



Education Newsletter



2021 Edition 2, July 14, 2021, BARRC Education Committee

Due to a little writer's block, it has taken a while to get the 2nd 2021 edition of the Bay Area Rhodesian Ridgeback Club (BARRC) Newsletter published. Please note that the 1st edition in 2021 issued in January, 2021 was mislabeled as 2020 edition 5. In this edition, you'll find an article on a form of canine meningitis that I have never heard of before and is often misdiagnosed by many veterinarians. I learned about this disease from a friend whose dog went through several months of misdiagnosis and made almost an overnight recovery once diagnosed correctly. As always, please let me know if there are topics or educational events you'd like the Education Committee to address, or better yet, if you would like to contribute an article! - Wendy Peirce, Editor and Chair, Education Committee

Steroid Responsive Meningitis-Arteritis

In November, 2020 the following was posted on Facebook:

Boxer, 6 months old. Owner says that she thinks his hind end is not developing like the rest of the dog. His hind end appears to be smaller than it should be. Pup also acts like his hind end is weak, stiff or sore. He always pulls himself up with his front and has difficulty with stairs. He cannot jump onto the bed. He appears to have pain when the owner moves his back legs. This owner has had 6 other boxers and says that they have not had any of these issues. This pup also has undescended testicles, not that there is a relationship but thought I would include the info. At first, I thought that pano may be the cause but it has been going on long enough for the hind end to appear to not develop. Ideas?

Suggestions? Owner will be taking the dog to an ortho vet at my suggestion. Hip dysplasia?

From that post, there were a lot of suggestions as to what may be the cause from neospora, to Lyme disease to spinal malformation. It was clear that what was going on with "Nash" was not normal.



Credit: Bush Veterinary Neurology Service

When I first met Nash, he acted like a mature dog. He was only four months old but he was the calmest, most relaxed puppy I had ever met. He was happy to lie at my feet. There was no biting, no jumping, no tugging just a calm, friendly, laidback boy. What a joy, I thought. "How lucky to have such a good puppy", I told Nash's owner. She too was pleased with his unusually placid behavior, but then, other things started to make her concerned. He wasn't using his back end normally. He exhibited discomfort and the muscles on his hind end weren't developing. He couldn't get up on even low-lying objects, let alone a sofa or the bed. He never would stand on his hind legs to reach things. And, he never played with the other dogs in the home the way a puppy would normally. This wasn't just a calm puppy, there was something wrong with him.

By the time Nash was six months old, it was clear that he was not a normal, healthy pup. After a series of visits to a general veterinarian who was stumped as to what going on, Nash was referred to an Orthopedic vet where he underwent extensive assessment and tests, including x-rays and an MRI, and the presumptive diagnosis

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provided would result in Nash's death before the age of two. Physical therapy was recommended to ease the discomfort. As Nash started physical therapy, the Orthopedic vet also suggested that perhaps Nash's owner should also take him to see a veterinary neurologist just to make sure they weren't missing something. Living in Reno, Nevada, the nearest canine neurologist is in Sacramento, California so off they went. Thank goodness they did! After a single trip to Sacramento in April, 2021, the veterinary neurologist determined that Nash did not have a debilitating and ultimately fatal condition, Nash had Steroid Responsive Meningitis-Arteritis (SRMA).

The Correct Diagnosis - SRMA

Meningitis is an inflammatory disease of the central nervous system. It can be caused by a number of infections, including bacterial, viral, fungal, and protozoal infections, but it may also be non-infectious in nature, caused by an immune-mediated inflammatory response (in which the body's immune system attacks its own tissues). Although frequently misdiagnosed, Steroid Responsive Meningitis-Arteritis is a relatively common inflammatory disease of the central nervous system in young dogs that falls into the non-infectious category. Although its exact cause is unknown, it is believed to be an autoimmune disease that results in the inflammation of the meninges (the membranes that envelope the brain and spinal cord) and associated blood vessels. Typically found in dogs between the ages of 6 to 24 months, it can begin to display symptoms in younger pups and the acute form can be found in dogs older than 2 years of age. One of the reasons that SRMA may be difficult for non-neurologists to diagnose is that symptoms may be intermittent and range from the mostly hind-end related weakness and subdued behavior typical of a skeletal issue (as displayed by Nash), to more typical meningitis signs such as severe neck pain, high fever, and lethargy. In addition to these typical symptoms, acute SRMA is characterized by profound cervical pain with guarding of the neck and hunched posture, stiff gait, and lack of appetite. Although SRMA primarily results in meningitis, it can occur concurrently with immune-mediated polyarthritis - multiple inflamed, swollen and painful joints - resulting in clinical findings of joint pain and effusion (swelling in a joint due to fluid moving into the soft tissues surrounding the joint).

CLINICAL SIGNS OF STEROID-RESPONSIVE MENINGITIS-ARTERITIS IN DOGS*

- Neck pain
- Lethargy
- Reluctance to rise or walk
- Stiff gait
- Decreased appetite
- Kyphotic posture
- Tremors
- Diarrhea
- Vomiting
- Inappropriate urination

*Source: Lau J, Nettifee JA, Early PJ, et al. Clinical Characteristics, Breed Differences, and Quality of Life in North American Dogs with Acute Steroid-Responsive Meningitis-Arteritis. *Journal of Veterinary Internal Medicine*. 2019;33(4):1719-1727.

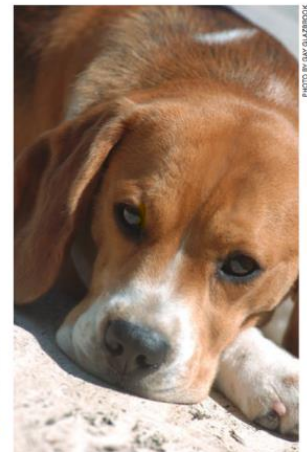


PHOTO BY BAY RIDGEBOOK

Any breed can develop SRMA, including Rhodesian Ridgebacks. The disease is most common in large breed dogs like the Boxer, Bernese Mountain dog, Newfoundland, Golden Retriever, Wirehaired Pointing Griffon and Great Pyrenees but has also been reported in a colony of research beagles where it was called Beagle Pain Syndrome. This suggests that there is a genetic component. It is interesting to note a 2018 published study¹ where records from a British veterinary referral hospital were examined and it was found that 48 percent of juvenile dogs that presented with a fever were diagnosed with SRMA.

Diagnosing SRMA

Oddly, the neurologic examination of a dog with SRMA is most often normal except for signs of pain. An MRI may be normal and infectious disease testing will be negative in affected dogs. These tests are usually done to rule out other things. Baseline laboratory tests, including a complete blood cell count (CBC), serum biochemistry profile, and urinalysis will usually be normal, unless the dog suffers from other conditions. The most important diagnostic test in meningitis is a cerebrospinal fluid (CSF) tap. For this test, the dog is placed under general anesthesia. A needle is then inserted between the vertebrae in the dog's neck or lower back and a small amount of the CSF fluid that bathes the brain and spinal cord is collected. This fluid is analyzed for the presence of abnormal protein levels, inflammatory cells, infectious organisms, or other indicators of disease. In many cases, analyzing the CSF



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fluid can not only diagnose meningitis, but also suggest an underlying cause. A positive diagnosis for SRMA is usually concluded when cerebrospinal fluid analysis reveals severe neutrophilic inflammation (neutrophils are a type of white blood cell).

When a dog has SRMA, the dog's liver usually produces a substance in response to the inflammation called C-reactive protein. This protein is elevated in the serum of affected dogs and mirrors the level of neutrophils in the cerebrospinal fluid. As neutrophil inflammation goes up, so does the C-reactive protein level. When the neutrophil numbers in the spinal fluid go down, so do the C-reactive protein levels in the dog's blood. This is particularly important as it provides a less invasive way to monitor a dog's response to treatment than doing repeated spinal taps.

SRMA Treatment

The most effective treatment for dogs with SRMA is immunosuppressive dosages of corticosteroids given over several months. Improvement can be dramatic, with dogs returning to normal in one to three days. Dogs continue on daily high doses of prednisolone or prednisone for four to eight weeks with some dogs continuing treatment for six months to a year. The treatment is monitored through blood tests to make sure that there are not adverse effects from the steroids and that it is being effective. Patients are slowly weaned off medications, but inadequate treatment may lead to a more chronic form of the disease.

The long-term prognosis for young dogs with acute SRMA is fair to good. Chronic SRMA can be much more difficult to manage. Most dogs with an acute case of SRMA that are diagnosed and treated promptly respond well to the initial course of steroids. About 10 to 15 percent relapse during treatment and about 20 to 30 percent relapse in the month following discontinuation of treatment. A few dogs will relapse over a year after treatment ends. Some dogs require lifelong therapy. Chronic SRMA develops in dogs that are not diagnosed and treated in a timely manner or that have recurring relapses.

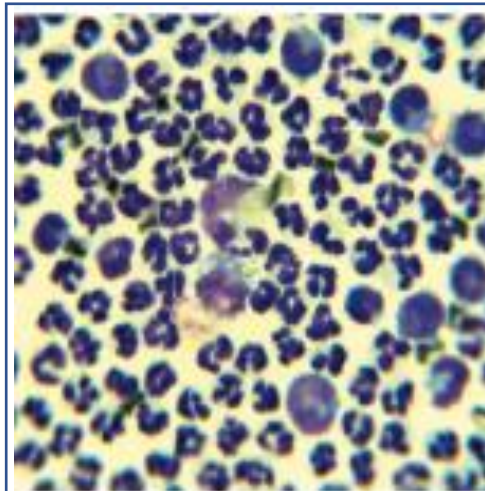
How is Nash now?

Nash is one of those SRMA dogs that made an amazing recovery. 24 hours after his first dose of steroids he was bouncing around the house. Within a few days he was jumping on the sofa. Within a week he was standing on his hind legs to peer over a fence. He is also acting like a puppy now, doing all the things he didn't do when he was 4 months old, instead he is doing them as a big 8-month-old! Naughty puppy or not, his owner is delighted.

Steroid Responsive Meningitis-Arteritis is a disease that, although common, is often misdiagnosed and dog owners may not be familiar with the symptoms. The story of Nash and his illness, although not a Ridgeback, came as a surprise to the author of this article and it is hoped that it will make others aware of this disease, the symptoms, and the treatment as well.

References:

1. Black VL, Whitworth FJ, and Adamantos, S. (2018) Pyrexia in juvenile dogs: a review of 140 referred cases. J Small Animal Practice
2. Purina Pro Plan Beagle Update, Volume 1, (Fall, 2019) Steroid Responsive Meningitis-Arteritis
3. Bush Veterinary Neurology Service, (2014) <https://bvns.net/disease-conditions/steroid-responsive-meningitis-arteritis/>
4. Albright, Sharon, DVM, CCRT. (March 13, 2019), Steroid Responsive Meningitis-Arteritis in North American Dogs. AKC
5. Michaels, Jennifer, DVM, DACVIM. Steroid Responsive Meningitis-Arteritis. MSPCA Angell
6. VCA, Meningitis in Dogs <https://vcahospitals.com/know-your-pet/meningitis-in-dogs>



*40x magnification of cerebrospinal fluid from a dog with SRMA. Normal fluid would show only a few cells; this is teeming with inflammatory cells, predominantly neutrophils.
Credit: Bush Veterinary Neurology Service*