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Hydrocephalus in Infants and Medical Negligence

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Hydrocephalus is a medical condition that can develop at any age, including during infancy. The term “hydrocephalus” literally translates to “water in the brain.” Hydrocephalus occurs when there is a build-up of cerebral spinal fluid (CSF) in the brain. CSF is a clear, colorless fluid that is produced in an area of the brain called the choroid plexus within the lateral ventricles. The ventricles are fluid-filled spaces in the brain. There are two lateral ventricles, a third ventricle, and a fourth ventricle. The CSF flows from the lateral ventricles into the third ventricle and then into the fourth ventricle. The CSF then flows into the arachnoid space where it circulates around the brain and spinal cord providing nutrients and protection. The CSF is eventually reabsorbed into the general circulation of the body. When this CSF pathway becomes blocked, the fluid backs up, increasing the size of the ventricles and exerting pressure on the brain. Increasing ventricle size (ventriculomegaly) and increased pressure in the brain (increased intracranial pressure) are the hallmarks of hydrocephalus.

Hydrocephalus in infants can be congenital or acquired. Congenital hydrocephalus is present at the time of birth or develops shortly after delivery. Congenital hydrocephalus has many causes. For example, congenital hydrocephalus may be caused by abnormal brain development or a prenatal infection.

Acquired hydrocephalus occurs any time after birth. With infants, hydrocephalus can be the result of bleeding in the brain due to a traumatic birth. For example, bleeding in the brain can occur if an obstetrician incorrectly uses equipment like forceps or a vacuum during the delivery. The failure to perform a C-section leading to a traumatic delivery with bleeding in the brain is a serious risk factor for hydrocephalus.

If your infant experienced a traumatic delivery with brain bleeding, especially if born prematurely, he or she should be monitored closely for the development of hydrocephalus. It is important to diagnose hydrocephalus early because a delay in the diagnosis can lead to permanent brain damage or even death. Clinical signs and symptoms of hydrocephalus in infancy include a bulging fontanelle (soft spot), an increased head circumference, abnormal movements, vomiting, irritability, lethargy and seizures. The diagnosis of hydrocephalus is confirmed in an infant with various types of head imaging studies such as ultrasounds (as long as the fontanelle is open), a CT (computed tomography) or an MRI (magnetic resonance imaging).

Once diagnosed, although not curable, hydrocephalus is treatable. If your infant is diagnosed with hydrocephalus, you will be referred to a pediatric neurosurgeon for treatment. The goal of treatment

with hydrocephalus is to reduce pressure in the infant's head by draining the CSF to allow for proper brain development. Treatment depends on the age and severity of the condition. The most common treatment for hydrocephalus is a surgical procedure involving the placement of a ventriculoperitoneal shunt. With a ventriculoperitoneal shunt, a tube is placed in a dilated ventricle in the brain. The tubing is then tunneled under the skin to the abdomen where it drains CFS into the peritoneal cavity where it is reabsorbed by the body. Another surgical treatment for hydrocephalus is an endoscopic third ventriculostomy (ETV). With ETV, an opening is created at the bottom of the third ventricle to allow drainage of CSF from the brain.

After your infant has been treated for hydrocephalus, he or she will need regular medical follow-up. Ventriculoperitoneal shunts can malfunction or become infected. A shunt malfunction or infection must be promptly treated to avoid injury and death. An infant/child with hydrocephalus will regularly need to see a pediatric neurosurgeon. Head imaging, most commonly a CT scan, is needed if a shunt malfunction is suspected. Multiple surgeries may be needed to treat shunt malfunctions and infections. Some children with hydrocephalus require additional services such as physical therapy.

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