The impact of early hypoglycaemia on 2-year cognitive impairment in small for gestational age preterm infants of less than 32 weeks: a single-centre retrospective study

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Objective. To evaluate the association between early hypoglycaemia and 2-year cognitive (COG) impairment in small for gestational age (SGA) preterm infants with a gestational age (GA) of less than 32 weeks.

Materials and Methods. We retrospectively reviewed data of 1,364 preterm infants with a GA between 24+0/7 and 31+6/7 weeks (01/01/2007-12/31/2021). Infants were classified based on blood glucose concentrations within the first 6 hours of life (HOL) as < or ≥ 40 mg/dL (Glyc < 40 [Birth-6HOL] and Glyc ≥ 40 [Birth-6HOL], respectively) and subsequently according to birth weight z-score (SGA < -1.282 and appropriate for gestational age (AGA) between -1.282 and +1.282). Propensity score matching analyses were conducted for each comparison. Multiple logistic regression was used to evaluate the association of Glyc < 40 [Birth-6HOL] with 2-year COG impairment (Bayley-III score<85) in SGA infants.

Results. 747 preterm infants met the inclusion criteria: 173 (23.2%) were classified as Glyc < 40 [Birth-6HOL], and 574 (76.8%) as Glyc ≥ 40 [Birth-6HOL]. The proportion of SGA infants was higher in Glyc < 40 [Birth-6HOL] than in Glyc ≥ 40 [Birth-6HOL] (25.4 *vs* 18.3%, p = 0.039). The incidence of 2-year COG impairment was significantly higher in SGA infants compared to matched AGA counterparts both in Glyc < 40 [Birth-6HOL] and Glyc ≥ 40 [Birth-6HOL]. Neither in the entire cohort nor in the SGA infants, Glyc < 40 [Birth-6HOL] was significantly associated with 2-year COG impairment after adjusting for GA, sex, APGAR at 5 min < 7, SGA, complications of prematurity, mechanical ventilator support > 7 days, energy intakes from birth to 36 weeks, and high maternal education.

Conclusions. Hypoglycaemia in the first 6 HOL did not increase the risk of 2-year COG impairment in SGA preterm infants with a GA between 24+0/7 and 31+6/7 weeks.

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