

# Hydrocephalus

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## SUMMARY:

- 1) Hydrocephalus is a condition where there is too much fluid in the brain.
- 2) Some pets can live normally with mild to moderate hydrocephalus. In other pets it will cause brain symptoms like blindness, confusion and seizures.
- 3) Hydrocephalus is most commonly congenital, but can also be secondary to another problem like a brain tumor.
- 4) Hydrocephalus can be treated with medication, or with a surgery called a ventriculoperitoneal shunt placement. The surgery is more effective long term in most patients, however it has a significant complication rate.

## EXPLANATION:

The brain normally has fluid filled spaces called ventricles. Hydrocephalus is when there is too much fluid in the ventricles. It is most commonly something that a pet is born with, which is called a congenital condition. It is seen most often in Chihuahuas, Pugs, Pomeranians, Yorkshire Terriers, English Bulldogs, and several other small breed dogs.

The increased volume of fluid results in decreased room for normal brain tissue and can also result in increased overall pressure inside the skull. This pressure can cause death of the surrounding brain, which overtime shrinks the brain tissue.

Common symptoms of hydrocephalus include seizures, quiet behavior, difficulty house training, weakness and incoordination, and abnormal vision. Some animals live quite normal lives with mild hydrocephalus and it can be found as an “incidental finding” later in life. Most animals who are going show signs due to their congenital hydrocephalus begin to show symptoms at a young age. However in some cases the symptoms present in adult animals.

Hydrocephalus is occasionally diagnosed by ultrasounding through the skull. However, dogs must have fairly large holes in their skull (called fontanelles or baby “soft spots”) to make this test possible. Most often hydrocephalus is diagnosed by doing an MRI or CT scan. In some cases spinal fluid is collected to look for inflammation. Many of the breeds that are predisposed to hydrocephalus are predisposed to other congenital or acquired diseases (i.e. auto-immune inflammatory brain disease) and they may have two conditions at the same time (hydrocephalus and something else). Therefore it can be important to rule out other diseases before starting treatment for hydrocephalus.

## Medical Treatment

Treatment options for hydrocephalus include medical and surgical management. Medical management involves giving drugs which decrease the production of spinal fluid and reduce inflammation around the dilated fluid pockets in the brain.



## **Surgical Treatment**

Surgical management involves placing a tube from the brain into the abdomen to continuously remove fluid from the brain and reduce pressure in the skull. The shunt surgery, while invasive and expensive, is the most effective way to drain fluid from the brain and protect underlying brain.

Surgery is more effective than medical treatment alone in controlling symptoms of hydrocephalus. However, studies have shown that it does not often decrease the amount of seizures a pet has. However, it does a better job in controlling other neurologic problems- like lethargy, confusion, blindness or difficulty walking.

Unfortunately, shunts are finicky, and the surgery has a relatively high complication rate. Somewhere between 20-30% of dogs will have a problem with their shunt that will require further treatment at some point. The most common problem with shunts is infection. However other complications, such as blockage of flow in the shunt, are also possible. In some circumstances, these complications can require replacement of the shunt- which means another surgery.

## **Medical Treatment:**

Medical treatment of hydrocephalus involves using medications to decrease fluid production in the brain, such as prednisone, lasix and omeprazole. Some patients will also need medications for seizures. Medication for this condition is often life long. Patients who have surgery performed can often be on less medication, but it is uncommon to be completely off medications at any point once they become necessary.

## **Prognosis:**

It is important to differentiate the animals that have incidental hydrocephalus, because often their hydrocephalus is mild and does not cause them problems. However, animals that show symptoms of their hydrocephalus unfortunately do have shorter lifespans. It is difficult to predict exactly how long it will be. Some of that will be based on cause, severity and the symptoms present early in the disease. However, with proper treatment some hydrocephalus patients can live many happy years with a good quality of life.

## **MONITORING:**

It is important to have regular visits with your veterinarian, especially early in the treatment of this condition. Patients on medication should be seen twice a year at a minimum so your vet can monitor for side effects of medication.

Please contact your veterinarian if your pet develops new symptoms or if existing symptoms seem to be getting worse. Symptoms include:

- 1) Seizures
- 2) Change in personality
- 3) Difficulty staying awake
- 4) Difficulty sleeping
- 5) Difficulty walking
- 6) Dizziness



- 7) Circling
- 8) Blindness
- 9) Difficulty eating, drinking or swallowing

