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Better prevention of cerebral palsy

INVITERT KOMMENTAR

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Advances in antenatal and intrapartum care and in the treatment of critically ill neonates have helped reduce the incidence of cerebral palsy. However, there is still scope for further improvement.

There is little margin for error in the care of newborn infants. Adverse events can have major, long-term consequences. Children born in high-income countries with a good standard of antenatal care have less than half the risk of cerebral palsy than children born in low- and middle-income countries (1). In Norway, 0.13 % of live-born infants die within the first four weeks, compared with 1.7 % of the total 132 million children born annually worldwide (2). The quality of antenatal and intrapartum care is reflected not only in mortality rates, but also in lifelong morbidity.

Nationwide data from the Norwegian Quality and Surveillance Registry for Cerebral Palsy (NorCP), published in this edition of the Journal of the Norwegian Medical Association by Zafari et al., show that the prevalence of cerebral palsy among term-born children and among preterm children born small for gestational age declined by 3–4 % annually between 2002 and 2018 (3). Improved survival among the most vulnerable neonates was also cause for concern: survival, but at what human cost?

In the new article, the figures were clear: the number of extremely preterm infants (< 28 weeks) with cerebral palsy was stable (3). Only one in ten children with cerebral palsy belonged to this group, whereas six in ten were born at term. NorCP has previously shown that approximately one in ten instances of cerebral palsy are attributable to intrapartum causes (4). Thus, for 90 of the approximately 100 children in each birth cohort who grow up with cerebral palsy, the underlying factors originate during pregnancy.

> ***«Improved survival among the most vulnerable neonates was also cause for concern: survival, but at what human cost?»***

Effective use of health and quality registries can generate new and valuable knowledge and improve clinical practice. Comparisons across health regions and hospital trusts in particular offer a unique opportunity to learn from each other and raise standards across the board. As with the Medical Birth Registry of Norway, the Norwegian Neonatal Network quality registry is mandated by law and does not require consent. It provides nationwide data on all children admitted to neonatal units in Norway since 2011.

Linkage to the Medical Birth Registry requires case-by-case approval. This is often a time-consuming process and entails a potentially protracted assessment of ethics and data protection. Experience also shows that linking to registries and quality registers based on individual consent is even more challenging. There is therefore considerable potential to better utilise NorCP, which continuously collects data on incidence, subtypes and functional impairment in cerebral palsy.

The causes of growth restriction among preterm infants born small for gestational age are multifactorial, but some are modifiable. A recent Californian study reported a 50 % increased risk of cerebral palsy following smoking during pregnancy, and the association was stronger in a sibling comparison model (5). A Danish study identified smoking and high maternal body mass index as risk factors for cerebral palsy among term-born children (6). In contrast to Denmark, registering data on smoking requires consent in Norway, introducing a risk of reporting bias in the Medical Birth Registry. In Norway, a marked decline in smoking during pregnancy has been observed in recent years (7). Improved health behaviours during pregnancy may therefore have played a role in reducing the incidence of cerebral palsy, but data accessibility is a barrier to investigating the underlying mechanisms.

Although antenatal factors constitute the main component, perinatal interventions are also important in preventing long-term sequelae. There is now robust evidence that magnesium sulphate administered prior to preterm birth protects the fetal brain and reduces the risk of cerebral palsy (8). This is now incorporated into the latest Norwegian obstetric guidelines and is expected over time to reduce the incidence of cerebral palsy among preterm infants.

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In 2007, therapeutic hypothermia became standard practice in Norway for infants born at ≥ 35 weeks with moderate to severe ischaemic encephalopathy. This intervention reduces the absolute risk of cerebral palsy in this group by approximately 10–13 % (9). Around 50–60 infants receive therapeutic hypothermia annually, potentially corresponding to an estimated five cases of cerebral palsy prevented each year (10).

Data sources need to be linked to estimate the contribution of individual interventions to further reductions in cerebral palsy. In Norway, substantial investment has been made in comprehensive health registries, and high-quality data are available. More streamlined access to these data could continuously generate new knowledge on the underlying causes of preventable cerebral palsy. This would benefit children and their families, and society as a whole.

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