

Hypoglycemia in an unmonitored full-term newborn

Michael Flavin MB BCH MRCP(UK) FRCPC, Kingston General Hospital, Department of Paediatrics, Queen's University, Kingston, Ontario

Jonathon Maguire MD FRCPC, St Michael's Health Centre, University of Toronto, Toronto, Ontario



A full-term male infant was admitted to the neonatal intensive care unit 30 h after birth for hypoglycemia. A review of the history revealed that the mother was a primigravid 30-year-old woman with obesity (body mass index 35 kg/m²) who had a normal glucose tolerance test at 28 weeks' gestation. The baby was born by spontaneous vaginal delivery after induction of labour at 41 weeks' gestation. Apgar scores were 8 at 1 min and 9 at 5 min. Cord blood gases were normal. Birth weight was 2900 g. The mother and newborn were transferred to the postnatal ward. Newborn examination was normal. During the first 24 h, the baby had several breastfeeding attempts with good latch and sustained sucking. The baby had two wet diapers, one small meconium stool and weight was 2800 g at 24 h. At 30 h of life, he had a temperature of 36.3°C and was noted to be jittery, with exaggerated startle, and subsequently experienced a cyanotic episode. A bedside glucose measurement was low. A simultaneous serum glucose measurement was 0.9 mmol/L. The baby was admitted to the neonatal intensive care unit and treated with intravenous dextrose 10% 2 mL/kg slow bolus and 6 mg/kg/min glucose maintenance. Infection was ruled out. There were three additional episodes of low glucose (1.8 mmol/L, 1.9 mmol/L and 2.0 mmol/L). A critical sample obtained during the third hypoglycemic event indicated hyperinsulinism. Hypoglycemia and hyperinsulinism resolved four days later, and he was discharged home feeding well with a normal neurological examination.

LEARNING POINTS

- The present case vignette describes a newborn who warranted glucose monitoring because of growth restriction and developed severe symptomatic hypoglycemia, likely secondary to transient hyperinsulinism.
- Monitoring recommendations, such as those published by the Canadian Paediatric Society in 2004 (1), are used for early detection of hypoglycemia in at-risk term newborns, including

those who are growth restricted. The infant in the present case was less than the 10th centile for birth weight; thus, glucose monitoring was warranted (2). Use of fixed birth weight cut-offs for glucose monitoring, such as birth weight <2500 g, has resulted in missed cases (3).

- A significant number of hypoglycemic newborns do not fit within currently used risk categories (3). However, universal glucose monitoring is not appropriate because as many as 14% of healthy term newborns experience transient hypoglycemia, which does not appear to cause harm (4).
- A Canadian Paediatric Surveillance Program project has recently been launched, targeting significant hypoglycemia in term newborns who did not warrant monitoring under current guidelines.
- The Canadian Paediatric Surveillance Program project will be a step to probe conditions, such as maternal obesity, excessive weight gain in pregnancy or hypertension, among others, as potential risk factors that warrant glucose monitoring.
- Future clarification of unrecognized or underappreciated risk factors will improve both the prevention and early detection of neonatal hypoglycemia.

REFERENCES

1. Canadian Pediatric Society. Screening guidelines for newborns at risk for low blood glucose. *Paediatr Child Health* 2004;9:723-9.
2. Kramer MS, Platt RW, Wen SW, et al; the Fetal/Infant Health Study Group of the Canadian Perinatal Surveillance System. A new and improved population-based Canadian reference for birth weight for gestational age. *Pediatrics* 2001;108:E35.
3. Flavin M, Grewal K, Hu L. Hypoglycemia in newborns with no pre-identified risk factors. Canadian Paediatric Society Annual Meeting, Montreal, June 25 to 28, 2014
4. Srinivasan G, Pildes RS, Cattamanchi G, Voora S, Lilien LD. Plasma glucose values in normal neonates: A new look. *J Pediatr* 1986;109:114-7.

The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and the Public Health Agency of Canada, which undertakes the surveillance of rare diseases and conditions in children and youth. For more information, visit our website at www.cpsp.cps.ca.

Correspondence: Canadian Paediatric Surveillance Program, 2305 St Laurent Boulevard, Ottawa, Ontario K1G 4J8.

Telephone 613-526-9397 ext 239, fax 613-526-3332, e-mail cpsp@cps.ca, website www.cpsps.cps.ca

Accepted for publication November 24, 2014