10% of birth weight. Signs and symptoms of possible local or systemic infection were assessed.

All the collected data were managed and analysed with standard software of Biostatistics (SPSS Version 22).

3. Result

Table I: Demographic data

	Total live birth	Cases	Incidence (per 1000 live birth)
Male child	9506 (52.91%)	154 (62.1%)	16.2
Female child	8459 (47.09%)	94 (37.9%)	11.11
Total	17965	248	13.8

Table I shows the total number of live birth during the study period were 17965. Out of these 248 neonates with dehydration fever were enrolled for study. Among them, 154 (62.1%) were male and 94 (37.9%) were female. The incidence of dehydration fever in newborn was 13.80 per 1000 live births.

Table II: Age of neonates at the time of hospitalization

Age of neonates	Cases	Mean age with range (days)
<3 days	2(0.8%)	4.19 days (range2-14 days)
3-7days	228(91.9%)	
7-14 days	18(7.3%)	
>14 days	0	
	248	

Table II shows that among the study population, most of the neonates 228 (91.9%) presented between 3-7 days of life. 18(7.3%) neonates were admitted between 7-14 days of life, 2(0.8%) neonates were admitted within 72 hours of life and none of the neonates was admitted with dehydration after 14 days. Mean age of admission was 4.19 days (range2-14 days).

Table III: Distribution of study neonates on the basis of birth weight

Birth weight (grams)	Cases	Mean birth weight with range (grams)
2000 – 2500 grams	91 (36.7%)	2629.23 grams (range 2010-3700 grams)
>2500 grams	157 (63.3%)	
Total	248	

Table III shows that in this study, 147 (38.3%) babies had birth weight less than 2500 grams and rest 237 (61.7%) babies had birth weight 2500 grams and more. Mean birth weight among neonates enrolled in the study was 2606.14 grams (range 2010-3700 grams).

Table IV: Distribution of study neonates on the basis of weight on hospitalisation

Admission weight	Number of dehydrated neonates	Mean weight with range (grams)
≤2000 grams	45 (18.14%)	2277.33 grams (1790-3100 grams)
2000-2500 grams	148 (59.68%)	
>2500	55 (22.18%)	
Total	248	

The table IV shows that at hospitalisation, most of the neonates 148 (59.68%) had weight in between 2000-2500 grams, 45 (18.14%) had weight ≤2000 grams and 55 (22.18%) had weight >2500 grams. The mean weight with range was 2277.33 grams (1790-3100 grams).

Table V: Distribution of study population according to weight loss after birth

Weight loss (%)	Cases	Mean Weight loss with range (%)
10 - <15 %	204(82.3%)	13.32% (10.34-20.69%)
15 - <20 %	42(16.9%)	
≥ 20 %	2(0.8%)	
Total	248	

Table V shows that among neonates admitted for dehydration, 204(82.3%) had weight loss of 10-15% after birth and remaining 44(17.7%) had weight loss of more than 15%. Mean weight loss among neonates with dehydration was 13.32% (10.34-20.69%).

4. Discussion

Dehydration fever (>38-39°C) is occasionally noted on the 2nd-3rd day of life in infants whose clinical course has been otherwise satisfactory. This disturbance is especially likely to occur in breast-fed infants whose intake of fluid has been particularly low or in infants exposed to high environmental temperatures. The incidence varies from country to country and even in same country because of variable demographic and environmental features.

In our study we found that the incidence of dehydration fever was 13.80 per 1000 live births. This incidence is significantly high as shown in previous studies. Escobar GJ *et al* found an overall incidence of dehydration was 2.1 per 1000 live births [2]. Lee KS *et al* reported a dehydration rate of 0.58 per 1000 live births [3]. Ahmed A. *et al* found the incidence of breastfeeding associated hypernatremic dehydration among neonates was 1.38% [4]. This lower incidence was because of their colder geographic regions. Bhat SR *et al* found a very high incidence of 31.6% (188 per 1000 live births) [5]. This high incidence may be due to their selection of study period which was during warm months and their center was in southern India which is hotter than northern India.

In our study, most of the neonates 228 (91.9%) were presented between 3-7 days of life with mean age 4.19 days (range 2-14 days). Usually it takes 3-7 days for dehydration to manifest in neonates. Ahmed *et al* found the mean age of admission was 8.96 ± 6.4 days with range of 2-24 days [4]. Hanoudi BM found the age range of 1-14 days with mean age 3.8 ± 2.5 days [6].

In our study the mean weight loss with range was 13.32% (10.34-20.69%) with 82.3% neonates had weight loss of 10-15%. Livingstone VH *et al* found weight loss ranged from 8% to 30% (mean 19.3%) of birth weight [7]. Maayan-Metzger *et al* found a low mean weight loss 7.8% [8]. Ahmed A. *et al* found the mean weight loss in their patients was 10.16 ± 6.6% with range of 0-25% [4].

In conclusion dehydration fever is significant cause of fever in apparently healthy looking newborns with significant weight loss in first few days of life. Breast feeding counselling and daily weight monitoring are the effective tools for prevention and early detection of this relatively benign condition.

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