Neurodevelopmental outcome after neonatal hypoglycemia: a multi-center randomized controlled trial comparing intensive treatment versus expectant glucose monitoring in 'high risk' newborns.

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON23239

Source
NTR

Brief title
HYPO-EXIT

Health condition

Key words: Hypoglycemia; Blood-glucose; Infant-newborn; Child-development; Developmental-disabilities; Randomized-controlled-trial; Multi-center-studies.
Trefwoorden: Hypoglycemie; bloedglucose; pasgeborene; psychomotere ontwikkeling; gerandomiseerde, gecontroleerde studie; multicenter studie

Sponsors and support

Primary sponsor: Academical Medical Center, Amsterdam, The Netherlands
Source(s) of monetary or material Support: Zon-MW, The Netherlands Organization for Health Research and Development.

Intervention

Outcome measures

Primary outcome

Primary outcome is neurodevelopment at 18 months, assessed with the Bayley Scales of Infant Development.

Secondary outcome

Secondary outcomes are:
1. Costs for medical treatment and hospital admission until 18 months of age:
1.1 costs for diagnostic tests and treatment of the infant (glucose measurements, supplemental feeding, tube-feeding, intravenous glucose administration), and hospitalization costs for both the infant and mother
1.2 costs for medical consumption related to neurodevelopmental impairment until the age of 18 months (visits to healthcare professionals and hospital admission after the neonatal period)
2. Plasma glucose concentrations and carbohydrate intake (breastfeeding, oral or enteral feeding and intravenous glucose)
3. Frequency of treatment failure, defined as infants who become severely hypoglycemic despite the treatment they received (frequency and severity of hypoglycemia episodes after randomization).

Study description

Background summary

Rationale: Hypoglycemia is the most common metabolic problem in neonatology: around 25% of all newborns are at risk for neonatal hypoglycemia. In the Netherlands this means that around 40.000 newborns are at risk annually. Because hypoglycemia can lead to permanent brain damage, 'high risk' infants for hypoglycemia are admitted, screened and, if necessary, treated. However, there is still much controversy about the definition of a 'safe' plasma glucose concentration. Currently used limits for hypoglycemia vary between 2.0 and 2.6 mmol/l. As a result, current clinical practice varies widely, especially for infants with 'moderate' hypoglycemia (glucose 2.0-2.5 mmol/l). This leads to both over- and under-treatment of hypoglycemic infants.

Objective: This study-protocol is directed at the comparison of two accepted management strategies at both ends of the current treatment-spectrum of moderate hypoglycemia in 'high risk' newborns: an intensive treatment versus an expectant monitoring strategy.

Study design: Multi-center randomized controlled trial.

Study population: 800 'high risk' newborn infants with moderate hypoglycemia >35 weeks gestational age and birth weight >2000 gram.

Intervention: In the intensive treatment arm the aim is to increase the glucose concentration above 2.5 mmol/l within 3 hours by increasing the carbohydrate intake by oral nutrition and/or intravenous glucose administration. In the expectant arm the aim is to maintain the glucose concentration above 1.9 mmol/l by the usual oral nutrition protocol.

Main study parameters/endpoints: Primary outcome is neurodevelopment at 18 months.

Study objective

Current clinical practice varies widely, especially for infants with 'moderate' hypoglycemia, due to lack of methodological sound studies. This leads to both over- and under-treatment of hypoglycemic infants.
This study-protocol is directed at the comparison of two accepted management strategies at both ends of the current treatment-spectrum of moderate hypoglycemia in 'high risk' newborns: an intensive treatment versus an expectant monitoring strategy.

Study design

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Intervention

In the intensive treatment arm the aim is to increase the glucose concentration above 2.5 mmol/l within 3 hours by increasing the carbohydrate intake by oral nutrition and/or intravenous glucose administration.
In the expectant arm the aim is to maintain the glucose concentration above 2.0 mmol/l by the usual oral nutrition protocol.

Contacts

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Eligibility criteria

Inclusion criteria

1. Infants >=35 weeks gestational age and >=2000 gram with one of the four major risk factors for neonatal hypoglycemia:
a. Small-for-gestational-age infants (SGA, birth-weight-for-gestational-age P90);
c. Near-term infants 35 0/7 to 36 6/7 weeks gestational age with a birth weight >2000 gram;
d. Infants of diabetic mothers (IDM).
Birth-weight-for-gestational-age is defined according to the growth charts of the Perinatale Registratie Nederland (PRN).

Exclusion criteria

Infants with serious co-morbidity will be excluded, because their co-morbidity can also affect neurodevelopment:
1. Very preterm infants (<34 6/7 weeks gestational age);
2. Severe perinatal asphyxia: presence of at least 3 of the next criteria:
a. Signs of intrauterine asphyxia, like late decelerations on CTG or meconium stained amniotic fluid
b. Arterial umbilical cord pH <7.10
c. Delayed initiation of spontaneous respirations >5 minutes after birth
d. 5 minute Apgar score <5;
e. Multi-organ failure;
3. Severe perinatal infection: requiring support of vital functions (infants without clinical signs of infection who are treated with antibiotics because of suspected perinatal infection can be included);
4. Respiratory insufficiency requiring respiratory support;
5. Severe hypotension requiring vasopressor support;
6. (Strong suspicion of) a syndrome or major congenital malformations.

Other exclusion criteria:
7. Intravenous glucose administration before randomization;
8. (Strong suspicion of) inborn error of metabolism;
9. (Strong suspicion of) hyperinsulinism, except infants of diabetic mothers;
10. No informed consent.

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	Active

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	01-10-2007
Enrollment:	800
Type:	Actual

IPD sharing statement

Plan to share IPD: Undecided

Ethics review

Positive opinion

Date:	03-07-2007
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
NTR-new	NL987
NTR-old	NTR1015
Other	. : ZonMW Doelmatigheid 80-007022-98-07406
ISRCTN	ISRCTN79705768

Study results

Summary results

Boluyt N, Van Kempen AAMW, Offringa M. Neurodevelopment after neonatal hypoglycemia: a systematic review and design of an optimal future study. Pediatrics. 2006 Jun;117(6):2231-43