What is hydrocephalus?

Hydrocephalus is an irregular buildup of the brain’s normal water-like fluid (cerebrospinal fluid or CSF) in the ventricles of the brain. The excessive fluid swells the ventricles and causes pressure on the brain. CSF normally flows through the ventricles and bathes the brain and spinal column, but the pressure caused by too much CSF associated with hydrocephalus can damage the brain, causing an array of impairments in brain functioning that can ultimately result in deafblindness.

Causes of Hydrocephalus

**Congenital hydrocephalus** results from a complex interaction of genetic and environmental factors and is present at birth. Common causes of congenital hydrocephalus are:

- Aqueductal Stenosis
- Neural Tube Defects
- Arachnoid Cysts
- Dandy Walker Syndrome
- Chiari Malformation

**Acquired hydrocephalus** develops after birth. Acquired hydrocephalus is the result of neurological conditions such as:

- Intraventricular Hemorrhage
- Meningitis
- Head Injury
- Brain Tumor

Sometimes the cause of hydrocephalus is unknown. If the cause of hydrocephalus is unknown, it is referred to as **Idiopathic hydrocephalus**. Normal pressure hydrocephalus (NPH) is a commonly diagnosed type of hydrocephalus that is idiopathic in nature.

**Symptoms, Diagnosis, & Treatment of Hydrocephalus**

Symptoms of untreated hydrocephalus are variable, and are dependent on a person’s age. In cases of prenatal hydrocephalus, routine ultrasounds can detect swollen ventricles in the baby’s brain. In children and adults a variety of symptoms can be present and may include the following:

**Symptoms of Infants & Children with Hydrocephalus:**

- Abnormal Head Enlargement
- Tense, Bulging Fontanelle (Soft Spot)
- Prominent Scalp Veins
- Separation of Skull Bones
- Vomiting, Lethargy, Irritability
- Headache, Nausea, Vision Problems
- A Downward Deviation of the Eyes

**Symptoms of Adolescents and Adults with Hydrocephalus:**

- Difficulty Walking
- Cognitive Challenges
- Urinary Urgency/Incontinence
- Dizziness and Vision Problems

When hydrocephalus is suspected at any age, the most commonly used diagnostic measure is to image the brain with a CT Scan or an MRI. Brain imaging tests can identify the enlarged ventricles within the brain that are typical of hydrocephalus.

The most common form of treatment for hydrocephalus is the surgical diversion of the excess CSF by placing a synthetic tube, or **shunt** into the enlarged ventricle and draining the fluid into another part of the body where it can be absorbed. The most commonly used shunt type is a **Ventriculo-peritoneal Shunt** that drains the excess cerebrospinal fluid into the peritoneal cavity in the abdomen. The shunt is usually composed of a silicone catheter that enters the enlarged ventricle, a valve that allows flow away from the ventricle, and tubing which enters the cavity to receive the fluid.

While shunts are very effective in treating hydrocephaly, complications can arise from their use. An obstructed shunt will result in symptoms similar to those previously listed when hydrocephalus is untreated.

**References:**