hydrocephalus

Jennifer Rhodes, MD and **Gary Tye, MD**

hydrocephalus is a condition where there is buildup of fluid around the brain. While many people think this fluid is water, or a condition sometimes known as "water on the brain," the fluid is actually cerebrospinal fluid (CSF). Too much CSF accumulating in the areas around the brain, known as ventricles, can place harmful pressure on the tissues of the brain.

In children with craniofacial conditions, hydrocephalus is most often caused by blockage to the flow of CSF. It may be present at birth or develop later. Other causes of hydrocephalus may include poor absorption of CSF or overproduction of CSF. An excess of CSF leads to enlargement of the ventricles which in turn may cause an increase of pressure in the head. This may cause damage to surrounding brain tissue resulting in neurological problems. With some craniofacial conditions, up to 80% of children develop hydrocephalus.

Symptoms

Children with hydrocephalus can present with a wide range of signs and symptoms. Infants' heads may appear larger and show an increase in head circumference. The most common complaints include nausea and vomiting, headache, irritability, tiredness, double vision, and seizures. Older children may also complain of inability to hold their urine. Additional findings can include swollen optic nerves, weakness, and developmental delay. The diagnosis can be confirmed on an MRI scan.

Treatment

The goal of treatment is to improve the flow of CSF out of the ventricles. This can be done by the placement of a device called a shunt or by a procedure called a third ventriculostomy.

A shunt is a silastic tube that consists of 3 parts: An intraventricular part which goes inside the brain, a valve to control flow of spinal fluid, and distal tubing which may be placed in the abdomen, heart or chest cavity. The surgery typically takes about 30-45 minutes and the child will stay overnight in the hospital. A shunt may be the preferred treatment in children with outflow obstructions at the skull base, which is seen in certain craniofacial syndromes.

A third Ventriculostomy involves using an endoscope to enter the ventricular system where the spinal fluid is made. A hole is made creating a connection between different areas of the drainage system. The child is watched overnight in the Intensive Care Unit and may have an external drain. A third ventriculostomy can only be performed in certain cases based on the anatomy found on the MRI scan.

The neurosurgeon on the team will review the MRI and determine the appropriate treatment for hydrocephalus.