

Four Leg News

Volume 2 / Issue 2



Clinical Neurology in the Literature

I am so very excited to provide this newsletter to my Four Leg Rehab Members. It is jam-packed with articles pertaining to intervertebral disc disease and MY take on their clinical relevance. I didn't actually plan it this way... it just turned out that all of the articles that I found and ripped out of the vet magazines I had lying around pertained to IVDD. It makes a nice cohesive newsletter however... and the findings are really fascinating to me! ENJOY!

Laurie Edge-Hughes, BScPT, MAnimSt, CAFCI, CCRT

Where in the world?

Want to know where you can catch Laurie live in action teaching? Here's the scoop:

- March 21-22: Lulea University of Technology
- March 24-26: Helsingborg, Sweden
- March 28-29: Vienna, Austria
http://www.physiovet-team.com/content/Lang_1/Seminarie_Leistungsangebot.htm
- April 25-28: Calgary, Canada
<http://www.physiotherapy.ca/Divisions/Animal-Rehabilitation/Professional-Development>
- May 23-25: Montreal, Canada ~ CPA Congress
<http://www.physiotherapy.ca/Congress>
- May 31-June 1: Rimini, Italy VEPRA <http://www.vepra.eu>
- June 26-30: Florham Park, NJ, USA
www.staarconference.com
- July 22-27 : Plettenberg Bay, South Africa <http://www.equine-librium.co.za/>

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Bos AS, Brisson BA, Nykamp SG et al. Accuracy, intermethod agreement, and inter-reviewer agreement for use of magnetic resonance imaging and myelography in small-breed dogs with naturally occurring first-time intervertebral disk extrusion. J Am Vet Med Assoc 240 (8): 969 – 977, 2012.

Purpose: To determine the accuracy and agreement between evaluators and methods for diagnostic imaging – comparing MRI and 2-view myelography.

Subjects: 24 small breed dogs that presented with clinical signs of intervertebral disc disease between T10 & L6.

Method: Each dog underwent MRI and myelography and 3 reviewers independently evaluated the images obtained. Surgery was performed on the dog, which subsequently identified the true site of the lesion.

Results: Accuracy of the MRI for the determination of site of the disc lesion was 95.5% and for side was 86.5%. Myelography however, demonstrated 90.9% accuracy for site and 54.5% accuracy for side.

Conclusion: The authors concluded that, “On the basis of these results, we believe that myelography may be most advantageous for emergency diagnosis, when MRI is unavailable, or when MRI reveals multiple sites of IVD extrusion to determine the site of the extrusion causing clinical signs.” MRI appears to be more accurate than myelography.

Clinical Relevance:

If a dog has not had an MRI prior to surgery, should rehab professionals, be concerned that the cord compression is not fully relieved? With the soaring costs of both MRI and surgery, will average pet owners be able to afford both MRI and surgery, as well as rehab?

The Tallest Therapy Dog

A therapy dog, a Great Dane, is making waves in a big way. That's because Bentley, the pooch in question, is in the running to earn a Guinness World Record as the World's Tallest Dog! Did we mention that the pooch already has another Guinness Record for having the longest tail for a dog at over 26 inches?





"I'm telling you I'm not paranoid! Sometimes he only pretends to throw the ball just to make me look like an idiot!"

BN, Egenvall A, Hagman R et al. Incidence of intervertebral disk degeneration-related diseases and associated mortality rates in dogs. J Am Vet Med Assoc 240 (11): 1300 – 1309, 2012.

Purpose: To determine the incidence and distribution of IVD lesions in a large population of dogs of varying demographics and to determine mortality rates among dogs with these lesions.

Subjects: The insurance data of over 1,000,000 dogs with veterinary health care and life insurance in Sweden were reviewed (665,249 dogs with health insurance & 552,120 dogs with life insurance).

Method: Incidence and mortality rates were determined for dogs that had claimed IVD-related diseases. They were divided into two categories: Incidence in dogs <12 years of age &

mortality rate in dogs < 10 years of age.

Results: According to the results, the lifetime prevalence for IVD degeneration-related disease before the age of 12 years was 3.5%, and that these diseases caused death (euthanasia) in approximately 1 in 100 dogs. Additional data reported that Miniature Dachshund, Standard Dachshund, and Doberman Pinscher were the most highly represented breeds, and that issues were more prevalent in male than female dogs.

Clinical Relevance:

I'm not sure there is clinical relevance with this study. It's just one of those interesting topics of discussion... perhaps at your next dinner party!!



Useless Knowledge

In 1877, the first Westminster Kennel Club Dog Show was held in New York and one entry included a dog named Nellie, born with only two legs.

Dogs can detect sounds of 35 000 vibrations a second whereas humans can only hear 20000 vibrations.

Petting dogs has been shown to lower the blood pressure of dog owners.

Joaquim JGF, Luna SPL, Brondani JT, et al. Comparison of decompressive surgery, electroacupuncture, and decompressive surgery followed by electroacupuncture for the treatment of dogs with intervertebral disk disease with long-standing severe neurologic deficits. J Am Vet Med Assoc 236 (11): 1225 – 1229, 2010.

Purpose: To compare the effects of surgery, electroacupuncture plus surgery, and electroacupuncture alone for thoracolumbar intervertebral disc disease in dog with severe neurological deficits of greater than 48 hours duration.

Subjects: 40 dogs, between 3 & 6 years of age, weighing 22 – 44lbs.

Methods: Dogs were scored from 1 to 5 based on the severity of their neurologic signs, and were all classified as a grade 4 (non-ambulatory paraparesis with deficits of proprioception but intact deep pain perception) or a grade 5 (paraplegia and no deep pain perception, plus bladder dysfunction). All dogs were administered prednisone for 7 days (with appropriate dosing and weaning). 10 Dogs had decompressive surgery. 11 dogs had decompressive surgery and electroacupuncture. 19 dogs had electroacupuncture alone.

Acupuncture points used: Bladder 18, 24, & 40; Kidney 3; Gallbladder 34; & Stomach 36. The electrical current (utilizing 2 Hz and 15Hz frequency with the amplitude turned up until muscle twitching was observed) was connected on both sides to BL 18 & 23 (same side connected) and ST 36 & GB 34 (same side connected), and was administered once a week for 1 – 6 months. Treatment was discontinued when animals were classified as grade 1 or 2 IVDD score. The median number of acupuncture sessions for dogs that had surgery and electroacupuncture was 11, and for the electroacupuncture-only group, it was 5.

Results: Dogs were followed up at 6 months post surgery or post initial acupuncture treatment.

In regards to regaining of deep pain perception

(DPP): none of the dogs without DPP regained it with surgical decompression (n=6); 5 out of 8 dogs without DPP in the surgery plus electroacupuncture group regained sensation; and 6 out of 10 dogs without DPP in the electroacupuncture-only group regained deep pain perception.

When evaluating neurologic scores for each group 4/10 in the surgery group improved, the rest were unchanged; 8/11 of the surgery + electroacupuncture group improved; and 15/19 in the electroacupuncture group improved.

Interesting note: In this study, the dogs that were diagnosed by MRI to have IVDD, there was no association between grade of compression and neurologic signs.

Conclusions: When surgery cannot be performed within 48 hours after loss of deep pain perception or when surgery is not successful, electroacupuncture along might be a good option for conservative treatment of dogs with IVDD and neurologic scores of grade 4 or 5.

Modulation of the immunologic and inflammatory response in the spinal cord is a possible mechanism of action for acupuncture because inflammation appears to be more important than is compression for the development of neurologic signs.

Clinical Relevance:

This study amazes me! Perhaps all IVDD dogs should get electroacupuncture, and if you don't do acupuncture... they you can use non-needling techniques. But I really think that this study can go further and be extrapolated with many of our modalities and some of our gentle manual therapies where the goal for the selected therapy is to reduce inflammation and promote healing. Do we need to be doing as many spinal surgeries even??

Laim A, Jaggy A, Forterre F, et al. Effects of adjunct electroacupuncture on severity of postoperative pain in dogs undergoing hemilaminectomy because of acute thoracolumbar intervertebral disk disease. J Am Vet Med Assoc 234 (9): 1131-1146, 2009.

Purpose: To evaluate the effect of electroacupuncture (EA) on post-operative pain in dogs undergoing hemilaminectomy.

Subjects: 15 dogs, alternately assigned to control (conventional analgesia) or treatment (conventional analgesics and electroacupuncture) groups.

Methods: Those undergoing electroacupuncture, were treated by stimulation of the following points: One Session – two points on the bladder meridian rostral and caudal to the incision, stomach 36, spleen 6 and bladder 60; Alternate Session – governing vessel 14, Bai Hui, bladder 11, bladder 40, gallbladder 34 & 30, and liver 3. A digital electroacupuncture unit was utilized to deliver a frequency range of 2 – 100Hz of electrical current, at an intensity that was high enough to see a muscle contraction for 20 minutes per session. Points on the same side of the body were connected to deliver the current. All dogs receiving EA were treated as soon as the dog was awake and every 12 hours after surgery until the pain score was assessed at zero.

Results: The total dose of fentanyl administered during the first 12 hours after surgery was significantly lower in the treatment group than the control group, but did not differ beyond that point. Pain score was significantly lower in the treatment group than in the control group 36 hours after surgery, but did not differ significantly at other times (1, 3, 12, 24, 48, 60, or 72 hours after surgery).

Conclusion: Electroacupuncture may provide some mild benefit regarding postoperative pain in dogs following hemilaminectomy surgery.

Clinical Relevance:

This study was actually riddled with potential biases... however it may have some merit. Perhaps pain was the wrong thing to evaluate. Perhaps function would have been more appropriate. Perhaps point selection was too obtuse? In any case, it's another study that promote electroacupuncture – and in my head, modalities that target pain and inflammation.

Neurologic Grading Scale

<i>GRADE</i>	<i>DESCRIPTION</i>
0	Clinically normal
1	Paraspinal pain without neuro deficits
2	Ambulatory paraparesis (mild, moderate, or severe)
3	Non-ambulatory paraparesis & unable to weight bear
4	Paraplegia with intact deep pain perception
5	Paraplegia with absent deep pain perception

Henke D, Gorga D, Flegel T, et al. Magnetic resonance imaging findings in dogs with traumatic intervertebral disk extrusion with or without spinal cord compression: 31 cases (2006 – 2010). J Am Vet Med 242(2): 217 – 222, 2013

Purpose: To determine the prevalence of spinal cord compression subsequent to traumatic intervertebral disc extrusion.

Subjects: 31 dogs with clinical signs and history of traumatic intervertebral disc extrusion.



Method: Medical records were reviewed for dogs that had a history of trauma to the spinal region. Trauma was defined as an acute onset of neurologic signs localized to the spinal region immediately after the dog was observed to have a sudden violent impact. MRI was conducted within 10 days of the trauma.

NOTE: All dogs were hospitalized and in addition to conventional analgesic care, were also provided physiotherapy that consisted of massage, passive ROM, stretching, & coordination training three times a day, as well, magnetic field therapy administered twice a day, on the day following admission / surgery. Underwater treadmill training or swimming (10 minutes, twice daily) begin the 2nd day after hospital admission or surgery. Dogs were discharged from the hospital when their condition stabilized and they were ambulatory.

Findings (of the MRI): Traumatic intervertebral extrusion with concurrent spinal cord compression was identified in 9 (29%) of the 31 dogs. Traumatic intervertebral extrusion without concurrent spinal cord

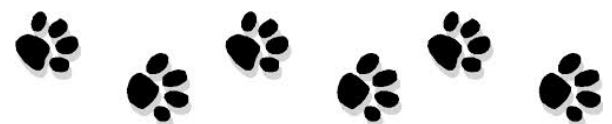


compression was identified in the remaining 22 dogs (71%). Of the 7 of the 9 dogs that had spinal cord compression, and 7 of the 22 that did not have cord compression had evidence of generalized intervertebral disc degeneration. The dogs that had cord compression were significantly older and more likely to be chondrodystrophic and have generalized disc degeneration as compared to the dogs without cord compression.

Conclusions: The authors concluded that the presence of spinal cord compression subsequent to intervertebral disc extrusion might be dependent on the physicochemical composition of the extruded material. The cord compression results only when the traumatically extruded nucleus pulposus material (which normally consists of mostly water), is unable to diffuse into the epidural fat as it would in normal circumstances.

Clinical Relevance:

Wow! So, if 71% of these dogs didn't have compression, and the goal of surgery is to reduce compression on the spinal cord... is surgery needed in as many dogs as are receiving it? Who's looking to do research in canine rehab? Blowing my mind with the possibilities here!



Fisher SC, Shores A, Simpson ST. Constrictive myelopathy secondary to hypoplasia or aplasia of the thoracolumbar caudal articular processes in Pugs: 11 cases (1993 – 2009). J Am Vet Med Assoc 242(2): 223 – 229, 2013.

Purpose: To report the presence of thoracolumbar caudal articular process (facet joint) malformations with secondary constrictive fibrosis of the spinal cord in Pugs.

Subjects: 11 pugs with neurologic dysfunctions (secondary to constrictive fibrosis because of the facet joint malformations) and 5 Pugs with no neurologic dysfunction.

Method: Medical records were reviewed for all Pugs that were managed medically or surgically for facet dysplasia or aplasia..

Results: Most common finding was paraparesis with ataxia or paraplegia without pain on palpation along the spine. Median age of the dogs was 7.7 years. 4 of the 11 dogs had urinary or fecal incontinence. 8 of the 11 underwent surgical exploration, but all (that survived surgery) continued to have neurological deficits.

Conclusion: Presence of aplastic of hypoplastic facets in the thoracolumbar region did not always produce neurologic signs. However fibrous constrictive myelopathy should be considered in Pugs with pelvic limb neurologic signs.

Clinical Relevance:

This study is just for your information. Perhaps your next patient will be a neurologic Pug! Maybe dural mobilization techniques (to stretch the fibrous tissue) would be in order. Perhaps manual therapies would help accomplish the same. Or maybe you'll never see a Pug with this issue! Who knows, but now you're smarter for reading about it!



More Useless Trivia

An American Staffordshire Terrier named Stubby earned the rank of sergeant and was the most decorated dog of World War 1.

People who own pets live longer, have less stress, and have fewer heart attacks.

The expression "three dog night" originated with the Australian Aborigines and means a cold night; so cold that you have to bed down with three dogs to keep warm.

During the 1950's and 60's about 25 different dogs, all female, were used for the Russian space program. Most of the dogs survived and most were originally strays, since it was believed they were tougher.



Laurie's take home newsletter message

As I see it, your take home message after reading these synopses is that we may need to rethink the current 'conventional wisdom' regarding intervertebral disc disease. I believe we need to offer more therapies to whether they undergo surgery or not. And for those who cannot opt for either MRI or surgery... why not try some forms of therapy – a) targeted at the spine & b) targeting function?
all animals



Cheers! - Laurie



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