Hyponatremia in infants under 100 days old: frequently overlooked and multifactorial

C. Storey (1,5), J.C. Carel (1,5), O. Baud (2,5), G. Deschenes (3,5), S.Dauger (4,5), L. Martinerie (1,5)

(1) Hôpital Universitaire Robert Debré, Service d'Endocrinologie Diabétologie Pédiatrique, AP-HP, Paris, France
(2) Hôpital Universitaire Robert Debré, Service de Réanimation Néonatale et Néonatologie, AP-HP, Paris, France
(3) Hôpital Universitaire Robert Debré, Service de Néphrologie Hémodialyse Pédiatrique, AP-HP, Paris, France
(4) Hôpital Universitaire Robert Debré, Service de Réanimation et Surveillance Continue Pédiatrique, AP-HP, Paris, France
(5) Université Paris Diderot, Sorbonne Paris Cité, Paris, France

No conflict of interest

OBJECTIVES

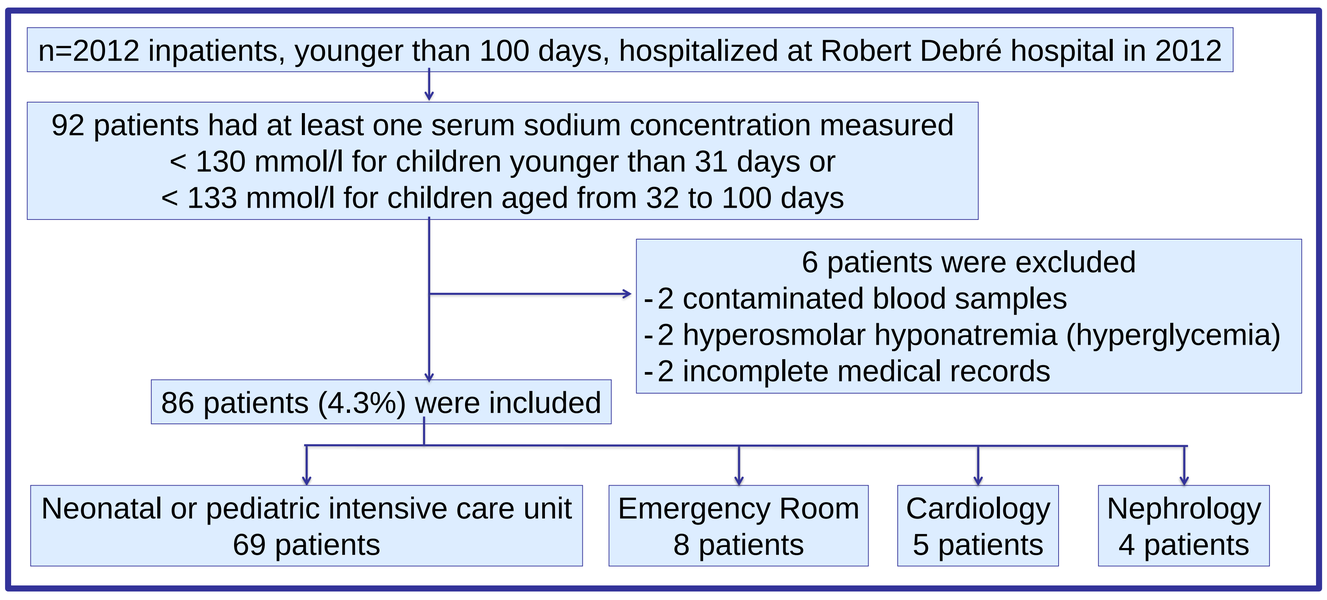
Background: Hyponatremia is one of the most common electrolyte disorder in hospitalized children and early diagnosis and management are crucial to prevent morbidity and mortality. Because of the physiological resistance to aldosterone under 3 months of age, the mechanisms leading to hyponatremia are often misunderstood.
Objective: To assess the prevalence of hyponatremia in hospitalized infants younger than 100 days and evaluate the mechanisms leading to water and sodium imbalance.

METHODS

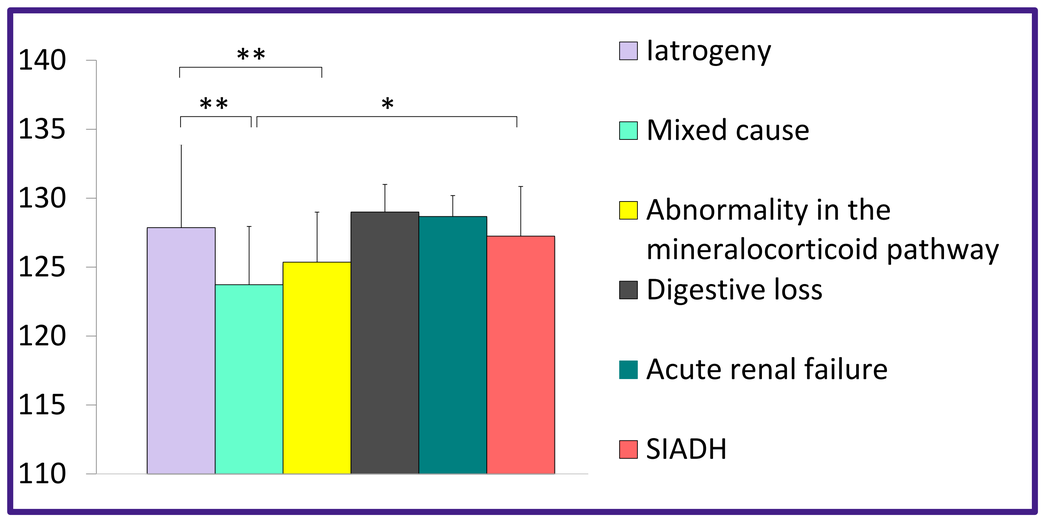
The database of a large paediatric hospital was searched for hyponatremia occurring in infants younger than 100 days-old hospitalized in 2012. The charts were analyzed to evaluate the origin and the management of hyponatremia.

RESULTS

86 patients were included.
The median age at identification of hyponatremia was 19.5 days (IQR 9.25-44.75).
77 patients (89.5%) had hospital-acquired hyponatremia.

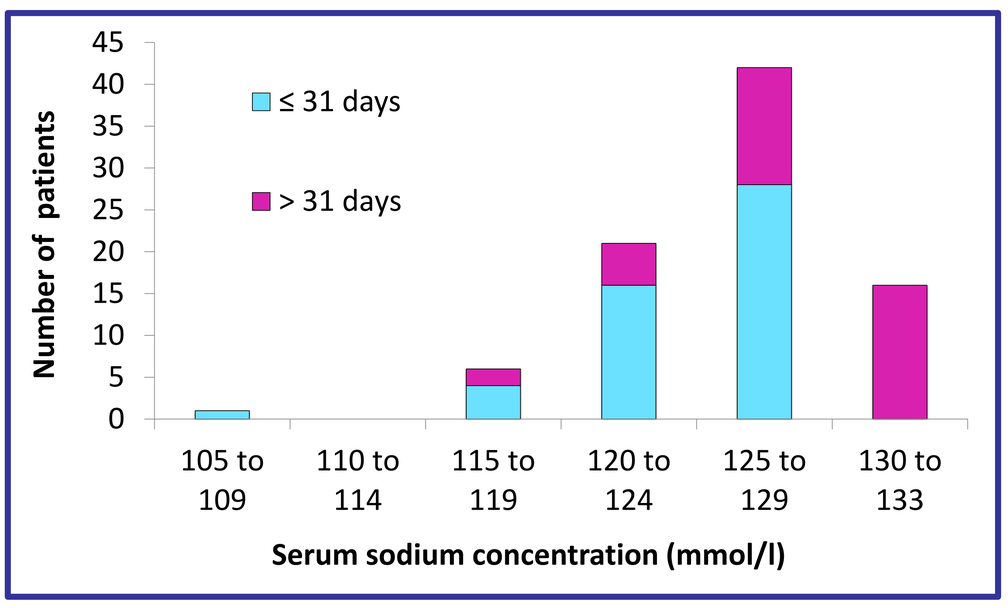


Flow Chart

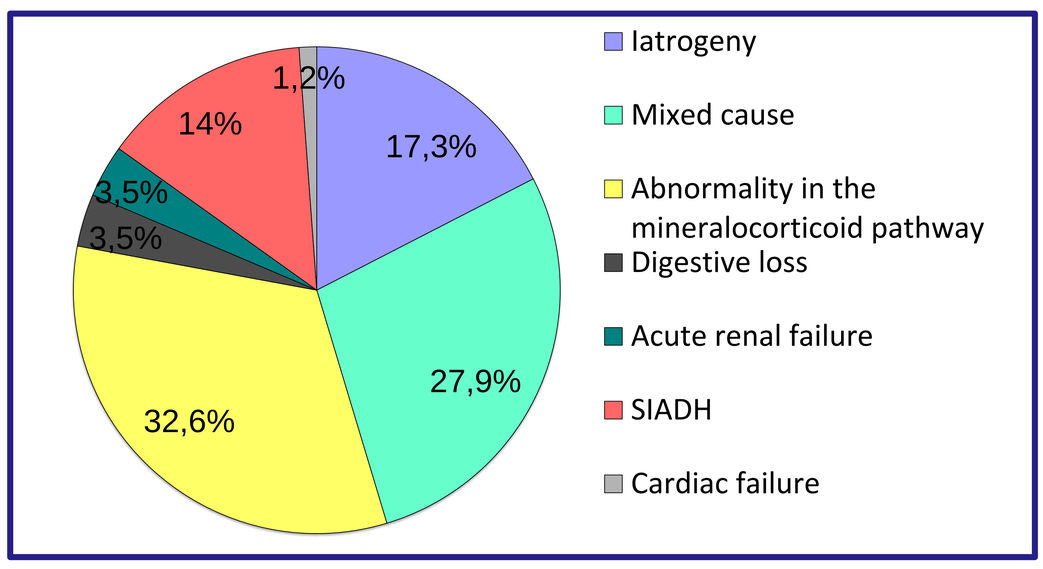


Serum sodium values according to the mechanism of hyponatremia

Statistical analyses were not made on the groups containing less than 6 patients (i.e. digestive loss and acute renal failure) (: p<0,05; **: p<0,01; ***: p<0,001)*



Distribution of the lowest values of serum sodium concentration, depending on the age of the patients at the time of hyponatremia



Distribution of hyponatremia according to their mechanism

Mechanisms leading to a defective mineralocorticoid pathway

Functional tubulopathy of prematurity	20 patients (23.3%)
Physiological resistance to aldosterone compounded by a severe sepsis	1 patient (1.2%)
Pseudohypoaldosteronism secondary to pyelonephritis or uropathy	4 patients (4.7%)
Constitutional genetic deficiency in the mineralocorticoid pathway	3 patients (3.5%)

CONCLUSIONS

Hyponatremia is a frequent electrolyte disorder in the neonatal pediatric population. Iatrogenic causes played a major role in the occurrence of hyponatremia in our study. Genetic abnormalities of the mineralocorticoid pathway, considered as extremely rare were relatively prevalent and might be otherwise underdiagnosed. We conclude that hyponatremia in infants should be thoroughly analyzed and managed.

References

Corona *et al.*, *PloS One*, 2013
Martinerie *et al.*, *Pediatric Research*, 2009
Sterns, *New England Journal of Medicine*, 2015
Foster *et al.*, *Journal of Pediatrics*, 2014

55ESPE 563--P1
Perinatal Endocrinology
Caroline Storey
DOI: 10.3252/pso.eu.55ESPE.2016
Poster presented at: ESPE 2016 PARIS