

Chihuahua

Update

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Understanding Differences Between a Molera and Hydrocephalus

Like human babies, many Chihuahuas have a "soft spot" on their heads known as an open fontanel or molera. The molera is considered normal and acceptable in the breed.

Unfortunately, some lay people and veterinarians unfamiliar with Chihuahuas link the molera to hydrocephalus, a serious condition in which fluid builds up in the brain causing brain damage and often early death. The two conditions are considerably different, experts say.

Moleras are Normal

Located on the top of the head, a molera may vary in shape and size. Some spots will close by the time a Chihuahua is a few months old, but some remain throughout adulthood. On its web site, the Chihuahua Club of America (CCA) states that a molera is not a medical problem. Meanwhile, the American Kennel Club (AKC) breed standard for Chihuahuas says that heads should be "a well-rounded, apple-domed skull with or without molera."

Mike Klauser, D.V.M., of Krichel Animal Hospital in Keokuk, Iowa, sees moleras frequently in his practice. "Some people will call the molera a defect, but according to the breed standard it's an acceptable trait in the

Chihuahua," he says. "When there is a molera, there is no protective coating of the skull where the soft spot is so veterinarians would rather the Chihuahua didn't have the molera.

But it's an acceptable characteristic in the breed."

Max Hurd of Council Bluffs, Iowa, has been breeding Chihuahuas for 47 years and is an AKC judge for the breed. Moleras and hydrocephalus "are completely different," he says. "Moleras are absolutely normal and are part of the breed. If you're buying a puppy, it's hard to tell if the dog even has a molera. You do have to watch for hydrocephalus though."

Interestingly, Hurd notes that moleras are less common today than when he started breeding. "It used to be if a Chihuahua didn't have a molera, judges didn't think he or she was a purebred. Now just a sprinkling of dogs has them."

Hurd attributes the larger size of

Chihuahuas with the decrease in moleras. "Before 1973, Chihuahuas were bred to be smaller — 2 to 4 pounds was preferred," he says. "The mindset was the smaller the dog, the better for judging. With the smaller dogs came more frequent moleras. Now, Chihuahuas up to 6 pounds are accepted, and judging is done on the overall dog, not just small size. As a result of the larger dogs, there are fewer moleras now."

"From a practical standpoint, the open fontanel is not a problem, especially since the spots are usually so small," Klauser says. "They can range in size from 1/4 to 1 inch across. I usually tell new owners to protect the dog's head — as you should even without a molera. The spot is not a big deal; most dogs do just fine with moleras."

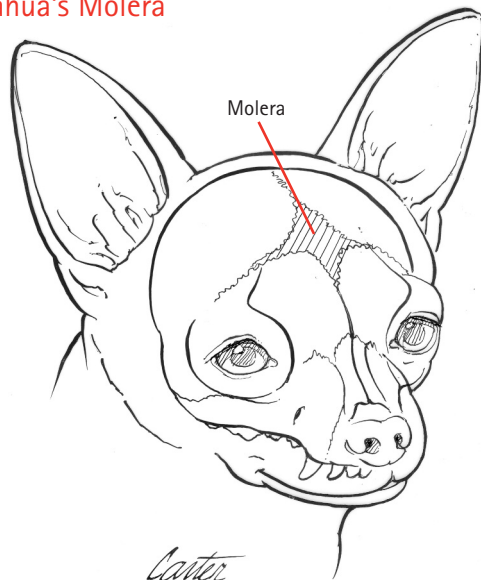
Heartache of Hydrocephalus

So what causes confusion between moleras and hydrocephalus? "In a lot of other breeds if a dog has an open fontanel, we're worried about hydrocephalus," Klauser says. "But in Chihuahuas, an open fontanel is generally not a sign of hydrocephalus. On the other hand, if a Chihuahua has hydrocephalus, there's a good chance he has an open fontanel, too. Hydrocephalus is pretty uncommon, but occasionally we'll see it in a Chihuahua."

According to the national parent club, medical evidence supports that the molera does not predispose Chihuahuas to hydrocephalus. In addition, an article on the Canine Inherited Disorders Database web site states "an open fontanel is not diagnostic per se of hydrocephalus, as it may occur in a normal healthy dog."¹

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The Chihuahua's Molera



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Molera and Hydrocephalus

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Signs of Hydrocephalus

In dogs with hydrocephalus, "often their eyes are more bulging and they are head pressers," says Klauser. This is because excessive cerebral spinal fluid (CSF) builds up in the brain. The fluid buildup occurs because it doesn't drain normally. As a result, the ventricles in the brain fill up with too much fluid and swell. The increased pressure damages or prevents development of brain tissue.

Signs of hydrocephalus often develop in the first year of life. In one study, 53 percent of 564 hydrocephalic dogs showed clinical signs by age 1.² In severely affected dogs, signs may be noticeable before 3 months of age. The most common signs involve behavioral changes.³

A dog's motor control may be delayed compared to littermates. Confusion, dullness, sleepiness, aggression, poor house-training skills, an altered gait

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and circling are also symptoms of hydrocephalus.^{3,4} Seizures affect 20 to 50 percent of dogs with hydrocephalus, and most are stunted in growth and have a disproportionately large domed skull.³ Vision and hearing may be affected, too. Open skull sutures and fontanels are present. Skull sutures, which join the bony plates in the skull and allow movement between the developing skull bones, should close at maturity.

Some dogs may have mild hydrocephalus with no symptoms. However, a trauma, hemorrhage or infection could make the condition worse. Hydrocephalus can be congenital or secondary, meaning it's acquired later in life. Researchers disagree about the distinction between congenital or acquired forms since infectious agents may cause hydrocephalus in puppies in the womb.²

Hurd recently bred a litter with a puppy showing the typical signs of hydrocephalus. "At 6 weeks old, I knew he didn't look right," he says. "I asked a lady who was buying one of the littermates if she would also take this dog for a pet so he would have a chance for a normal, happy life. She says the dog is doing well at just a few months old."

Diagnosis and Causes

When a veterinarian diagnoses hydrocephalus, he or she bases the determination on physical, behavioral and neurological symptoms. Diagnostic tests, including skull X-rays, ultrasound, computed tomography (CT) or magnetic resonance imaging (MRI) scans, electroencephalography (EEG) and cerebral spinal fluid collection, can confirm the disorder.

Skull X-rays help the veterinarian to see the open sutures and fontanels. Ultrasound can be done through the open sutures or fontanel to see the enlarged ventricles in the brain. CTs and MRIs provide detailed images but are expensive and require general anesthesia. Though EEGs are useful, they are generally only available at referral centers. Collecting cerebral spinal fluid from the brain is considered a riskier way of diagnosing hydrocephalus.³

Genetic and environmental factors may play a role in hydrocephalus. New Zealand Golden Retriever puppies born with a disorder that causes excessive hair growth also appear to have congenital hydrocephalus from an autosomal mode of inheritance.² Since the hereditary issues of hydrocephalus are uncertain, dogs with the condition should not be bred.

Chihuahuas and other toy breeds with shortened heads are considered to be at high risk for hydrocephalus. Breeds most commonly affected include Maltese, Yorkshire Terriers, Pomeranians, Boston Terriers, English Bulldogs, Lhasa Apso, Pekingese, Toy Poodles and Shih Tzu.³

Treatment Options

Many cases of hydrocephalus go untreated; however, dogs with the condition rarely live more than two years. Some owners consider treatment futile, especially in cases of severe hydrocephalus where a large amount of brain tissue is damaged.² If an owner decides to pursue treatment for congenital hydrocephalus, it will depend on the severity of symptoms and how the disease is progressing.³

Rapidly progressive disease should be treated aggressively, although brain damage from the increased pressure in the brain often makes the prognosis poor. In some cases, a neurologist may withdraw CSF to lower pressure in the brain, although this can be risky. Medications, such as diuretics and corticosteroids, may also help lower the pressure. Anticonvulsants may be necessary to control seizures until the pressure is lowered.³

If a Chihuahua's condition is stable

with only mild symptoms, treatment is unnecessary. However, medical and surgical approaches can be used to treat dogs with mild, chronic progressive hydrocephalus. Steroids can improve some symptoms but the dog will never return to normal since permanent damage occurred from the initial pressure in the brain. Some dogs remain stable after stopping medication, while others relapse and need long-term therapy.³

Surgery is a last resort for dogs that don't respond to medical therapy. A shunt can be surgically implanted to drain excess CSF from the brain into the abdomen where it

can be absorbed. Unfortunately, shunts are costly and often have complications such as infection and blockage from tissue or clots. If they are implanted in small puppies, they often are replaced as the dog grows. In some dogs, shunts have lasted as long as eight years.³

Differences Defined

Hydrocephalus can be painful for dogs and usually causes an early death. The effects are usually obvious and a dog doesn't behave normally. However, the presence of moleras does not specifically indicate hydrocephalus in Chihuahuas. Dogs with moleras that do not have concurrent hydrocephalus are just as healthy and alert as those without moleras. ■

¹ www.upei.ca/~cidd/Diseases/nervous%20system%20disorders/hydrocephalus.htm.

² Braund KG. Clinical Neurology in Small Animals — Localization, Diagnosis and Treatment. Chapter on Developmental Disorders. www.ivis.org.

³ Hardy R. Hydrocephalus. www.cvm.unm.rdu/academics/current_student/notes/hydrocephalus.pdf.

⁴ Shell L. Neurological Causes of Cerebral Signs in Small Animals. www.education.vetmed.vt.edu/curriculum/vm8654/cerebral.pdf.

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