ORIGINAL RESEARCH PAPER
Volume - 9 | Issue - 6 | June - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PROFILE OF DEHYDRATION FEVER IN DMCH SNCU

Paediatrics

Dr Vivekanand Paul* Senior Resident, Department of Pediatrics, Darbhanga Medical College and Hospital, Laheriasarai, Bihar, India *Corresponding Author

Dr N P Gupta Associate Professor, Department of Pediatrics, Darbhanga Medical College and Hospital, Laheriasarai, Bihar, India

ABSTRACT

Objectives: The objectives of the study were to determine the number of newborns admitted into the SNCU with dehydration fever, to ascertain about other associated comorbid conditions, and to know the outcome of these newborns following treatment.

Materials and Methods: Data were collected from the SNCU records of neonates admitted with fever with no evidence of infection during three summer months (May, June and July) in the years 2018 and 2019. Status of hydration in all such babies at the time of admission was noted. The outcome of all the neonates, who were treated according to the existing protocol, were also noted.

Results: Out of the total 3852 neonates admitted during the study period, 42 (1.09%) were having dehydration fever. Among them, 10 (23.80%) were preterm, 8 (33.33%) were intrauterine growth restriction, and the rest 32 (76.19%) were term, appropriate for gestation. Males were more than females (26:16). Electrolyte imbalance was not seen in any of the babies. Although, initially, all the babies were lethargic, they all improved promptly following intravenous rehydration along with the maintenance of thermoneutral environment and the maximum hospital stay noted was only 3 days.

Conclusion: Fever in newborn due to pure dehydration, even without electrolyte imbalance exists, and it should be considered in warm climatic condition.

KEYWORDS

Dehydration fever, Neonatal dehydration, Neonatal fever

INTRODUCTION

Regarding neonatal thermoregulation, too much emphasis has been given on hypothermia, while hyperthermia has always been a neglected and less discussed issue. Although there are limited publications on this subject, it has almost always been discussed that neonatal hyperthermia is usually iatrogenic, consequent to inadvertent dislodgement of skin thermistor in a baby nursed in a servo controlled incubator or open care system [1]. However, we have seen newborns being admitted into our "sick newborn care unit" (SNCU) with fever of varying degrees, associated with significant dehydration, lethargy, and refusal to feeds. A good number of these newborns improved rapidly following maintenance of hydration and supportive care only. Oddie *et al*. found that 1 out of 8 (12.5%) neonates with dehydration fever had convulsions [2]. In another study, hyperkalemia was noted in 83.67% of neonates with dehydration fever and acute kidney injury (AKI) in 18.36%, whereas 1 (2.04%) baby was treated with peritoneal dialysis. Therefore, it is apparent that failure to detect the condition can have serious consequences including death [3, 4].

The aim of the study was to determine the number of newborns admitted into the SNCU with dehydration fever, to ascertain other associated comorbid conditions, and to know the outcome of those newborns following treatment.

MATERIALS AND METHODS

It was a retrospective study. We analyzed the records of the neonates admitted into the SNCU of Darbhanga Medical College and Hospital during 3 months period (May 1–July 30) for 2 consecutive years (2018 and 2019) with fever (surface temperature >99.5°F or 37.5°C) [5] who, on subsequent investigations, were found to be negative for any infective condition. All babies admitted into the SNCU with fever, as usual, were subjected to the following investigations: Sepsis screen and blood and urine culture. The babies who were found to be negative for the three investigations were included in the study.

Dehydration was assessed by loss of more than 10% of birth weight on admission (daily weight was recorded with a digital weighing scale with resolution of 10 g), decreased urine output (as evident from the history on admission and subsequent observation in the SNCU regarding the number of times urine was passed every 24 h), dryness of the oral cavity and eyes, loss of skin turgor, and sunken anterior fontanelle (as clinically assessed on admission and subsequently from time to time). Babies with infective conditions as per the investigation reports and those without features of dehydration were excluded from the study.

Serum electrolytes on admission of all the babies under study were also checked. All the babies were initially given resuscitating measures, namely, intravenous fluid, hydrotherapy, management of associated hypoglycemia, and empirical administration of antibiotics until the investigation reports supported non-infective condition. The outcome of the neonates, thus treated according to the standard protocol, was noted.

RESULTS

Out of the total 3852newborns admitted during the study period, 42 (1.09%) had dehydration fever and met the inclusion criteria. Among them, 10 (23.80%) were preterm and 32 (76.19%) were term babies. Of the term babies, 8 (33.33% of total) were intrauterine growth restriction, weighing 2500 g and 24 (57.14% of total) were weighing ≥2500 g at birth (Table 1). All the 42 babies were exclusively breastfed. Out of the total 42 babies, 26 (61.90%) were male and 16 (66.66%) were female.

Table 1: Profile of neonates with dehydration fever

Variables	Neonates	n=42 (%)
Birth weight and maturity	Preterm	10 (23.80)
	Intrauterine growth restriction	8 (33.33)
	Term (Appropriate for gestation)	24 (57.14)
Sex	Male	26 (61.90)
	Female	16 (66.66)

Electrolyte imbalance was not observed in any of the babies under study. All the babies were lethargic and prostrated on admission, which made it difficult to differentiate from other conditions associated with fever, notably sepsis. All the babies showed prompt improvement following maintenance of hydration along with exposing the baby to thermoneutral environment and tepid sponging. The maximum hospital stay was 3 days.

DISCUSSION

There are reports of isolated cases of life-threatening hypernatremic dehydration in literature. In most of those studies, it was emphasized that life-threatening hypernatremic dehydration is an uncommon entity in newborn [6-15]. In the present study, however, dehydration fever accounted for 1.094% of all SNCU admissions in the summer months. Although all the babies showed other features of dehydration as elaborated earlier, associated with fever of varying degree, serum electrolytes were within normal range. This finding is similar to that observed by Boutin *et al*. [16].

Earlier, Davis *et al*. observed that fever in the presence of a normal

osmolality makes infection very likely [17]. However, these were contrary to the observations in the present study. None of the serious complications such as seizures, AKI, disseminatedintravenous coagulation, multiple cerebrovascular accidents, and the need for peritoneal dialysis or amputations, as observed in the earlier studies [2,3,7,12,18,19], were seen in the present study. Zachariassen and Juvonen concluded that a rise in temperature could be a sign of neonatal dehydration [20]. Maayan-Metzger *et al*. concluded that in low-risk full-term infants, fever with no other symptoms during the 1st day of life is related primarily to dehydration [21]. Similar study was done by Toshibananda Bag et al in a tertiary care hospital in West Bengal with almost similar results [22].

Contrary to observations made in the earlier studies, hypernatremia was not associated with dehydration fever in the present study. The climatic condition of Darbhanga and the adjoining area, where the environmental temperature soars above 40°C during the summer months may have a role in causation of severe dehydration even without alteration of the serum electrolytes.

Management of the condition is by bringing the ambient temperature to the thermoneutral zone along with the correction of dehydration by fluid therapy. Considering the outcome following management in the current study, wherein no mortality was observed, it can be presumed that the prognosis of the condition is good. However, from the reports published in literature, it is apparent that the condition could have been fatal, if left untreated.

Since the study was done on the SNCU admitted neonates and data were collected from the records, this study does not give any idea about the incidence of dehydration fever. Community-based larger study would have given insight into the real incidence of dehydration fever in the community.

CONCLUSION

Current observations indicate that the possibility of pure dehydration without electrolyte imbalance actually exists. The study further reinforces to consider the possibility of pure dehydration fever whenever a newborn presents with fever where infective condition is less likely, especially in warm climatic conditions.

REFERENCES

1. Singh M. Temperature Regulation in Care of TheNewborn Revised. 8th ed. Chennai, Tamil Nadu: CBS Publishers and Distributors Pvt., Ltd.; 2015. p. 267-8.
2. Oddie S, Richmond S, Coulthard M. Hypernatraemic dehydration and breast feeding: A population study. Arch Dis Child 2001;85:318-20.
3. Kumar MS, Pattar R, Yelamali BC, Pol R, Vanaki R, Talawar K. Clinical spectrum and outcome of dehydration fever in term healthy neonates-a teaching hospital based prospective study. Med Innov 2017;6:20-3.
4. Simmons MA, Adcock EW 3rd, Bard H, Battaglia FC. Hypernatremia and intracranial hemorrhage in neonates. N Engl J Med 1974;291:6-10.
5. Agarwal R, Deorari A, Paul VK. Thermal Management in AIIMS Protocol in Neonatology Reprinted. 1st ed. CBS Publishers and Distributors Pvt., Ltd.; 2017. p. 15.
6. Bhat SR, Lewis P, Dinakar C. Hypernatremic dehydration in a neonate. Indian Pediatr 2001;38:1174-7.
7. Clarke TA, Markarian M, Griswold W, Mendoza S. Hypernatremic dehydration resulting from inadequate breast-feeding. Pediatrics 1979;63:931-2.
8. Ghishan FK, Roloff JS. Malnutrition and hypernatremic dehydration in two breast-fed infants. ClinPediatr (Phila) 1983;22:592-4.
9. Thullen JD. Management of hypernatremic dehydration due to insufficient lactation. ClinPediatr (Phila) 1988;27:370-2.
10. Lohr J, Springate J, Feld L. Seizures during correction of hypernatremicdehydration in an infant. Am J Kidney Dis 1989;14:232-5.
11. Molteni KH. Initial management of hypernatremic dehydration in the breastfed infant. ClinPediatr (Phila) 1994;33:731-40.
12. Cooper WO, Atherton HD, Kahana M, Kotagal UR. Increased incidence of severe breastfeeding malnutrition and hypernatremia in a metropolitan area. Pediatrics 1995;96:957-60.
13. Ng PC, Chan HB, Fok TF, Lee CH, Chan KM, Wong W, et al. Early onset of hypernatraemic dehydration and fever in exclusively breast-fed infants. J Paediatr Child Health 1999;35:585-7.
14. Korkmaz A, Yiğit S, Firat M, Oran O. Cranial MRI in neonatal hypernatraemic dehydration. PediatrRadiol 2000;30:323-5.
15. Livingstone VH, Willis CE, Abdel-Wareth LO, Thiessen P, Lockitch G. Neonatal hypernatremic dehydration associated with breast-feeding malnutrition: A retrospective survey. CMAJ 2000;162:647-52.
16. Boutin A, Carceller A, Desjardins MP, Sanchez M, Gravel J. Association between dehydration and fever during the first week of life. ClinPediatr (Phila) 2017;56:1328-35.
17. Davis JA, Harvey DR, Stevens JF. Osmolality as a measure of dehydration in the neonatal period. Arch Dis Child 1966;41:448-50.
18. Rowland T. Malnutrition and hypernatremic dehydration in breastfed infants. JAMA 1982;247:1016-7.
19. Clarke AJ, Sibert JR. Hypernatraemic dehydration and necrotizingenterocolitis. Postgrad Med J 1985;61:65-6.
20. Zachariassen G, Juvonen P. Neonatal dehydration (dehydration fever) in newborn infants. UgeskrLaeger 2002;164:4930-4.
21. Maayan-Metzger A, Mazkereth R, Kuint J. Fever in healthy asymptomatic newborns during the first days of life. Arch Dis Child Fetal Neonatal Ed 2003;88:F312-4.
22. Bag T, Karan S, Saha M. Profile of dehydration fever in a medical college hospital sick newborn care unit. Indian J Child Health. 2019; 6(12):676-678.