

What New Parents Should Know When Their Newborn May Have Been Injured During Birth

By James Girards

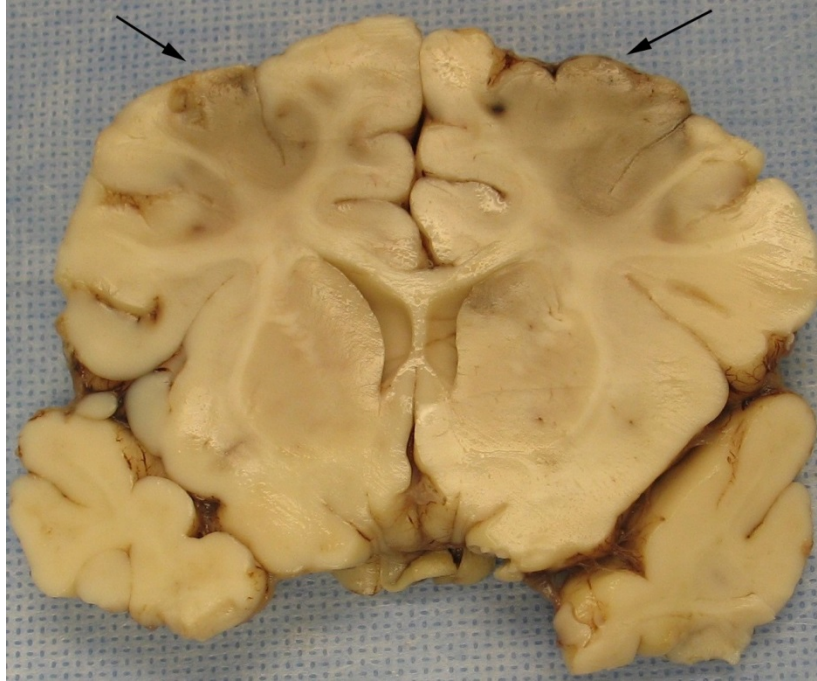
When childbirth becomes complicated and the newborn is not doing well in the first minutes and hours following birth, parents are often confused about what may have happened and what questions to ask. Frequently, the hospital staff is not talking and the new parents feel lost. This article is a short primer on brain injury caused by low oxygen and low blood flow during childbirth and includes some questions that should be asked of the healthcare providers.

First, new terminology you might hear is “hypoxic-ischemic encephalopathy.” This is a diagnosis that means brain injury [“encephalopathy”] caused by low oxygen [“hypoxic”] and low blood flow to the brain [“ischemic”]. This is a condition that ranges from mild to severe.

During the birth process, the baby undergoes periods of low oxygen during contractions. Sometimes this is complicated when the organ that provides oxygen to the baby’s blood [the placenta] is no longer functioning well. This can happen when the pregnancy has exceeded 40 weeks or when the placenta has developed blood clots or other issues that result in it not being able to provide the levels of oxygen to get baby through the birth process in a healthy way. This is one of the main reasons babies sometime require a cesarean section delivery to avoid permanent injury.

When the labor and delivery process is underway and low oxygen situations develop, baby’s body will begin to redistribute blood flow away from some parts of the body that can handle low oxygen better and send that blood flow to the most important organ systems that will not do well in low oxygen settings. Thus, blood flow is redistributed to the heart, brain, and adrenal glands, for example, when the brain detects decreased oxygen, increased carbon dioxide, and decreased blood pH. When this happens, the baby’s blood pressure increases and blood flow to the brain increases to compensate. If this situation develops and lasts too long, there is a point where baby’s brain will no longer be able to re-route the blood flow and do what doctors call “autoregulate” blood flow to the brain. This can also happen if baby’s blood pressure falls too low. The fetal monitor that is used during labor and delivery gives important clues to when baby is not doing well and is starting to lose autoregulation. The hospital staff, of course, is not supposed to wait until this happens but instead should be working to deliver baby before this happens. When evidence of loss of autoregulation is seen on the fetal monitor, however, baby must be delivered immediately. Injury from this process is usually seen in the most vulnerable parts of baby’s brain at the end of the blood vessels that bring fresh blood out to the farthest

parts of the brain nearest the skull, known as the end-artery zones or the “watershed” areas. The cross section image below shows the location of this area with arrows showing brain injury caused by this low blood flow-low oxygen condition. There are also



In the first hours following birth, a brain injury of this nature typically has a range of symptoms depending on how severe the insult. In mild cases, these symptoms are usually seen:

- Muscle tone may be slightly increased and deep tendon reflexes may be brisk during the first few days;
- There may be temporary behavioral abnormalities, such as poor feeding, irritability, or excessive crying or sleepiness;
- The neurologic examination findings may normalize by 3-4 days of life.

In moderate cases, these symptoms may be seen:

- The infant is lethargic, with significant weak muscle tone and diminished deep tendon reflexes;
- The grasping, Moro, and sucking reflexes may be sluggish or absent;
- The infant may experience occasional periods where he or she stops breathing;
- Seizures may occur within the first 24 hours of life;
- Full recovery within 1-2 weeks is possible and is associated with a better long-term outcome.

In severe cases, seizures occur early and often and may be initially resistant to conventional treatments. The seizures are usually generalized, and their frequency may increase during the 24-

48 hours after onset. As the injury progresses, seizures subside and electroencephalogram readings are typically done to look for certain tell-tale patterns of injury. Wakefulness may deteriorate further, and the fontanelles may bulge, suggesting brain swelling. Other symptoms include the following:

- Stupor or coma is typical; the infant may not respond to any physical stimulation;
- Breathing may be irregular, and the infant often requires a ventilator;
- Generalized weak muscle tone and depressed deep tendon reflexes are common;
- Baby's reflexes (eg, sucking, swallowing, grasping, Moro) are absent;
- Disturbances of eye movement are seen, such as a skewed deviation of the eyes, nystagmus, bobbing, and loss of "doll's eye" (ie, conjugate) movements may be revealed by cranial nerve examination;
- Pupils may be dilated, fixed, or poorly reactive to light;
- Irregularities of heart rate and blood pressure are common during this period.

An initial period of well-being or mild hypoxic-ischemic encephalopathy may be followed by sudden deterioration, suggesting ongoing brain cell dysfunction or injury.

Parents whose child is having these symptoms following birth need to ask the staff about treatment therapies to minimize the consequences of an initial brain injury such as hypothermia [cooling] therapy that has been proven to help mild and moderate cases of hypoxic-ischemic encephalopathy. This will frequently require an emergent transfer to a major hospital that is equipped to do this kind of specialized care. So, parents in this situation should speak up early and insist on getting proper treatment for their child. After assuring the proper treatment is being done timely, the long-term consequences of this kind of injury need to be considered. A lawyer who has a lot of experience with these kinds of cases can guide you through the many considerations necessary to make sure the life-long needs of a brain-injured child are met.

For more information or questions on this topic, please contact Jim Girards at 888-333-9709 or jim@girardslaw.com

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