Hydrocephalus

Background

Hydrocephalus (hydro-water, cephalus-brain) means there is an excess accumulation of cerebrospinal fluid (CSF) in the spaces in the brain, called ventricles. Normally there is a balance between the rate at which CSF is produced and the rate at which it is absorbed. When this delicate balance is disrupted, intracranial pressure will increase causing hydrocephalus. The excess CSF enlarges the ventricles and can cause the head to swell. CSF protects the brain and spinal cord, but when too much is present it can be dangerous, causing damage to the brain that can be debilitating and life-threatening.

Hydrocephalus is a chronic, complex condition that you can either be born with or acquire. Congenital hydrocephalus exists at birth caused by a complex interaction of genetic and environmental factors during fetal development. Spina bifida and brain malformations are two of the most common causes of congenital hydrocephalus. Acquired hydrocephalus occurs after birth and can be the result of a stroke, hemorrhage, infection, cysts or trauma. Many factors can cause hydrocephalus, but it is most commonly the result of a structural obstruction.

Symptoms will vary between individuals based on progression of CSF build up. Infants will often present with a rapid increase in head size or unusually large head size. Signs and symptoms of hydrocephalus are often general including:

- Headache
- Nausea and vomiting
- Behavior changes
- Motor difficulties
- Developmental delay

While there is no cure for hydrocephalus, treatment will focus on relieving the pressure in the brain. One of the most common treatments is brain surgery and placement of a shunt. A shunt is an implanted catheter used to drain the excess CSF into another region of the body. Surgical placement of a ventriculoperitoneal (VP) shunt is most often used to treat hydrocephalus and drain fluid into the peritoneum.

Another surgery performed for hydrocephalus is endoscopic third ventriculostomy (EVT). EVT surgery involves making a tiny hole in the third ventricle of the brain to allow CSF to flow into another area of the brain for reabsorption. EVT is the preferred surgery for obstructive hydrocephalus. A shunt allows individuals to lead full lives, but medically implanted devices can malfunction, fail, or become infected. Always seek medical care for any signs or symptoms of shunt malfunction/failure.

Top Takeaways for School

Hydrocephalus develops when CSF is produced and absorbed at a disrupted date, causing increased intracranial pressure.

Surgical placement of a ventriculoperitoneal (VP) shunt is most often used to divert the flow of CSF and decrease intracranial pressure. School staff should be aware of signs and symptoms of shunt infection and device malfunction/failure.

Students with hydrocephalus can experience poor motor coordination. They may appear clumsy or struggle with handwriting, use of scissors, etc.

Students often experience some degree of learning difficulty. Retrieving stored information, issues with abstract concepts, and spatial/perception disorders are common.

Considerations for the Individualized Healthcare Plan (IHP)

- Nursing diagnoses: Risk for injury and risk for infection
- Assessment of implanted medical device (consider location, date of surgical placement, and device-specific information)
- Activity, positioning, transferring (consider precautions and/or restrictions)
- Consider emergency action plans (EAPs) and emergency evacuation plans (EEPs) related to special health care needs, including staff education/training

Discussion Starters for the Educational Team

1. Would the student benefit from evaluations or assessments in any of the following areas: physical therapy, occupational therapy, speech and language therapy, assistive technology, adapted physical education, functional behavior, psychology, hearing and vision?
2. Would the student benefit from additional academic support and/or modified education (e.g., copies of notes, extra time, reduced workload, simplified instructions, alternative formats for presentation of material, 504/IEP)?
3. Does the student need support with gross or fine motor skills in the classroom?
4. Does the student require activity precautions to prevent injury?
5. Is the physical school environment safely accessible for the student's mobility needs (e.g., entry and exit, ramps, location of classes, access to elevator, doorways)?
6. Will staff receive education/training to implement the student-specific emergency plan?

Resources

Kennedy Krieger Institute: Neurology and Neurogenetics Clinics
kennedykrieger.org/patient-care/centers-and-programs/neurology-and-neurogenetics-clinics

Hydrocephalus Association
hydroassoc.org/about-hydrocephalus/

SHINE
shinecharity.org.uk/

For more information, please scan the QR code or visit: KennedyKrieger.org/SHNIC

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