Novel resuscitation strategy for babies with birth asphyxia

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During birth, the baby has to stop depending on the placenta and start breathing on his or her own. If there are problems during the birth process, the baby may spend a period of time in the pathological condition of asphyxia, where the oxygen levels in the blood are much lower and carbon dioxide levels are much higher than expected.

Birth asphyxia is the most common cause of seizures in newborn babies. Birth asphyxia seizures tend to cause problems later in life. The range of these problems is very wide, and include problems of movement and poor performance in school.

Gradual decrease of abnormally high carbon dioxide prevents seizures

Current resuscitation protocols for babies include strict instructions on how to control the oxygen the baby is breathing. Instructions on how to control carbon dioxide are, however, absent. When oxygen levels are quickly restored in babies after birth asphyxia, carbon dioxide levels are also quickly restored.

Mohamed Helmy in the Laboratory of Neurobiology, University of Helsinki, Finland, developed for his doctoral dissertation a rat model of birth asphyxia, the original idea of Prof. Kai Kaila. They found out that this quick restoration of carbon dioxide levels after birth asphyxia may in fact trigger seizures.

"In our new therapeutic strategy carbon dioxide levels were restored gradually after birth asphyxia and the rats had far fewer seizures. Restoring carbon dioxide levels after experimental birth asphyxia gradually also resulted in more favorable outcome of behavior in adult life when compared with rats in which carbon dioxide levels were restored quickly after experimental birth asphyxia", Mohamed Helmy explains.

The Laboratory of Neurobiology in the University of Helsinki, Finland, is now investigating the mechanisms underlying birth asphyxia seizures, and developing the proposed treatment further.

More information: The report is available online: helda.helsinki.fi/bitstream/ha … ation.pdf?sequence=1

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