# Neonatal hypoglycaemia: unchanged risk of neurodevelopmental impairment, but sex-specific fine motor function and internalizing behaviour at school age.

Annett Helleskov[a,b] Sonja Wehberg[c] Fani Pørtner[a] Anna-Marie Larsen[d]
Karen Filipsen[d] Henrik Thybo Christesen[a,b]

## OBJECTIVE

To assess the cerebral function in children with neonatal hypoglycemia.

## CONCLUSION

Neonatal hypoglycaemia was not associated with neurodevelopmental impairment.

## MATERIAL AND METHODS

Study population
- Neonates with blood glucose <1.7mmol/L,
- No severe perinatal risk factors.

Neurodevelopmental impairment was defined as:
- blindness, epilepsy, cerebral palsy,
- WISC-IV score <70 or
- Movement ABC-2 <15th percentile,
- or inability to complete tests.

- 71, Seventy-one children with neonatal hypoglycaemia aged 7.75(6.0-8.45) years were compared with 32 control siblings aged 9.17(3.75-16.0) years.

## RESULTS

### Overall neurodevelopmental impairment at 7.75 years. was not associated with neurodevelopmental impairment at 7.75 years.

### Cognitive function

| | Hypoglycemia | Control siblings | | Siblings 1:1 | | |
|---|---|---|---|---|---|---|
| WISC-IV | N=71 | N=26 | | N=23 Hypo | N=23 Controls | P |
| Total score | 96(93.3-99.8) | 100(95.0-104.4) | 0.29 | 97.(91.1-102.8) | 99.3(104.6) | 0.20 |
| Verbal comprehension | 99(96.1-102.2) | 103(97.4-108.0) | 0.23 | 100.6(94.3-106.0) | 102.2(96.2-108.1) | 0.52 |
| Perceptuel organization | 101(97.8-104.0) | 105(101.0-108.5) | 0.16 | 100.5(94.7-101.3) | 104.8(100.6-109.1) | 0.12 |
| Processing speed | 101(97.5-105.0) | 100(93.9-106.0) | 0.71 | 97.1(90.6-103.7) | 99.5(92.5-106.6) | 0.45 |
| Working memory | 90(86.5-93.4) | 93(87.8-98.1) | 0.34 | 91.6(84.5-98.7) | 92.7(87.0-98.4) | 0.75 |

NO significant difference between childen with neonatal hypoglycemia and controls.
NO significant differens between moderate to severe neonatal hypoglycemia.

## RESULTS cont.

### Motorfunction

| | Hypoglycemia | Control siblings | P | Siblings 1:1 | | P-value |
|---|---|---|---|---|---|---|
| MOVEMENT ABC | N=68 | N=29 | | N=23 Hypo | N=23 Controls | |
| Total motor | 48(40.5-72.4) | 61(49.1-72.4) | 0.07 | 42.6(29.9-55.3) | 60.8(48.4-73.2) | 0.009 |
| Fine motor | 43(34.8-50.3) | 57(45.6-68.7) | 0.03 | 40.4(26.9-53.9) | 55.7(43.6-67.8) | 0.008 |
| Gross motor | 49(42.0-56.1) | 53(42.2-56.1) | 0.53 | 40.7(40.3-63.7) | 52.1(40.3-63.9) | 0.06 |
| Balance | 59(51.6-66.0) | 64(53.0-75.2) | 0.43 | 58.7(47.4-70.1) | 58.7(51.9-76.3) | 0.53 |

Significantly reduced motor function. Driven by fine motor function. No difference between severe and moderate hypoglycemia.

### Risk group assigment

| | Total IQ score | | Total motor function | | Fine motor function | |
|---|---|---|---|---|---|---|
| | | P-value | | P-value | | P-value |
| RISK GROUP (ANY) VS.NO RISK GROUP | | 0.86 | | 0.30 | | 0.34 |
| Siblings, baseline N= 32 | 99.7(94.8-104.6) | | 60.7(49.2-72.5) | | 57.2(45.5-68.1) | |
| Maternal diabetes N=16 | -3.8(-11.8-4.2) | 0.35 | 2.1(-19.1-23.4) | 0.83 | -4.0(-25.4-17.6) | 0.70 |
| Asphyxia N=5 | -2.4(-14.6-9.5) | 0.67 | -16.5(-19.2-23.5) | 0.28 | -25.7(-55.3-4.2) | 0.10 |
| Premature N=8 | 0.1(-10.1-9.8) | 0.98 | -11.9(-38.0-14.3) | 0.37 | -11.7(-37.2-14.8) | 0.37 |
| SGA N= 17 | -3.2(-11.3-4.9) | 0.42 | -11.2(-31.2-7.4) | 0.22 | -14.5(-33.4-4.6) | 0.13 |
| LGA N=4 | -9.7(-24.8-5.3) | 0.20 | -11.8(-44.3-21.9) | 0.50 | -22.4(-55.8-10.4) | 0.18 |

Among those with hypoglycaemia, a risk group assignment did not associated with more adverse outcome compared to no risk group assignment.

Disclose statement: We have nothing to declare.

HCA Research HANS CHRISTIAN ANDERSEN CHILDREN'S HOSPITAL
OUH Odense University Hospital
SDU UNIVERSITY OF SOUTHERN DENMARK

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