Conservative Management for Intervertebral Disk Disease

NC State Veterinary Medical Forum

March 14, 2018

Conservative (non-surgical) management of intervertebral disc disease (IVDD) or intervertebral disc herniation (IVDH) is a reasonable, and sometimes necessary, treatment approach in circumstances where surgery is not an option for medical, financial or other reasons. In this hour we will discuss some of the indications as well as techniques for conservative therapy for IVDD and IVDH. The specific pathogenesis of disease will not be covered here, and for our purposes chronic or severe IVDD is synonymous with IVDH from a treatment perspective, except where noted.

Careful patient selection is key to ensuring a positive outcome for the patient and client. In most cases the determination of whether a given patient is a candidate for conservative management involves both medical and non-medical considerations. Medically speaking, it is important to assess the patient’s degree of pain, current level of function, and chronicity of signs. The presence of comorbidities that might impact recovery or preclude surgery should be noted. Prior to making treatment recommendations of any kind, an attempt should be made to confirm the diagnosis to the extent possible and possible differential diagnoses should be discussed with the client. Other circumstances affecting the decision to attempt conservative management include: the owner’s overall goals for the patient, any financial constraints, household or lifestyle factors, and the owner and patient’s level of tolerance for disability, including incontinence.

Many of these considerations will become evident during the initial physical exam and history. Still, it is important not to overlook factors that are not immediately appreciated, nor to make assumptions about the patient’s medical condition or the client’s expectations.

Physical exam should include localization of the lesion as precisely as possible based on clinical signs. History should include a general description of the household and daily routine for the patient both at the present time and prior to the injury. This information will be useful in designing any home therapy recommendations as well as setting client expectations. Of course, a complete list of medications the patient is currently on and any previous neurologic episodes or chronic medical concerns should be noted. I will often take down a diet history during the initial visit since a high proportion of my patients are overweight and nutritional management will be a factor in their long-term treatment plan even if it is not the most immediate clinical concern. I also find that clients are sometimes more forthcoming with dietary information if they believe you are inquiring because of the patient’s neurologic injury rather than as the basis of a weight management program.

In addition to the physical exam and history, a minimum database of CBC, serum chemistry and spinal radiographs are indicated to rule out other differential diagnoses and also identify any underlying metabolic or organ disease that would affect treatment recommendations such as the medications prescribed. Often, a series of lateral views with good positioning and technique is sufficient for initial
imaging. If the patient is not going to be sedated for the imaging, the area of highest concern should be imaged first.

In cases where the patient is, or has been, non-ambulatory for more than a few days a urinalysis with culture is recommended to rule out occult urinary tract infection. If there is evidence of orthopedic disease such as joint pain noted on the physical exam, it would be worthwhile to consider radiographs of the joints in question to help guide the long-term treatment plan and set realistic expectations about the rate and degree of recovery. Lastly, I recommend a thyroid panel (free T4, T3 and TSH) in any patient 7 years or older since low thyroid levels can have a significant negative effect on recovery from spinal cord injury.

In general, conservative management is most likely to have a positive outcome when the patient’s clinical signs are mild, relatively stable, and chronic or recurrent. Surgical management should always be strongly recommended if the patient is in severe pain that does not respond to injectable pain management within a few hours, or if the patient’s functional status is severely compromised or deteriorating quickly. This is particularly true of working dogs and athletes where the client expectations for recovery may be high. Clients should be advised that if their pet has lost deep pain sensation within the last 12 hours, surgical management offers a far better chance of recovering the ability to walk. Even after two or three weeks of non-ambulatory paraparesis, surgery may offer a better outcome both in the near-term and long-term than conservative management. In my opinion, clinical signs localizing to the cervical spine should be managed more aggressively since any decline in status or progression of the injury in this location can have more severe consequences for the patient. In all cases, any decline in functional status while the patient is being managed conservatively must be considered a failure of conservative management.

On the other hand, if the client cannot afford surgical management, the patient’s clinical signs are mild, household or lifestyle considerations preclude surgery, or a surgeon is not available, then conservative management should be considered - except where there is intractable pain. It is reasonable to consider humane euthanasia in cases where the patient’s quality of life is severely affected by pain and surgery is not an option.

Historically, conservative management has consisted primarily of cage rest and pharmacologic pain management. While this is still an effective approach, it is not without risk and it may not be optimal for all patients. Pure cage rest can result in greater muscle atrophy than recovery management programs that incorporate controlled activities. In addition, comorbidities such as obesity, degenerative joint disease, dermatitis, etc. may actually worsen under these conditions. In some patients, prolonged cage rest can unmask anxieties or lead to behavioral disorders that are as troublesome for the client as the spinal cord injury. Increasingly we have a wider array of treatment options available to us that help offset some of these issues and allow us to tailor a treatment plan to the individual patient. Recent evidence suggests that properly administered and controlled physiotherapy does not increase the risk of complications for IVDD and IVDH.

In all cases, any pain or discomfort should always be addressed first. In addition to standard pharmacologics (NSAID therapy, gabapentin, opioids) other medications, such as fluoxetine, amantadine, methocarbamol, trazodone, etc may be used to help reduce pain or the perception of pain. Non-pharmacologic treatments such as massage therapy, acupuncture, low-level laser therapy, pulsed electromagnetic field therapy, and transcutaneous electrical nerve stimulation are also increasingly
available. Many of these alternative treatments are associated with minimal side effects and have been shown to be effective not only for pain management but also increasing blood flow and rate of healing at the site of the injury. Furthermore, acupuncture and massage therapy can also help to lower the patient’s overall blood pressure and relieve pain and muscle spasm distal to the primary injury that occur as a result of “guarding” or altered posture and gait.

When a patient is presented with relatively acute signs and no history of back pain or previous diagnosis of IVDD, treatment should generally be restricted to therapies that do not require active involvement from the patient (i.e. cage rest and pain management) for the first 10-14 days in order to avoid exacerbating the injury. This may include some of the therapeutics listed above, as well as thermotherapy and passive range-of-motion in any limbs that are not fully weight-bearing. In these cases, if the patient is not hospitalized for care I recommend scheduling a recheck appointment with the client at 2 weeks so that you can directly evaluate the patient’s status and level of progress (or decline). Subsequent recheck exams should be scheduled every 2-4 weeks until the patient is walking again, no further recovery is expected, or a decision to pursue surgery has been made. Many patients with spinal cord injury will continue to show improvements for 6-8 months (or longer) after the initial injury.

If the patient is ambulatory on presentation, particularly if the back pain and/or neurologic signs are mild, chronic or recurrent, a reduction in the activity level is still indicated, but strict cage rest may not be warranted. In these cases, I recommend that the patient be restricted from using stairs or jumping onto furniture (or people) in the house, and they should be kept separated from other pets, for 4-6 weeks. In these cases, pain management is still the paramount concern. Low-intensity therapeutic exercise can be introduced as soon as pain is reasonably well-controlled. The specific exercises, frequency and duration of the home exercise sessions should be calibrated to the patient’s level of function, client’s ability and availability, and the existing household routine.

With conservative management, cases that were non-ambulatory on presentation with intact pain sensation should be able to stand again within the initial 10-14 day period and ideally within 7 days. Many patients will already be taking steps at this point as well. If after 10-14 days no improvement in patient status is observed, even if there has not been a decline in status the client should be encouraged to consult with a neurologist or neurosurgeon. Assuming some improvement is noted in the 10-14 day time-frame then static exercises can and should be introduced at this point in order to prevent muscle atrophy – particularly in the stabilizing muscles of the core – and reinforce proprioceptive function. Whether or not the patient is able to stand and support weight, the owner should be encouraged to place them in a standing position with normal foot placement 5-6 times each day. If the patient sinks, they should be placed in a standing position 8-10 times in a row during each session. If the patient is able to bear some weight, a sling or harness with rear support (eg. the Help-em-Up) can be used to apply some very light weight shifting. In all cases the patient should continue to be confined to a crate or small area (about 2.5 x the body length) with good traction on the floor in-between any home treatments. A yoga mat or similar rubber covering (non-slip mats for under rugs also work well) is a relatively inexpensive option for providing traction without any permanent impact on the underlying floor.

In patients with no appreciable voluntary motor function on initial presentation recovery is more variable and may progress irregularly. In these patients, any improvement is considered a sign of continued recovery and justifies continued physiotherapeutic intervention. Such improvements may...
include: return of nociception (if absent initially), improved bladder/bowel control, increased muscle tone (patients often experience a transient period of increased extensor rigidity in the limbs as the spinal cord recovers from injury), observable motor response during acupuncture (or decreased tolerance of acupuncture), and decreased stimulation intensity required to elicit a muscle contraction on NMES. In plegic patients where no evidence of improvement is noted within 1 week, referral to a neurologist or neurosurgeon should be discussed with the owner a second time. If specialty referral is declined and there is no discernible change in patient status at 4 weeks then the client should be encouraged to consider having the patient fitted for a wheelchair. (See further discussion on this topic, below.)

In all cases with patients recovering from IVDD, frequency is more important than intensity with regard to the exercise sessions. For instance, it is far preferable for any patient recovering from spinal cord injury (even the athletes) to have seven 5-minute therapy sessions throughout the day than one 35-minute session. Even for clients who work during the day and can only work with their pet in the mornings or evenings it is still preferable to break the sessions up. For example, two 7-minute sessions in the morning with a 30-minute break while the owner showers; or one 5-minute session when they first get home, followed by another just after dinner and a third just before bedtime.

Once the patient is standing on their own, the client can begin more active exercises such as assisted sit-to-stands, side-bends, and balance activities. If/when the patient is able to take steps independently or with limited sling support, more advanced activities can be introduced such as weaving, low-obstacles, variable substrates, and even incline work. There is no “formula” for the home therapy plan since each patient will progress at his or her own rate, the unique medical profile and comorbidities for each patient need to be taken into consideration, every household has a different schedule and layout, and some activities come more naturally to owners or pets than others. Whenever possible, it is ideal to use familiar activities and objects in the patient’s home therapy plan in order to reduce the learning curve and avoid any anxiety or hesitation on the part of the patient.

It is imperative that the client be educated on basic sanitation and supportive care, even if the patient has some control of the bladder and bowel. The patient should be housed on clean, dry and absorbent bedding that can be replaced and/or laundered easily. Bedding should ideally have some padding so that the patient is not placed directly on a hard surface. When resting, patients weighing less than 25 Kg at a healthy body condition should be turned every 3-4 hours. Patients with increased body condition scores or any patient weighing more than 25 Kg should be turned every other hour during the day and every 3-4 hours overnight. When sensation is compromised or questionable, an e-collar should be worn to prevent self-mutilation. In general I do not recommend leaving booties on patients while they are being cage rested. Booties can decrease sensory input at a critical time in the recovery period and in many cases they encourage pets to lick or chew at the feet.

For patients with incomplete bladder function, accommodation will need to be made to prevent bladder overfilling. While the relative merits of manual bladder expression v. indwelling urinary catheter can be debated, in cases where an indwelling catheter is placed it is usually wisest to delay the use of antibiotics until the catheter can be permanently removed. Clients should be advised to expect a urinary tract infection to develop, and if/when this occurs, I prefer to withdraw the indwelling urinary catheter and to teach the owner to express the bladder manually in order to avoid resistant infections which could affect quality of life and significantly increase the cost of medical care in the long run. I
recommend that the client carry or sling-walk the patient to their normal elimination spot to express the bladder in order to reinforce normal elimination habits.

Because of the high risk of urinary tract infection in non-ambulatory patients and the possible absence of clinical signs in an incontinent or paretic patient, I recommend checking a urinalysis and culture with susceptibility (the culture is essential) within the first month after the injury and every 8-12 weeks thereafter - even when bladder function is intact. If a bacterial infection is identified, a 5-7 day course of antibiotics should be sufficient to clear any infection with lower risk of resistance developing than longer treatment periods. A repeat culture and susceptibility should be submitted 7-10 days after the last dose of oral antibiotic (culturing too soon may lead to a false negative.) Once resolution of the infection is confirmed, return to the 8-12 week routine monitoring schedule. Evidence suggests that the use of a cranberry supplement may help reduce the frequency of UTI in higher risk patients.

Some clients may elect to use diapers or belly bands to minimize house soiling. In my experience, these adaptations (while sometimes necessary) will increase the risk of UTI, urine scald and urinary or dermatologic infection. The diaper or belly band should be left off for at least 6 continuous hours during every 24 hour period. In females it is sometimes helpful to swab the perivulvar skin with a mild antiseptic (Bactine, betadyne, etc.) before and after the diaper is used. It is important to dry the skin thoroughly before placing a diaper and it may also be helpful to apply a moisture barrier (Gold Bonds, diaper cream, etc) after the skin has been thoroughly dried. In males it is important to ensure that the diaper or belly band is not causing protrusion of the penis or preventing the penis from retracting into the preputial sheath. If this occurs, a larger or appropriately fitted product should be used. It may also be helpful to apply a lubricant to the tip of the penis prior to placing the diaper or belly band.

For cases where the patient is non-ambulatory and/or deep pain is absent after 10-14 days of conservative management but the owner is unwilling or unable to pursue surgery, a discussion about the use of a cart or wheelchair should be had. Generally, wheelchairs are indicated when there has been no improvement in plegic patients 4 weeks after the initial injury, or failure to regain the ability to stand and support weight 8 weeks after injury in paraparetic patients. Wheelchairs can have a dramatic positive impact on quality of life for pets with permanent disability, however in my opinion they should only be introduced when the likelihood of recovery is very low or has been eliminated entirely. Wheelchairs are not a total solution for the non-ambulatory pet and they only address a small portion of the mobility and management concerns for these cases.

In instances where a patient is showing progress, the use of a wheelchair may delay the return to independent ambulation because of reduced weight bearing and inhibition of the development of necessary core and pelvic limb strength. Active movement and regular weight-bearing are essential for a normal recovery (this may be particularly true in patients with elongated body conformation where greater effort is required to lift the rear end of the body.) A poorly designed or ill-fitting cart (e.g. a “loaner” or cart borrowed from a friend) can actually create or exacerbate neurologic and orthopedic at or distal to the site of the primary injury. Furthermore, even a wheelchair that is properly sized and fitted does not allow a patient to rest or lie down. Pets should never be left in their wheelchair unattended, even for a quick “potty break” outside. Because of this, wheelchairs should be introduced gradually to allow the patient to develop the necessary strength and stamina to support and steer. Wheelchairs should only be used for brief periods (20-30 minutes) during the day. Pets who have free-
range of the home indoors may benefit from being fitted with a “drag bag” to help prevent contusions, abrasions or other injuries from dragging their rear end.

In summary, successfully managing IVDD patients without surgery requires careful patient assessment and selection and thorough client education. The ideal candidate for conservative management is stable or chronically and mildly affected: ambulatory with mild or no neurologic deficits and pain that can be controlled. If the patient’s status is rapidly progressive, the patient is already non-ambulatory on presentation, or there is significant or uncontrolled pain then the client should be encouraged to consider surgery as the treatment of choice in order to preserve as much function and ensure the best patient outcome. When financial or other considerations exclude surgery as a treatment option, conservative management can be attempted. Clients should be given realistic expectations with regard to outcome, educated about supportive care and sanitation, and provided with ample support - including a thorough description of the home treatments or any in-clinic therapies that will be administered, an understanding of complications that are likely to arise (including potential emergencies or adverse drug reactions) and how to handle them, and frequent recheck exams so that the treatment plan can be adjusted according to the patient’s progress or lack thereof. If the client elects to use a wheelchair as part of their pet’s management, they should be advised about the limitations of the device and the need for ongoing vigilance and supportive care.