HYDROCEPHALUS AFTER HEMISPHERECTOMY

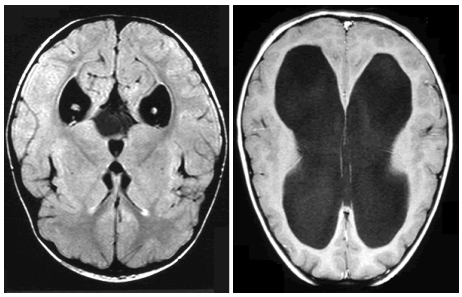
The possibility of hydrocephalus developing following hemispherectomy surgery is something that all parents and caregivers of hemispherectomy children need to remain aware of. The onset of hydrocephalus can occur anytime after surgery from hours to many years.[i] In fact, there are cases reported in the literature of hydrocephalus occurring up to 34 years after surgery.

Hydrocephalus is more common after anatomical hemispherectomy than functional hemispherectomy or hemispherectomy. Results of a comprehensive, multi-institutional review[ii] indicate that anatomical hemispherectomies are associated with a 50% higher rate of hydrocephalus (approximately 30% of children who have had anatomical hemispherectomies will develop hydrocephalus compared to 20% of children who have undergone functional hemispherectomies).

What is hydrocephalus?

Hydrocephalus is an abnormal accumulation of Cerebro-Spinal Fluid, or CSF, within cavities called ventricles inside the brain. CSF is produced in the ventricles, circulates through the ventricular system and is absorbed into the bloodstream.CSF is in constant circulation and has many important functions. It surrounds the brain and spinal cord and acts as a protective cushion against injury. CSF contains nutrients and proteins that are needed for the nourishment and normal function of the brain. It also carries waste products away from surrounding tissues.

Hydrocephalus occurs when there is an imbalance between the amount of CSF that is produced and the rate at which it is absorbed. As the CSF builds up, it causes the ventricles to enlarge and the pressure inside the head to increase.



The image on the right is of hydrocephalus in a non-hemispherectomy brain

Is it dangerous?

Yes, if untreated, hydrocephalus can result in brain damage or death. Hemispherectomy children displaying symptoms of hydrocephalus need to seek medical advice immediately.

What are the symptoms of hydrocephalus?

Symptoms of hydrocephalus vary with age. The main symptoms are headache, nausea and vomiting.

Additional symptoms for babies 0-18months may include: an increase in head size, soft spot on the head, poor feeding, drowsiness, eyes turning downwards or inwards and seizures.

Additional symptoms for older children or adults may include: blurred or double vision, poor concentration, hearing sensitivities, loss of muscle coordination, confusion, incontinence or seizures.

Why does hydrocephalus sometimes occur after hemispherectomy surgery?

The way that CSF operates in the brain is not fully understood. What is known is that by removing part or a whole hemisphere of the brain, the remaining brain cavities are exposed to blood products and inflammatory changes, creating an environment vulnerable to developing hydrocephalus. The greater the brain tissue removed the more difficulty the brain has in absorbing CSF.

What is the treatment for hydrocephalus?

Depending on the underlying cause, surgery for hydrocephalus includes removal of the blockage or insertion of a small tube called a shunt to allow the excess CSF to drain out.

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i Acute Hydrocephalus as a late complication of hemispherectomy. M. Strowitzki et al.
ii Post-Hemispherectomy hydrocephalus: results of a comprehensive, multi-institutional review. Sean Lew et al. Epilepsia, February 2013