Antepartum and intrapartum risk factors associated with neonatal metabolic acidosis: a retrospective cohort study

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Objective. The study aimed to identify antepartum and intrapartum risk factors associated with neonatal metabolic acidosis, potentially leading to hypoxic-ischemic encephalopathy (HIE).

Materials and Methods. It was a retrospective cohort study conducted between 2016 and 2020, including term neonates from single pregnancies without chromosomal abnormalities or structural malformations.

Results. Based on the umbilical artery blood gas analysis in 13,023 deliveries analysed, 395 neonates were categorized in the metabolic acidosis group, while 12,628 served as controls. The antepartum and intrapartum risk factors commonly considered in the literature were analysed. Significant intrapartum risk factors are oxytocin administration (OR 1.347) and a prolonged expulsive phase of labour between 120-180 minutes (OR 1.963). Antepartum risk factors involved chronic hypertension (OR 2.343), hypertensive disorders of pregnancy (OR 1.883), labour induction (OR 1.401), and nulliparity (OR 2.208). As expected, the prolonged expulsive phase was more common in nulliparous women. Regarding delivery methods, operative vaginal delivery is significantly more frequent in cases of metabolic acidosis while emergency caesarean section does not reach statistical significance.

Cases with metabolic acidosis presented exclusively intrapartum risk factors in 3.07% of cases *versus* 6.68% of controls.

Conclusions. This study, thanks to the large control group, allowed us to confirm the association of a small number of risk factors with metabolic acidosis at birth. It also highlighted how intrapartum risk factors are present equally in cases and controls.