

A Retrospective Study of the Use of Traditional Chinese Veterinary Medicine in the Treatment of Reoccurring Canine Intervertebral Disc Disease

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ABSTRACT

Clinical records of a private referral veterinary hospital were reviewed for cases of dogs affected with reoccurrence of intervertebral disc disease (IVDD) after recovery from a previous IVDD episode. Six cases (3%) were identified that had experienced a reoccurrence of IVDD, with a spinal cord deficit of Grade 3 or higher rear limb non-ambulatory paralysis. All six patients were chondrodystrophic breeds consisting of four Dachshunds and two Pekingese. These patients had been treated with conventional Western medical therapy, including one dog with a history of two previous back surgeries. All animals had received or were receiving traditional Chinese veterinary medicine (TCVM) treatments which included acupuncture, Chinese herbal medicine and *Tui-na* before the IVDD reoccurrence. All 6 animals went from non-ambulatory to ambulatory by the end of treatment. Three of the animals were able to attain completely normal neurological function while 3 dogs had some residual mild ataxia (Grade 2) by the end of the study. This retrospective case review suggests benefit from the use of TCVM therapy for reoccurrence of IVDD even in animals with severe neurological deficits.

Key words: Intervertebral disc disease (IVDD), acupuncture, electro-acupuncture, aqua-acupuncture, traditional Chinese veterinary medicine

ABBREVIATIONS

TCVM	Traditional Chinese veterinary medicine
IVDD	Intervertebral disc disease
DNAP	Dry needle acupuncture
EAP	Electro-acupuncture
Aqua-AP	Aqua-acupuncture
GV	Governing Vessel

Intervertebral disc disease (IVDD) in the dog is a common clinical disorder associated with degeneration and protrusion of the intervertebral disc that results in compression of the spinal cord, spinal nerve and/or nerve root.¹ Its mild manifestation presents as acute neck or back pain without neurological deficits (Grade 1). It can progress in severity to neurological dysfunction with ataxia, quadriparesis, quadriplegia, paraparesis or paraplegia (Grades 2-5), (Table 1).² It occurs most frequently in the chondrodystrophic breeds such as the Dachshund, Pekingese, Shih Tzu, Beagle or American Cocker spaniel.³ Predisposed IVDD large breed examples are German shepherd, Labrador Retriever and Doberman

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Pincher.⁴ The small canine breeds often exhibit the Hansen type-I disc herniation (acute explosive rupture of the outer disc annulus fibrosis with extrusion of the inner disc gelatinous nucleosis).

Aged large canine breeds generally experience the Hansen type-II disc herniation (chronic progressive weakness and distortion of the annulus fibrosis with extrusion of the gelatinous nucleosis).^{4, 5} Less common is Hansen type-III disc disease which is an acute non-compressive disc injury. It is associated with heavy exercise or trauma, causing a normal nucleus to explode from a sudden tear in the annulus.

In the chondrodystrophic dog, disc degeneration may begin between two months and two years of age with degeneration occurring rapidly and is frequently followed by mineralization of affected discs.^{1, 3} Degeneration occurring in non-chondrodystrophic dogs is a slow aging process most evident between eight and 10 years of age.⁴ Definitive diagnosis of disc extrusion is based on advanced radiography imaging techniques such as magnetic resonance imaging (MRI) or a computed tomography scan (CT scan). Common medical therapy for dogs with pain and minimal neurologic defects is cage rest accompanied by anti-inflammatory medications such as steroids or non-

steroidal anti-inflammatories (NSAIDs), muscle relaxers and/or opiates for pain. Surgery is recommended for failure of conservative therapy, neurological deficits Grade 3 or greater and recurrent episodes of severe neurological deficits. Surgery performed < 24 hours of the loss of deep pain has a 50% chance of recovery while surgery delayed for > 48 hours carries a very poor prognosis for return to mobility.¹

The incidence and risk factors for reoccurrence of canine IVDD after disc surgical decompression has been investigated in several studies. In one large retrospective study of 265 dogs, most affected animals were chondrodystrophic breeds, with Dachshunds found to be approximately 10 times more likely to have recurrence than other breeds.⁶ Although male dachshunds have been reported to be at greater risk, there was no sex predilection in their results. The initial reoccurrence rate of surgery patients receiving prophylactic disc fenestration was 4.4% but at 4-year telephone case-follow-up, this had increased to 15.8%.⁶ In another study, the authors combined results of recurrence following disk surgery in 11 studies which totaled 1,184 IVDD canine surgery patients and reported a reoccurrence rate of 9.1% but noted that most studies did not follow the cases for an adequate period of time.⁷ These same authors in their own retrospective study of 229 cases with mean case-follow-up of 3.7 years noted an interval of 17.3 months for recurrence (range 3-71 months) in 19.2% of the dogs following the first surgery.⁷ This data indicates

that a substantial percentage of canine IVDD patients will experience an IVDD reoccurrence even if surgery and/or prophylactic procedures are performed.

In contrast to the conventional veterinary medical approach, traditional Chinese veterinary medicine (TCVM) offers a different and unique treatment approach to diagnosis and treatment of neurological disease for veterinary clinicians. From the TCVM perspective, these patients can exhibit clinical signs of *Bi* Syndrome (pain or stiffness), and/or *Tan Huan* Syndrome (paresis/paralysis) and/or *Wei* Syndrome (limb weakness and muscle wasting). IVDD with disc degeneration is considered a form of Boney *Bi* Syndrome. Using the Chinese Five Element Theory and *Zang-fu* physiology, the primary organs affected in these patients are Kidney (which influences the bone and spinal cord), Liver (which nourishes the tendons and ligaments) and Spleen (controls the muscles and limbs). Identification of the TCVM Pattern (*Bian Zheng*) in affected animals is critical to appropriate TCVM treatment and will determine selection of acupuncture points, Chinese herbal medicine, and *Tui-na* (Chinese massage techniques). There are 2 Excess Patterns: Invasion of Wind-Cold-Damp, *Qi*-Blood Stagnation and 3 Deficiency Patterns: *Qi*/*Yang* Deficiency, *Yin* Deficiency, combined *Qi*/*Yang* and *Yin* Deficiency which are associated with IVDD.⁵

As a TCVM practitioner, the author has treated 200 cases of canine IVDD Grades 1-5 in his private clinical referral practice with the TCVM modalities of acupuncture,

Table 1: Neurological deficits grading scale²

Grade	Neurological Deficits
Grade 1	Neck or back pain but no neurological deficits
Grade 2	Ambulatory paraparesis/quadriparesis (ataxia); ataxia may be present in all four limbs or pelvic limbs, with or without conscious proprioceptive deficits
Grade 3	Non-ambulatory paraparesis/quadriparesis; may or may not have a reduced or absent cutaneous trunci response; pain preserved
Grade 4	Paraplegia/Quadriplegia (no voluntary movement) with preserved deep pain sensation; fecal and urinary incontinence may be present and reduced or absent cutaneous trunci responses
Grade 5	Paraplegia/Quadriplegia with loss of deep pain; urinary and fecal incontinence; absent cutaneous trunci response

Paresis = some voluntary movement

Plegia = no voluntary movement

Table 2: Predicted Outcome of TCVM Treatment of IVDD: Reference Neurological Grading Scale⁵

Grade Scale	TCVM Treatment
1	95-100%
2	95-100%
3	90-95%
4	80-95%
5	50-60%

Chinese herbal medicine and *Tui-na* over a four-year period. The TCVM treatment results achieved with these animals has been good and closely parallels published predicted successful outcomes for TCVM treatment of canine IVDD syndrome (Table 2).⁵ In addition, the efficacy of TCVM treatment of canine non-ambulatory paralysis was also validated in a study by the author when 11 of 12 (91%) non-ambulatory canine paralysis patients experienced improved neurological function and regained the ability to walk.⁸ There are no studies in the literature, to the author's knowledge, evaluating IVDD reoccurrence after TCVM treatment and efficacy of TCVM therapy for reoccurrence of IVDD in dogs. The purpose of this retrospective case review was to evaluate IVDD recurrence in TCVM treated dogs in the author's clinical practice and the efficacy of TCVM therapy for IVDD recurrence syndrome.

MATERIALS AND METHODS

Animals selected for this review had a Western diagnosis of IVDD and were all referral patients to The Baton Rouge Veterinary Acupuncture and Integrative Medicine Practice located in Jefferson Animal Hospital, Baton Rouge, Louisiana, USA from January 2013 through February 2017. Inclusion criteria was a dog of any age, breed, sex or body weight with reoccurrence of IVDD at Grade 3 or higher during or after recovery from TCVM treatment of IVDD. There were no comorbidities that would exclude an animal from inclusion. The primary

veterinarian made the diagnosis of IVDD in each dog reviewed.

The dogs were evaluated before treatment by the author for neurological deficit and TCVM Pattern. Grades 1 through 5 were assigned for spinal cord deficits based on the following grading system: 0 = normal, 1 = pain but no neurological deficits, 2 = ambulatory paraparesis (ataxia), 3 = non-ambulatory paraparesis, 4 = paraplegia with preserved deep pain and 5 = paraplegia and loss of deep pain (Table 1). Paraparesis in this grading scale is defined as some voluntary movement and paraplegia = no voluntary movement. TCVM Pattern diagnosis was based on the patient's history and TCVM exam to include tongue and pulse, along with an in-depth assessment of the patient's neurological deficits (proprioceptive positioning, cutaneous trunci reflexes, Back-*shu* sensitivities, segmental reflexes and deep pain sensory reflexes).

Treatment of these patients consisted of the TCVM principles of moving *Qi* and Blood to remove Stagnation, breaking down Stasis in the spine, relief of pain, and to tonify *Qi*. The treatment plan consisted of three TCVM treatment modalities: acupuncture (dry needle, electro-acupuncture, aqua-acupuncture, scalp acupuncture), Chinese herbal medicine and *Tui-na* exercises.

A veterinarian certified in veterinary acupuncture (LM) performed all acupuncture treatments. Needles^a that were used for dry needle acupuncture (DNAP) and electro-acupuncture (EAP) were 0.25mm x 13mm or

Table 3: Acupuncture points and indications to treat rear limb paresis/paralysis¹⁵

Acupoints	Indications
GV-20	Sedation point
GV-14	<i>Yin</i> Deficiency, sedation, IVDD
BL-11	Influential point for bone, IVDD, thoracolumbar (TL) pain
LI-4	General pain syndromes
BL-23	Kidney <i>Yin</i> and <i>Qi</i> Deficiency, thoracolumbar IVDD, urinary incontinence
<i>Bai-hui</i>	Pelvis limb paresis or paralysis, IVDD
<i>Shen-shu</i>	Kidney <i>Qi</i> or <i>Yin</i> Deficiency, thoracolumbar pain, urinary incontinence
BL-54	Master point for pelvic limbs, pelvic limb paresis or paralysis, muscle atrophy
BL-40	Master point of the caudal back and coxofemoral joint, pelvic limb paralysis
BL-60	IVDD, cervical and thoracolumbar pain
KID-3	Thoracolumbar IVDD
KID-1	IVDD, hind limb paresis or paralysis, dysuria, urinary incontinence
LIV-3	<i>Qi</i> Stagnation, general pain conditions, pelvic limb paresis or paralysis
SP-6	Master point for the caudal abdomen and urogenital tract, pelvic limb paralysis
GB-34	Influential point for the tendon and ligaments, weakness, paresis or paralysis
ST-36	General <i>Qi</i> tonic, generalized weakness, hind limb weakness
ST-41	<i>Wei</i> syndrome, pelvic paresis or paralysis
<i>Wei-jian</i>	Paralysis of the tail, pelvic limb weakness
<i>Liu-feng</i>	Pelvic limb paresis or paralysis
<i>Hua-tuo-jia-ji</i>	Thoracic and lumbar pain, IVDD
BL-19,20,21,22,24	Local points for IVDD at TL spine and cranial lumbar spine

25mm (32# x ½" or 1") or 0.22mm x 13mm or 25mm (34# x ½" or 1") sterile stainless steel disposable acupuncture needles depending on patient size and acupoint location. Acupoint selection was based on TCVM treatment principles, pattern diagnosis and location of spinal cord injury (Table 3). EAP using an electro-acupunctoscope^b performed during treatment consisted of connecting 8 to 12 bilateral or bilateral crossing acupoints while other acupoints were stimulated by DNAP. Connected acupoints were electrically stimulated with direct current 20 Hz for 15 minutes and 80/120 Hz for 15 minutes. Scalp acupuncture was performed on slow responding Grade 3 and for all Grade 4 and 5 patients every other acupuncture treatment session (Table 4).⁹ At the end of each treatment session, aqua-acupuncture (aqua-AP) was performed

using 27 gauge x ½" sterile needles with 0.1cc of injectable 1000mcg Vitamin B₁₂ at selected acupoints (i.e. BL-40, BL-54, BL-60, ST-36, and *Hua-tuo-jia-ji*).

The treatment frequency protocol for all clinical cases were organized as follows: patients received at least twice weekly treatment until ability to stand was achieved, then at least once weekly until ambulatory. In addition, follow-up treatments to help prevent IVDD reoccurrence were organized as bi-weekly treatments for 2 sessions and then monthly. Patients that became clinically normal received maintenance sessions recommended at a minimum of twice/year.

Study animals received oral administration of 1-3 Chinese herbal medicines: Double P II^c, *Bu Yang Huan Wu*^c and Body Sore^c. Double P II is a veterinary specific

Table 4: Scalp acupuncture points for paralysis patients^{9,17}

Acupoints	Indications
Midline: From GV-21 to <i>Long-hui</i>	Paresis, paralysis, and urinary incontinence
Diagonal: From GV-21 to TH-23	Paresis, paralysis in the opposite rear limb
Diagonal: From GV-20 to <i>Nao-shu</i>	Paresis, paralysis in the opposite rear limb

Table 5: Ingredients and actions of the Chinese herbal medicine Double P II^c (modified *Da Huo Luo Dan*)¹⁰

English Name	Chinese Pin Yin	Actions
Angelica	<i>Dang Gui</i>	Nourishes Blood, activates Blood and relieves pain
Ligusticum	<i>Chuan Xiong</i>	Activates Blood, resolves Stagnation
Paeonia	<i>Chi Shao Yao</i>	Cools Blood, resolves Stagnation
Carthamus	<i>Hong Hua</i>	Moves Blood, resolves Stagnation
Myrrh	<i>Mo Yao</i>	Resolves Stagnation and relieves pain
Olibanum	<i>Ru Xiang</i>	Resolves Stagnation and relieves pain
Notogengeng	<i>Tian San Qi</i>	Moves Blood, stops hemorrhage
Draxonis	<i>Xue Jie</i>	Resolves Stagnation
Buthus	<i>Quan Xie *</i>	Resolves Stagnation
Scolopendra	<i>Wu Gong **</i>	Clears Internal Wind, detoxifies
Eucommia	<i>Du Zhong</i>	Strengthens back, tonifies Kidney Yang
Dipsacus	<i>Xu Duan</i>	Strengthens bones and ligaments, tonifies Kidney Yang
Drynaria	<i>Gu Sui Bu</i>	Strengthens bones and tonifies Kidney Yang
Morinda	<i>Ba Ji Tian</i>	Warms Yang and tonifies Kidney
Cibotium	<i>Gou Ji</i>	Tonifies Kidney Yang and strengthens bones
Achyranthes	<i>Niu Xi</i>	Tonifies Kidney Yang and strengthens the rear limbs
Psolarea	<i>Bu Gu Zhi</i>	Tonifies Kidney Yang and strengthens bones
Astragalus	<i>Huang Qi</i>	Tonifies Qi
Strychnos	<i>Ma Qian Zi</i>	Activates Channels, relieves pain, clears Wind-Damp
Aconite	<i>Fu Zi</i>	Warms Yang and Channels
Lindera	<i>Wu Yao</i>	Moves Qi and relieves pain
Licorice	<i>Gan Cao</i>	Harmonize

* May substitute *Tu Bie Chong*

** May substitute Earthworm *Di Long*

patented modification of *Da Huo Luo Dan* (Table 5). It was used to address the Chinese principles of treatment to break down Stasis in the spine, move *Qi* and relieve pain and the Western medical indications of acute phase IVDD, spinal stenosis and disc protrusion resulting in paresis and paralysis.¹⁰ Patients were dosed at 0.5g per 20 lb body

weight (BW) twice daily. *Bu Yang Huan Wu* was used to address the Chinese principles of treatment to tonify *Qi*, nourish and move Blood and to smooth the Channels with Western medical indications for patients with weakness and ataxia after an IVDD episode (Table 6).¹⁰ Patients were dosed at 0.5g per 10-20 lbs BW twice daily (BID).

Table 6: Ingredients and actions of the Chinese herbal medicine *Bu Yang Huan Wu*¹⁰

English Name	Chinese <i>Pin Yin</i>	Actions
Astragalus	<i>Huang Qi</i>	Warms and tonifies <i>Qi</i>
Angelica	<i>Dang Gui</i>	Nourishes Blood
Paeonia	<i>Bai Shao</i>	Nourishes Blood and <i>Yin</i> , soothes Liver <i>Yang</i>
Earthworm	<i>Di Long</i>	Breaks Blood Stagnation
Ligusticum	<i>Chuan Xiong</i>	Activates Blood and relieves pain
Carthamus	<i>Hong Hua</i>	Breaks Stasis and relieves pain
Persica	<i>Tao Ren</i>	Breaks Stasis and relieves pain

Table 7: Ingredients and actions of the Chinese herbal medicine Body Sore^c (modified *Shen Tong Zhu_Yu*)¹⁰

English Name	Chinese <i>Pin Yin</i>	Actions
Ligusticum	<i>Chuan Xiong</i>	Relieves pain and activates Blood
Notopterygium	<i>Qiang Huo</i>	Relieves pain and activates Blood
Angelica	<i>Dan Gui</i>	Activates Blood, resolves Stagnation and relieves pain
Epimedium	<i>Yin Yang Huo</i>	Tonifies Kidney <i>Yang</i> and <i>Yin</i>
Achyranthes	<i>Niu Xi</i>	Strengthens bones and limbs
Cuscuta	<i>Tu Su Zi</i>	Nourishes Kidney and Liver
Corydalis	<i>Yan Hu Suo</i>	Moves <i>Qi</i> /Blood, resolves Stagnation, relieves pain
Paeonia	<i>Chi Shao</i>	Relieves pain and cools Blood
Eucommia	<i>Du Zhong</i>	Strengthens back and tonifies <i>Yang</i>
Psoralea	<i>Bu Gu Zhi</i>	Strengthens back and tonifies <i>Yang</i>
Myrrh	<i>Mo Yao</i>	Moves Blood, relieves pain
Olibanum	<i>Ru Xiang</i>	Moves Blood, relieves pain
Milletia	<i>Ji Xue Teng</i>	Nourishes Blood
Persica	<i>Tao Ren</i>	Breaks down Blood Stasis, relieves pain
Carthamus	<i>Hong Hua</i>	Breaks down Blood Stasis, relieves pain

Table 8: *Tui-na* massage therapy techniques for IVDD patients^{5,16}

<i>Tui-na</i> Technique	Description
<i>Mo-fa</i> (Touching skin and muscle)	Touching or rubbing in a circular motion with the palm of the hand or one or more fingers at <i>Da-feng-men</i> , GV-14, then from BL-13 to BL-35
<i>An-fa</i> (Pressing)	Apply gentle pressure to acupoints for paresis/paralysis (i.e. <i>Hua-tuo-jia-ji</i>)
<i>Yi-zhi-chan</i> (Single thumb)	Using the thumb pressed firmly on the acupoint, with a back to forward quick motion at BL-40, KID-1, and LIV-3
<i>Nie-fa</i> (Pinching and holding)	Pinching and holding the skin along the spine moving forward from the tailbone to the cervical thoracic region
<i>Rou-fa</i> (Rotary kneading)	Rotary kneading from <i>Bai-hui</i> to GV-14

Body Sore is a veterinary specific patented modification of *Shen Tong Zhu Yu* which was used to address the Chinese principles of treatment to invigorate *Qi* and Blood, resolve Stagnation and relieve pain with Western medical indications for use in patients with musculoskeletal and back pain (Table 7).¹⁰ Patients were dosed at 0.5g per 10-20 lb BW, BID. Patients received herbal medications until clinical signs were resolved or there was no longer improvement in neurological clinical signs.

The third TCVM therapy used for treatment of IVDD cases in this study was *Tui-na* massage techniques. It was used on all study animals. Owners were taught *Tui-na* exercises to be performed twice daily at home with each session lasting approximately 10 minutes (Table 8). *Tui-na* exercises were performed until the study patients regained neurological function to walk or no further improvement in neurological clinical signs.

Criteria for successful clinical outcome was set as a non-ambulatory animal regaining successful ambulatory ability. Partial successful clinical outcome was improvement in neurological grade with some ability to stand but forward ambulatory ability without aide not achieved. Case failure was set as no change in the neurological grade assigned to the animal at study start and by study conclusion.

RESULTS

There were 200 canine IVDD cases which occurred during a four-year period that were available for review for inclusion in this study. Out of these cases, 6 cases (3%) met inclusion criteria. These six dogs were chondrodystrophic breeds, consisting of four Dachshunds and two Pekingese dogs. The ages ranged from 1 to 9 years old with most animals 5 years or older (4/6) and included 3 males (2 neutered) and 3 females (2 spayed). IVDD reoccurrence in these 6 dogs ranged from 1 month (case 5) to 24 months (case 2) with an average of 11 months.

All patients (cases 1-6) in this study were treated with Western conservative medicine during their first IVDD episode (Table 9). All cases had received or were receiving TCVM treatments when they experienced their IVDD reoccurrence episode. Case 2 experienced two Grade 3 IVDD reoccurrences, (11/16/2015 and 06/16/2017). Case 3 experienced two back surgeries prior to the first TCVM treatment for Grade 2 neurological deficits. Approximately 1.5 years later the dog experienced a Grade 5 IVDD reoccurrence. Four dogs (cases: 1, 2, 4, 6) had complete recoveries as a result of previous TCVM treatment modalities before their IVDD reoccurrence. Only one patient (case 5) was taking the herbal medicine formulas: Body Sore and Double P II prior to his Grade 3 IVDD reoccurrence.

Initial TCVM exams exhibited clinical signs of *Tan Huan* (paralysis/paresis) Syndrome, *Bi* (pain and stiffness) Syndrome and *Wei* (muscle weakness) Syndrome along

Table 9: Patient Signalment and IVDD Reoccurrence Case Data

Case #	Sex Age (yrs) Body wt.	Breed	Neurological Deficits Grade	Number Acupuncture Treatments and Time Interval	Regained Ability to Walk and Neurological Grade	Residual Neurological Deficits
1	M / 5yrs/ 5.3/kg	Dachshund	3	(6) 5 weeks	Yes (Grade 0)	None
2*	M/ 7yrs / 7.5 kg	Dachshund	3	(2) 1 week (5) 3 weeks + 1 day	Yes (Grade 2)	Mild rear end ataxia
3	F / 7yrs / 4.3 kg	Dachshund	5	(8) 4 weeks + 5 days	Yes (Grade 2)	Mild rear end ataxia
4**	F / 9yrs / 5.1 kg	Dachshund	5	(10) 6 weeks + 5 days	Yes (Grade 2)	Mild rear end ataxia
5	M / 4yrs / 6.1kg	Pekingese	3	(6) 4 weeks	Yes (Grade 0)	None
6 **	F / 1yrs / 4.8 kg	Pekingese	4	(2) 1 week + 2days	Yes (Grade 0)	None

* Two Grade 3 reoccurrences 1.5 years apart

with a neurological exam documenting non-ambulatory rear limb paralysis in all study dogs. Neurological grade assessment for individual animals ranged from Grade 3 (cases 1, 2, 5) to Grades 4 (case 6, urinary incontinence) and 5 (cases 3, 4; no deep pain sensation) based on the neurological grading scale (Tables 1, 9). Initial TCVM exam revealed a lavender tongue color (cases 1, 2, 4) or purplish pink (cases 3, 5, 6). Femoral pulses of all patients, except case 4, were fast/wiry. Case 4 femoral pulses were fast but weak and considered a result of the patient's age of nine years. Clinical signs recorded for all cases were consistent with an initial pattern diagnosis of *Qi* and Blood Stagnation of the thoracolumbar/lumbar spine. The two urinary incontinence cases (4, 6) also had a pattern diagnosis of Kidney *Qi* Deficiency.

All patients were administered Double P II for *Tan Huan* (paralysis/paresis) Syndrome and received this herbal formula until able to walk. Western conservative medications as prescribed by the primary veterinarian were continued for all patients until prescription completion or until no longer required. For those patients with poor pain control, Body Sore was added to their medication treatment protocol. Cases 1, 5, and 6 were the only three patients requiring the use of Body Sore and received this herbal formula until the back pain resolved (range = 2-4 weeks). *Bu Yang Huan Wu* was given to 3 patients (cases 2, 3, 4) over a 2-month period with slow recovery characterized by persistent Grade 3 or greater neurological signs, continued rear limb ataxia, and a TCVM Pattern diagnosis of *Qi* and/or *Yang* Deficiency.

All patients in this retrospective study progressed from non-ambulatory to ambulatory without assistance, therefore being categorized as successful clinical outcome. Improvement of neurological function to the point of developing the capability to walk averaged 5.58 acupuncture treatment sessions (Table 9). Three of the 6 dogs had complete resolution of their neurological deficits (cases 1, 5, 6) while 3/6 (cases 2, 3, 4) dogs still had residual Grade 2 mild rear limb ataxia. There were no treatment failures.

Clinical Case Examples

Case 3 was a 7-year-old, 4.3 kg, spayed female Dachshund with a lengthy history of reoccurring episodes of IVDD and two previous successful back surgeries. Her first surgery occurred in November 2012, and her second surgery, 8 months later, in July 2013. Following the second surgery, the dog had an arched appearance of the thoracolumbar spine with a noticeable curvature to the left along with moderate to mild rear limb proprioceptive positioning deficits. The dog was referred for TCVM evaluation due to persistent IVDD Grade 2 neurological deficits. The dog's only other medical problem was chronic skin allergies.

On presentation, the dog had great *Shen*, was a Fire Constitution, and very active when placed on the floor.

Her tongue was lavender along with normal temperatures of the nose, ears and body. Femoral pulses were slightly fast and weaker on the right. She had mild to moderate bilateral proprioceptive positioning deficits of the rear limbs and epaxial muscle atrophy with no reaction to cutaneous trunci reflex testing in the thoracolumbar (T12-L2) spine. She was assigned a Grade 2 spinal cord deficit. The TCVM Patterns diagnosed included chronic *Qi* and Blood Stagnation of the thoracolumbar (TL) spine, with *Tan Huan* and *Wei* syndromes. The herbal formula Double P II^c (0.5g per 20 lbs BW, BID) was started as well as daily *Tui-na* exercises by her owner at home.

Weekly acupuncture treatments which included DNAP: GV-20/14, BL-11/20/21/23/24, *Shen-shu*, *Bai-hui*, BL-40/60, KID-3/1, LIV-3, LI-4, ST-36; EAP: BL-20+KID-1 (bilateral), BL-21+*Shen-shu* (crossed) and Aqua-AP: KID-1, BL-40/54, ST-36, *Hua-tuo-jia-ji* from BL-20 to BL-24 were initiated at the same time. The EAP acupoints were stimulated for 15 minutes at 20 Hz and 15 minutes at 80/120 Hz. Each of the Aqua-AP acupoints were injected with 0.1 cc vitamin B₁₂. *Tui-na* techniques including *Mo-fa* for 1 to 2 minutes, *An-fa* 12 times, *Rou-fa* 12 times (clock-wise and counter clock-wise) were performed twice daily. A week later, the dog appeared to be doing better. She had good *Shen* and a pink tongue. While there was no improvement in the left rear limb proprioceptive positioning, the right rear limb deficit had improved. No other specific changes were noted. The acupuncture treatment remained the same and Double P II^a was continued for another two weeks.

At day 31, the dog had received three acupuncture treatments with only minor changes to her initial neurological clinical signs. After discussion with the owner, it was thought that no other significant neurological improvements were likely due to the chronic changes that had occurred subsequent to the previous two surgeries. Acupuncture treatment frequency was decreased to monthly intervals and over time the intervals were extended to every three to four months. The dog did well for approximately 1 year on this regime. During the maintenance appointment, the owner indicated that there had been some gait abnormalities for the past week. TCVM exam revealed a markedly ataxic dog with rear leg weakness and unchanged proprioceptive positioning deficits. She had a pink tongue, with slightly fast femoral pulses which were weaker on the right side. Nose, ears, and body temperatures were all normal. No other specific changes were noted. A diagnosis of Grade 2 neurological deficits was made but due to the increase of rear limb weakness and ataxia, IVDD reoccurrence was suspected.

Acupuncture treatment was intensified with the addition of EAP therapy and the herbal formula Double P II^c was restarted. At the 1 week recheck, there was clinical improvement and 1 month was set for the next session. Four weeks later, the dog started dragging one leg. Absolute cage rest was advised until the dog could

be examined at her scheduled appointment the next day. The following morning the dog's owner observed the leg dragging had progressed to inability to walk. Clinical exam revealed that she was non-ambulatory with subdued *Shen*. A neurological exam revealed she had prominent rear limb proprioceptive positioning deficits with no deep pain sensation. She had segmental reflexes on the left rear limb but minimal on the right rear limb. A diagnosis of Grade 5 IVDD reoccurrence was made with a TCVM Pattern diagnosis of acute *Qi* and Blood Stagnation of the thoracolumbar spine. Due to her neurological clinical signs and history of reoccurring IVDD, the prognosis for recovery was 50%. Surgery as a treatment option would not be pursued.

Due to the severity of the dog's paralysis, twice weekly acupuncture treatments were initiated until the dog could stand on her own. Every other acupuncture treatment included scalp acupuncture (Table 4). *Liu-feng*, *Wei-jian*, GB-34, and ST-41 acupoints were also added to acupuncture treatments (Table 3). After 1 month of treatment (7 AP sessions), the dog improved and was able to initiate a few short steps. After two more weekly acupuncture treatments, her ambulatory mobility improved to pre-reoccurrence neurological level. Double P II^c was continued for another month and *Bu Yang Huan Wu*^c (for *Qi* Deficiency, weakness after IVDD) was added to her Chinese herbal medicine protocol for 2 months. The dog has not had another IVDD reoccurrence (approximately 2 years) and receives IVDD maintenance acupuncture treatments every 3 months.

Case 5 was a 4-year-old, 6.1 kg, neutered male Pekingese with a history of two episodes of back pain over 6-month periods that were diagnosed as Grade 1 IVDD. He responded well to conservative Western treatments of cage rest, pain medication and muscle relaxers. Following the second Grade 1 episode, survey radiographs were performed and disc mineralization was observed at T-10 and T-12 intervertebral disc spaces. The dog was referred for TCVM evaluation and possible treatment. Western medications he was receiving at the time of presentation for TCVM evaluation were Rimadyl®^d (4.4 mg / kg BW) once daily and Tramadol^e (5 mg/kg BW every eight hours, as needed). During the TCVM exam, the dog's constitution was identified as Water. He had a pink tongue, normal body temperature (nose, ears, and body) and walked normally with no signs of ataxia or proprioceptive positioning deficits. The rear limb strength was normal; however, he had a 2+ sensitivity of his Back *Shu* Association points from T-10 to the TL junction suggesting *Bi* Syndrome and another episode of Grade 1 reoccurring IVDD.

TCVM Pattern diagnosis included *Qi* and Blood Stagnation of the TL spine area. The Western medicines (Rimadyl® and Tramadol) were only partially controlling the dog's pain, so the herbal formula, Body Sore^c (0.5grams per 10 to 20 lb BW, BID) was added to his pain medication

protocol. Treatment was started with weekly acupuncture which included DNAP: GV-20/14, BL-11/19/20/21/23, *Shen-shu*, *Bai-hui*, BL-54/40, KID-3, LI-4, ST-36 and EAP: BL-19 + BL-22 (leads crossed), BL-23 + *Shen-shu* (crossed). The EAP points were stimulated for 15 minutes at 20 Hz and 15 minutes at 80/120 Hz. The dog would not allow Aqua-AP during the first treatment. A week later, the dog was doing well with decreased sensitivity at Back *Shu* Association points along the TL spine. No neurological or proprioceptive positioning deficits were noted. The dog was more relaxed during the second treatment and allowed Aqua-AP at acupoints: BL-40, BL-54 and ST-36.

The dog's third treatment scheduled for 3 weeks later was preceded 4 days earlier by an episode of severe pain, anorexia, constipation and a visit to the veterinary teaching hospital emergency clinic. He was again diagnosed with a Grade 1 IVDD back pain reoccurrence episode. He was given a Rimadyl® injection at that time and improved. TCVM exam during the morning of his third appointment revealed a +2 Back *Shu* Association point sensitivity at the same area as previously identified. Acupuncture was modified to include *Hua-tuo-jia-ji* from BL-19 to BL-23. His herbal formula program was modified with the addition of Double P II (0.25g/10 lb BW, BID) to help break chronic *Qi* and Blood Stagnation in the TL spine. After his appointment, he was walking normally as he headed home with his owner. After work that evening, the owner returned home to find the dog non-ambulatory.

The owner returned for TCVM assessment the following morning. On exam, the dog's tongue was dark pink/slightly purple and was unable to stand or walk. He had bilateral proprioceptive deficits, decreased panniculus (L1-2) and bilateral segmental reflexes, but had preserved bilateral deep pain sensation and no evidence of urinary or fecal incontinence. In addition to the TCVM Pattern diagnosis of thoracolumbar *Qi*-Blood Stagnation, the dog was also exhibiting significant *Wei* and *Tan Huan* syndromes. A clinical diagnosis of Grade 3 IVDD rear limb non-ambulatory paralysis was made. At the end of the exam, after discussion, the owner elected to continue with TCVM therapy versus surgery.

The dog then began a new TCVM treatment plan. His herbal formula Double P II^c was increased to 0.5g/ 10 lb. BW twice daily (prescribed dose for his body weight). He was exercise restricted to absolute cage rest and the owner would begin daily *Tui-na* exercises at home. He received acupuncture treatments twice weekly until he was standing (3rd session). By his sixth acupuncture treatment, he was walking and made a full clinical recovery. Once the clinical signs had resolved, maintenance acupuncture treatment to prevent IVDD reoccurrence was started, targeting the Kidney, Liver, and Spleen acupoints. With the use of maintenance acupuncture treatments, which initially began as biweekly treatments and then tapered to three-month intervals, the dog has not experienced significant IVDD reoccurrences (approximately 2 years).

DISCUSSION

In this retrospective study, 3% (6/200) of IVDD cases that underwent TCVM treatment in a private referral practice developed a reoccurring Grade 3 or greater IVDD non-ambulatory rear limb paralysis. Length of time from initial IVDD episode to first reoccurrence ranged from one month (case 5) to 2 years (case 2), with a case study average of 11 months. In addition, 1% (2/6) of the cases identified had more than 1 reoccurrence of Grade 3 or greater IVDD episodes. The sexes were equally affected with 3 males and 3 females. In general, affected animals were older with only 1 dog less than 4 years old (range 1-9 years, average age 5.5 years). Body weights ranged from 4.3 to 7.5 kg with an average of 5.5 kg. All patients identified in this series had received or were receiving TCVM acupuncture treatments prior to their IVDD reoccurrence. Similar to other reviews, all patients were Dachshunds or Pekingese which are chondrodystrophic breeds who have a genetic propensity for IVDD.^{6,7,11}

TCVM treatment modalities for all patients consisted of Chinese herbal medicine, acupuncture and *Tui-na*. There were no adverse effects noted associated with any of these TCVM treatment modalities. No matter the clinical scenarios, number of times, or severity of IVDD insult, all patients in this case series regained their ability to walk which dramatically improved quality of life for the dog as well as animal care for the owner. Three of the dogs gained completely normal function (Grade 0) while 3 of the 6 dogs had some mild residual Grade 2 neurological deficits still present.

One of the limitations to this study was the small number of IVDD reoccurrence cases identified. Post-surgical reoccurrence surveys have been able to perform retrospective studies on case-loads of 1,184 dogs versus the 200 cases to draw from for this study. Although only a small number of reoccurrence cases were identified, there were some trends observed. Dogs tended to be middle aged or older animals with chondrodystrophic breeds clearly over represented. Affected animals can have an IVDD recurrence even when undergoing maintenance TCVM treatment and relapses (IVDD reoccurrence) demonstrated wide variability. Case 2, for example, had 2 previous IVDD episodes occurring 2 years apart and the third episode occurring 1 year later. The predictability of which patients will develop reoccurrence is difficult and awaits larger studies, although some studies have noted calcified discs on survey radiography appears to be a highly significant risk factor.^{6,7,11} When comparing retrospective studies evaluating IVDD reoccurrence after surgical decompression in dogs, the reoccurrence rate was 4.4% but could be as high as 19.2% when surgery patients were followed for a longer period of time such as 3.7 yrs.⁷ The current review of 200 dogs following TCVM therapy for reoccurrence had a rate of only 3% which is lower than literature reports following surgery but cases in this study

were only followed for 2-3 years.

One of the most important pieces of information gathered from this series is that continuing use of TCVM treatment modalities is an effective option when working with canine patients with an IVDD reoccurrence. Even severe neurological deficits, as demonstrated by cases 2 and 4 (Grade 5 IVDD) can respond and attain mobility. After resolution of clinical signs in dogs suffering an IVDD reoccurrence, it is important to routinely perform maintenance acupuncture treatments anywhere from 1 to 4-month intervals, depending on the patient's clinical signs. In addition to acupuncture maintenance therapy for these dogs, the use of Chinese herbal medicines such as Epimedium Formula that treats the underlying root cause of this syndrome, Kidney *Jing* Deficiency may be helpful in preventing IVDD reoccurrence. From a Western viewpoint, there are a growing number of research studies documenting the neuroprotective effects of the total flavonoid fraction contained in Epimedium.^{12, 13, 14}

To date, none of the patients in this series have had another Grade 3 IVDD reoccurrence. It is hoped that the information provided in this study will give the TCVM practitioner confidence to continue the use of TCVM with patients who experience reoccurring episodes of IVDD, especially when faced with severe neurological deficits of Grade 3 or greater.

FOOTNOTES

- ^a Kingli and Jing Mei Acupuncture Needles, Dr. Xie's Jing Tang Herbal Inc. Reddick, FL, USA
- ^b JT-1A Electro-Acupuncture Stimulator, Dr. Xie's Jing Tang Herbal Inc, Reddick, FL, USA
- ^c Dr. Xie's Jing Tang Herbal, Inc, Reddick, FL, USA
- ^d Rimadyl, Zoetis Services LLC, Parsippany, New Jersey, USA
- ^e Tramadol, generic product

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