

Severe Neonatal Hybernatraemia

Abstract

Hybernatraemia occurs relatively commonly in babies. Severe hybernatraemia occurs much less commonly, but its prevalence is unknown. There is significant reported comorbidity and mortality in extreme cases, and little information about prognosis or indeed which approaches are taken to treatment. While severe cases have not infrequently been reported in the literature, no study has yet ascertained how frequently severe hybernatraemia occurs, nor its associated mortality and short term morbidity. Additionally some children appear to arrive in hospital without neurological signs only to develop these after treatment.

We propose to collect the first ever prospectively gathered population based study of this rare condition, analyse associations in terms of feeding, symptoms at presentation, approach taken to treatment and the timing of any post admission symptoms. We will then report incidence, presenting features, outcomes and the approach taken to treatment of such infants.

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Background

Hybernatraemia in infants is well recognised, and in published case series is often linked to difficulties with breastmilk transfer. Severe hybernatraemia clearly occurs much less commonly, but is associated with significant reported morbidity and even with mortality. Deaths from ischaemic complications are reported. The feeding associations of such severe hybernatraemia have not been systematically studied, nor its incidence measured. Recommended approaches to treatment vary significantly between texts.

While this condition has long been reported, in recent years its profile has risen, without reliable data on incidence. We hope to gather robust estimates of incidence, as well as describing clinical features and approaches taken to treatment.

Consultant paediatricians will be asked to report all cases of severe neonatal hybernatraemia in mildly preterm and term infants every month. A questionnaire seeking demographic and clinical data will be sent to reporting clinicians at the point of notification. The study's findings will describe clearly the associations of severe hybernatraemia and may allow further work to be done on the best approach to take to treating this difficult problem

Coverage	United Kingdom and Republic of Ireland
Duration	May 2009 – June 2010 (13 months)
Research Questions	<p>Specific aims of the project are to:</p> <ul style="list-style-type: none"> • Report the incidence of severe hyponatraemia in the neonatal period, and the mortality rate associated with this. • Describe the incidence of severe hyponatraemia due to poor feeding in the neonatal period, and the mortality rate associated with this. • Describe the age at presentation, clinical features and extent of weight loss at presentation and associated morbidity. • Describe the approaches taken to treatment of severe hyponatraemia, and the early responses of babies to the treatment. • Describe the timing of neurological sequelae and co-morbidities.
Case definition	<p>Severe hyponatraemia (i.e. serum sodium ≥ 160mmol/l) in an infant less than 28 days of age, who was born at >33 weeks gestation. Infants with a known urinary concentrating problem should be excluded (see below). If you are unsure whether to exclude on basis of a urinary concentrating defect, please report the case.</p> <p>Excluding infants with a urinary concentrating defect: This will be a clinical judgement based on history, age at presentation, and in some cases expert advice from a paediatric nephrologist. Measured or calculated urine osmolality will enable clinicians to exclude urinary concentrating defects.</p>
Reporting instructions	Please report any cases you have seen in the last month which meet the surveillance definition above. Please report to the BPSU even if you believe the case may have been reported from elsewhere.
Methods	Paediatricians reporting a case through the orange card system will be asked to complete a questionnaire seeking demographic and relevant clinical information. Cases admitted to more than one hospital will be counted as one patient episode.
Ethics approval	This study has been approved by the Bradford REC (Ref: 08/H1302/129) and has been granted NIGB Section 251 Support (ECC/BPSU 1-06(FT1)/2009)
Funding	Bradford Teaching Hospitals
References	<p>R Shroff, R Hignett, C Pierce, S Marks, and W van't Hoff. Life-threatening hyponatraemic dehydration in breastfed babies. Arch Dis Child 2006; 91: 1025-1026</p> <p>Oddie S, Richmond S, Coulthard M. Hyponatraemic dehydration and breast feeding: a population study. Arch Dis Child. 2001 Oct;85(4):318-20</p> <p>Laing IA, Wong CM. Hyponatraemia in the first few days: is the incidence rising? Arch Dis Child Fetal Neonatal Ed. 2002 Nov;87(3):F158-62</p> <p>Paula van Dommelen, Jacobus P van Wouwe, Jacqueline M Breuning-Boers, Stef van Buuren, and Paul H Verkerk Reference chart for relative weight change to detect hyponatraemic dehydration Arch. Dis. Child., Jun 2007; 92: 490 - 494.</p>