

Case Series

The Use of Traditional Chinese Veterinary Medicine in the Treatment of 5 Cases of Neoplastic Bone Disease

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ABSTRACT

In veterinary medicine, neoplastic disease of bony origin is a frustrating disease to treat due to poor long-term prognosis and complications from conventional medical techniques. Osteosarcomas produce pathologic fractures, uncontrollable pain and invariably include metastasis despite use of surgical and chemotherapeutic modalities. Nasal chondrosarcomas include chronic infection, epistaxis, extensive local tissue destruction and rare metastasis. This case series reviews 5 clinical cases of osteosarcoma or nasal chondrosarcoma that were treated with Traditional Chinese Veterinary Medicine either as an alternative medical treatment or as part of an integrative medicine protocol. All 5 cases had malignant aggressive neoplasms with predicted poor quality of life and survival rates. In case 1 (metatarsal osteosarcoma), the dog had a good quality pain-free life for 21 months after diagnosis, greatly bettering the expected best-case scenario of 1 year and was euthanized due to unrelated illness. In case 2 (nasal chondrosarcoma), the dog has bested a median survival of 3 months when left untreated and has survived 38 months since initial presentation in good health. TCVM treatment in cases: 3 (appendicular osteosarcoma), 4 (maxillary osteosarcoma) and 5 (appendicular osteosarcoma) demonstrate the benefit of using this therapeutic modality to improve the quality of life in veterinary patients. All 3 of these patients went beyond the predicted survival rate, were maintained with reduced levels of pain and were able to eat and exercise until the last months of their disease.

Key Words: Acupuncture, Traditional Chinese Veterinary Medicine, Chinese herbal medicine, osteosarcoma, chondrosarcoma, canine, herbs, neoplasia, integrative medicine

ABBREVIATIONS

P	Phalanx
DJD	Degenerative Joint Disease
FNA	Fine Needle Aspirate
TCVM	Traditional Chinese Veterinary Medicine
CBC	Complete Blood Count

Neoplasia of bony origin is a devastating disease for canine veterinary patients carrying a high mortality rate and poor long-term prognosis. Osteosarcoma is the most common of these tumor types comprising over 75% of bony neoplasia cases.^{1,2} Less commonly diagnosed in veterinary patients are chondrosarcoma (5-10%), fibrosarcoma (5%), and hemangiosarcoma (5%).¹ Median survival times for osteosarcoma patients with amputation alone ranges from 12 weeks to 20 weeks.^{1,2} Osteosarcoma is an aggressive neoplastic process with a high rate of metastasis while chondrosarcoma is slow to metastasize. The disease process can be insidious with the first clinical sign of appendicular osteosarcoma merely a lameness noted by the caretaker.^{1,2} This paper presents an interesting case series of bony neoplasia treated with Traditional Chinese Veterinary Medicine (TCVM) in 5

dogs.

Case 1 was a 6-year-old female spayed Greyhound who presented for acute lameness in the right rear limb. An obvious swelling was noted by the attending veterinarian at the level of the second phalanx of the fourth digit. Radiographs revealed a 5th metatarsal fracture and remodeling of the 4th digit at the level of P1-P2 (Figure 1). Concurrent radiographs of the thorax were normal. Diagnostic rule-outs were osteosarcoma, fungal infection, trauma and osteoarthritis with a fracture. Evaluation of the images by a board-certified radiologist verified the fracture but was inconclusive as to etiology.

Fine needle aspirates (FNA) were obtained from the area in question 2 weeks later along with the ipsilateral popliteal lymph node. Pathology evaluation at a commercial diagnostic laboratory^a returned a diagnosis of mild reactive lymphoid hyperplasia in the popliteal node and no definitive diagnosis for the bone FNA. Additional radiographs were obtained which yielded a diagnosis of osseous changes at the fracture site suggestive of an aggressive lesion such as infection or underlying neoplastic disease.

A second FNA obtained 12 days later under Propofol^b sedation returned an inconclusive diagnosis of osteoblastic proliferation with evidence of osteolysis. Tissue biopsy was recommended to increase the chance of a definitive

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diagnosis; therefore, the patient was scheduled for biopsy 1 week after the second FNA with an oncologist. The pathologic diagnosis reported by the pathologist this time was appendicular osteosarcoma of the 5th metatarsal bone. Recommendations from the oncologist included chemotherapy with carboplatin or doxorubicin and amputation of the limb.

Clinical outcomes presented to the owner comparing amputation alone to amputation accompanied by chemotherapy gave survival times of 3-4 months or 10-12 months respectively. Other options included palliative radiation and treatment with pamidronate. The owner elected to decline further conventional therapies and scheduled an acupuncture consult 3 weeks post biopsy with the author (MB)^c. After careful weighing of all options, the owner elected to support the patient with an immune/anti-oxidant support formula^d, a glandular complex immune support supplement^e and digestive enzymes^f while treating with acupuncture and Chinese herbal medicine based on TCVM pattern diagnosis.

The first acupuncture session was scheduled for the

next day. The TCVM pattern assessment noted the tongue was dark pink with purple and pulses were fast with a wiry quality. The owner reported that the dog enjoyed cooler temperatures, had a great appetite with normal bowel movements, normal urination, was sleeping well and had experienced no behavior changes. Lameness was a 5/6 with toe touching lameness noted. The TCVM Diagnosis was Stagnation in the Bone with Heat. The initial acupuncture treatment included dry needle technique by a certified veterinary acupuncturist at LI-10, LI-4, ST-36, BL-23, BL-11, LIV-3 (Left), and GV-14 (Table 1) with Lekon sterile acupuncture needles^g. A homeopathic remedy for pain and inflammation^h was utilized for aqua-acupuncture at BL-23 initially using 1 ml each side. The patient was sent home with the Chinese herbal medication, Bone Stasis Formulaⁱ (Table 2), to address Stagnation in the bones.

Weekly acupuncture was continued for 6 treatments. After 6 weeks, the frequency was reduced to every 14 days due to the dog's excellent clinical response. No swelling was noted and only 1 episode of mild lameness (Grade 1/6) occurred related to trauma when the owner stepped



Figure 1: Case 1, a 9-year-old spayed female Greyhound presented for lameness in the right rear leg. This radiograph was taken 2 weeks after initial presentation. The lesion at the fracture site was diagnosed via biopsy as appendicular osteosarcoma.

Table 1: Acupoints and indications for treatment in traditional Chinese veterinary medicine ⁹

Acupoint	Location	Indications
LI-10	2 cun distal to LI-11 between the extensor carpi radialis and the common digital extensor muscles	Immune regulation, general tonic, Wind-Heat, elbow pain, thoracic and pelvic limb weakness, diarrhea
LI-4	Between the 2nd and 3rd metacarpal bones and at the midpoint of the 3rd metacarpal bone on the medial side	<i>Yuan</i> point, master point for face and mouth, nasal discharge and congestion, dental pain, immune regulation, clear Heat
BL-23	1.5 cun lateral to the caudal border of the dorsal spinous process of the 2nd lumbar vertebrae	Back- <i>Shu</i> point for Kidney, Kidney <i>Qi/Yin</i> Deficiency, sore/weak back, urinary incontinence
BL-11	1.5 cun lateral to the caudal border of the dorsal spinous process of the 1 st thoracic vertebrae	Influential point for Bone, fever, shoulder pain, cervical stiffness, DJD, IVDD, back pain

LIV-3	Between the 2 nd and 3 rd metatarsal bones proximal to the metatarsophalangeal joint	<i>Shu</i> -stream point, <i>Yuan</i> point, Liver <i>Qi</i> Stagnation, paralysis of hind limbs
GV-20	Within the depression on the dorsal midline, on a line drawn from the tips of the ears level with the center of the ear canals	Opening permission point, headache, epilepsy, aphonia, cervical stiffness
<i>Bai-hui</i>	Between L7-S-1 on dorsal midline	Opening permission point, distal point along the GV, <i>Yang</i> Deficiency, IVDD, Hind limb paresis/paralysis, diarrhea, constipation
GV-14	In the depression on the dorsal midline between C-7-T-1 dorsal spinous processes	Immune regulation, clear Heat, fever, cough, asthma, false Heat, cervical stiffness, epilepsy
BL-17	1.5 cun lateral to the caudal border of the spinous process of the 7th thoracic vertebrae	Influential point for Blood, Blood Deficiency, <i>Yin</i> Deficiency, vomiting, regurgitation, cough, dyspnea
BL-20	1.5 cun lateral to the caudal border of the spinous process of the 12th thoracic vertebrae	Back- <i>shu</i> point for Spleen, Damp, abdominal fullness, vomiting, diarrhea, edema, jaundice
BL-21	1.5 cun lateral to the caudal border of the spinous process of the 13th thoracic vertebrae	Back- <i>shu</i> point for Stomach, abdominal fullness or pain, constipation, gastric ulcer, diarrhea
ST-36	3 cun distal to ST-35a and 0.5 cun lateral to the cranial crest of the tibia	<i>He-sea</i> (Earth) Point, <i>Qi</i> tonification, master point for the GI tract and abdomen, nausea, vomiting, gastric pain, food stasis
LIV-13	Just below the free end of the 12th rib on the lateral side of the body	Front- <i>mu</i> point for Spleen, influential for <i>Yin</i> organs, master point for viscera, muscle pain, abdominal fullness and discomfort, colic, diarrhea
GB-34	In the depression just distal and cranial to the head of the fibula on the lateral side of the pelvic limb	<i>He-sea</i> point, influential point for ligaments/tendons, weakness of ligaments and tendons, vomiting, biliary disorders
ST-40	Half the distance between the lateral malleolus and the tibial plateau, 2 cun lateral to the cranial aspect of the limb in the groove between the cranial tibialis and the long digital extensor muscles	Influential point for Phlegm, lipoma, Damp- Heat skin, itching, <i>Luo</i> -connecting point to Spleen
LIV-14	In the depression at the costochondral junction of the 6th intercostal space	Front- <i>mu</i> point for Liver, hepatic disease, mastitis, pleuritis, chest pain, muscle pain
SP-3	On the medial side of the pelvic limb just proximal to the metatarsal phalangeal joint on the plantar-medial side of the 2nd metatarsal bone	<i>Shu</i> -stream point, <i>Yuan</i> point, horary point, abdominal pain, diarrhea, constipation, obesity, stifle and thigh pain
SP-4	On the plantomedial side of the pelvic limb in the depression distal to the base of the 2nd metatarsal bone	<i>Luo</i> -connecting point to Stomach, confluent point to Chong Channel, watery diarrhea, vomiting
SP-6	3 cun proximal to the tip of the medial malleolus in a small depression on the caudal border of the tibia	Master point for the caudal abdomen and urogenital system, <i>Yin</i> /Blood Deficiency, Damp, watery diarrhea, uterine problems
SP-9	On the lower border of the medial condyle of the tibia in the depression between the caudal border of the tibia and the gastrocnemius muscle.	<i>He-sea</i> point, <i>Yin</i> Deficiency, Damp, watery diarrhea, itching, <i>Wei</i> Syndrome
<i>An-shen</i>	Midway between the dorsal and ventral borders of the ear base in a large depression that is 1/2 of the distance between GB-20 and TH-17	Calm the <i>Shen</i> , Internal and External Wind, headache, cervical stiffness, nose bleed, nasal congestion, otitis, deafness, facial paralysis

on the site 8 weeks after TCVM treatment was initiated. Acupuncture was continued every 14 days for another 5 treatments (4 months total) when the frequency was further reduced to monthly treatments due to continued clinical and radiographic improvement (Figure 2). Between the second and third acupuncture treatments, a 3-day course of intravenous vitamin C therapy^j was initiated and the pet received 1-day treatments at the 3 and 6-month mark.

During treatment, the patient maintained an

excellent quality of life (sleeping, appetite, activity level). Radiographs were repeated regularly with the last set taken approximately 19 months after the initial presentation and demonstrating continued radiographic evidence of resolution (Figure 3). The patient remained pain free with no evidence of swelling or observable neoplasia at the tumor site for 1 year and 9 months after initiation of TVCM treatment when the patient was humanely euthanized due to illness unrelated to the osteosarcoma.

Table 2: Ingredients, actions and parts used of the Chinese herbal medicine Bone Stasis Formula⁵

English Name	Pin Yin Name	Latin Name	Actions	Part of Plant/Animal Used
Chinese Peony	Chi Shao	Paeonia Lactiflora	Nourishes Yin and Blood	Root with bark
Myrrh	Mo Yao	Commiphora Myrrha	Activates Blood and relieves pain	Gum-resin
Frankincense	Ru Xiang	Boswellia Sacra	Activates Blood and relieves pain	Gum-resin
Sichuan Lovage	Chuan Xiong	Ligusticum Sinense	Activates Blood and relieves pain	Rhizome
Drynaria	Gu Sui Bu	Drynaria Fortunei	Tonifies and strengthens bone	Rhizome
Flowering Quince	Mu Gua	Chaenomeles Speciosa	Clears Channel blockages and relieves pain	Fruit
Cordyalis Yanhusuo	Yan Hu Suo	Cordyalis Yanhusuo	Invigorates Blood and relieves pain	Tuber
Cyathula	Chuan Niu Xi	Cyathula Officinalis	Strengthens bone and benefits the pelvic limbs	Root
Cassia	Gui Zhi	Cinnamomum Aromaticum	Warms Channels and benefits the thoracic limbs	Twig
Safflower	Hong Hua	Carthamus Tinctorious	Clears Blood Stasis and relieves pain	Flower
White Mulberry	Sang Zhi	Morus Alba	Clears Wind-Heat and benefits the thoracic limbs	Young twig



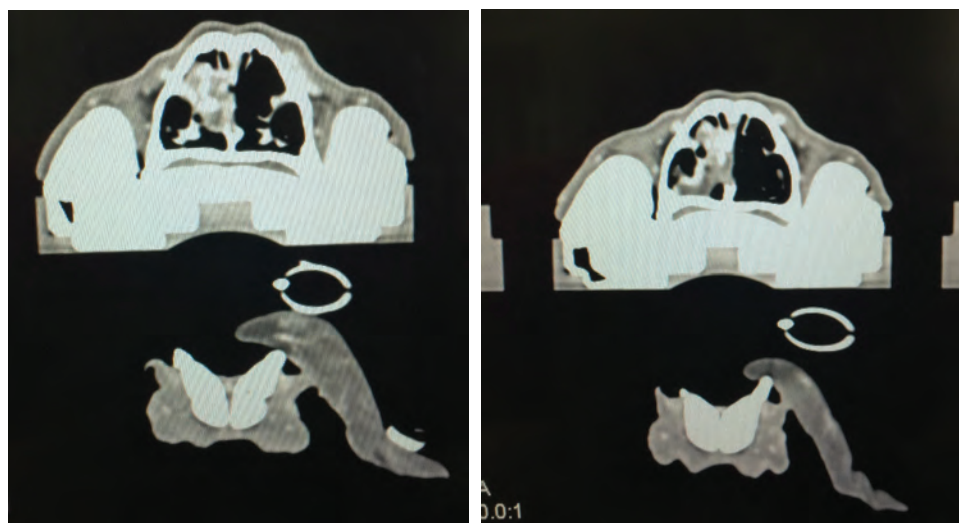
Figure 2: Case 1 radiograph, taken 7 months after initial presentation, demonstrating early changes in the metatarsal bone consistent with regression of the disease process and improvement of the tumor site.



Figure 3: Case 1 radiograph, taken 19 months after initial presentation, showing further regression of the disease and improvement of the tumor site.

Case 2 was an 8-year-old neutered male mixed-breed dog who presented initially with severe right-sided epistaxis at an emergency clinic. A computerized tomography scan (CT) and rhinoscopy were performed, which revealed a 2.3 cm x 1.5 cm x 2.1 cm irregularly shaped tissue mass in the rostral aspect of the right nasal passage (Figures 4 and 5). Biopsy of the mass yielded a diagnosis of nasal chondrosarcoma. The dog was promptly evaluated by an oncologist and started on piroxicam^k (5.5 mg tab SID) which was continued for 4.5 months. One week later, the dog was seen for an acupuncture consult at the author's hospital^c (MB). The TCVM pattern assessment noted that

the patient's tongue was pale purple with Phlegm lines and slippery pulses that were weak bilaterally. The TCVM Diagnosis was Stagnation of Phlegm, Qi Deficiency and Blood Deficiency. Acupuncture treatment was initiated the day of the consult and included dry needle technique by a certified veterinary acupuncturist at *Bai-hui*, GV-20, GV-14, ST-36, BL-20/21, BL-17, LI-4 and LI-10 (Table 1). The patient was sent home with the Chinese herbal medications, Yunnan Bai Yao^l dosed at 1 capsule (0.25g) twice daily (Table 3) and Huey's Formulaⁱ dosed at 3 capsules (0.5g) twice daily (Table 4) and given a custom-blended nutraceutical powder^m. By the second treatment,



Figures 4 and 5: Diagnostic imaging from the University of Florida College of Veterinary Medicine demonstrating different sections of a 2.3 x 1.5 x 2.1 cm nasal chondrosarcoma.

Table 3: Ingredients, actions and parts used of the Chinese herbal medicine *Yunnan Bai Yao*⁶

Ingredients	Pin Yin Name	Actions	Part of Plant/Animal Used
Notoginseng	<i>San Qi</i>	Stops bleeding, transforms Stasis, reduces swelling	Root
Dioscorea	<i>Huai Shan Yao</i>	Tonifies Qi	Rhizome
Dioscorea Parviflora	<i>Ku Liang Jiang</i>	Resolves Stagnation	Rhizome
Dioscorea Nipponica	<i>Chuan Shan Long</i>	Invigorates Blood	Rhizome
Inulae Cappae	<i>Bai Niu Dan</i>	Clears Heat, removes toxin	Root
Ajuga Forrestii	<i>San Yu Cao</i>	Resolves Stagnation	Entire Plant
Geranii	<i>Lao Guan Cao</i>	Resolves Stagnation	Aerial Parts

Table 4: Ingredients, actions and parts used of the Chinese herbal medicine Huey's Formula⁵

English Name	Pin Yin Name	Latin Name	Actions	Part of Plant/Animal Used
Xanthium	<i>Cang Er Zi</i>	Xanthium Sibiricum	Clears Wind-Cold, opens nares	Seed
Fragrant Angelica	<i>Bai Zhi</i>	Angelica Dahurica	Clears Wind-Cold, relieves pain	Root
Chinese Mint	<i>Bo He</i>	Mentha Canadensis	Clears Wind-Heat	Parts above ground
Magnolia	<i>Xin Yi Hua</i>	Magnolia Denudata	Clears Wind-Cold, opens nares	Flower bud

the pulses were stronger and the tongue red purple. By the third treatment, the tongue was pink and the pulses were normal. No bleeding was noted.

After 3 weekly sessions, acupuncture treatments were temporarily postponed while the patient underwent 18 radiation treatments over a 1-month period at the University of Florida College of Veterinary Medicineⁿ. The patient restarted weekly acupuncture and continued with Chinese herbal medications originally dispensed as the TCVM Pattern remained the same based on consistent tongue and pulse diagnosis. Ten days after restarting acupuncture, the dog was reported to be snorting by the owner, however, this was resolved by the next acupuncture session. Treatments were then extended to every 3 weeks (for 2 treatments) and finally once a month.

Five months after the patient's first radiation treatment and 4 months of acupuncture and herbal therapy treatment, a recheck CT was performed where mass size had decreased from 2.1 cm to 1.4 cm. At this time, a splenic and lung nodule were noted but diagnosed by the oncologist as likely benign and unrelated to the nasal mass. The dog continued with acupuncture, nutraceutical and Chinese herbal medicine and did well until 3 months after the first CT scan. Nose bleeds were again noticed by the owner and a re-check CT indicated no further decrease in the nasal mass size. The oncologist noted that the nasal mass may not shrink any further. Surgery was discussed as a possible treatment option, but the owner elected for alternative therapies only but did try a trial of oral Baytril^o which offered no improvement.

Table 5: Ingredients, actions and parts used of the Chinese herbal medicine Max's Formula ⁵

English Name	Pin Yin Name	Latin Name	Actions	Part of Plant/Animal Used
Heal All	<i>Xia Ku Cao</i>	<i>Prunella Vulgaris</i>	Clears Liver Heat and resolves nodule	Fruit spike
Oyster Shell	<i>Mu Li</i>	<i>Ostrea</i>	Softens hardness and clears masses	Shell
Zhejiang Fritillary	<i>Zhe Bei Mu</i>	<i>Fritillaria Thunbergii</i>	Softens hardness, clears nodules	Bulb
Trichosanthes	<i>Tian Hua Fen</i>	<i>Trichsanthes Kirilowii</i>	Clears Heat, promotes body fluid	Root
Scrophularia	<i>Xuan Shen</i>	<i>Scrophularia Ningpoensis</i>	Clears Heat and Cools Blood	Root
Platycodon	<i>Jie Geng</i>	<i>Platycodon Grandiflorum</i>	Opens Upper <i>Jiao</i> , transforms Phlegm	Root
Fragrant Angelica	<i>Bai Zhu</i>	<i>Angelica Dahurica</i>	Clears Wind-Cold, relieves pain	Root
Chinese Rhubarb	<i>Da Huang</i>	<i>Rheum Palmatum</i>	Clears Stagnation/Stasis and clears Heat	Root and rhizome

Table 6: Ingredients, actions and parts used of the Chinese herbal medicine Eight Treasures ⁵

English Name	Pin Yin Name	Latin Name	Actions	Part of Plant/Animal Used
Astragalus	<i>Huang Qi</i>	<i>Astragalus Membranaceus</i>	Tonifies <i>Qi</i>	Root
Rehmannia	<i>Shu Di Huang</i>	<i>Rehmannia Glutinosa</i>	Nourishes Blood/ <i>Jing</i>	Cured Root Tuber
Chinese Peony	<i>Bai Shao Yao</i>	<i>Paeonia Lactiflora</i>	Nourishes Blood	Root without bark
Bai-Zhu Atractylodes	<i>Bai Zhu</i>	<i>Atractylodes Macrocephala</i>	Tonifies <i>Qi</i> and strengthens Spleen	Rhizome
Dong Quai	<i>Dang Gui</i>	<i>Angelica Sinensis</i>	Nourishes Blood	Root
Codonopsis	<i>Dang Shen</i>	<i>Codonopsis Pilosula</i>	Tonifies <i>Qi</i>	Root
Sichuan Lovage	<i>Chuan Xiong</i>	<i>Ligusticum Sinense</i>	Moves Blood, resolves Stagnation	Rhizome
Poria	<i>Fu Ling</i>	<i>Wolfiporia Cocos</i>	Drains Damp and strengthens Spleen	Sclerotium

After the bleeding episode, the herbal treatment was changed slightly with an increased dose of *Yunnan Bai Yao* (2 capsules BID), no change in Huey's Formula and the addition of Max's Formula (0.5g) 2 capsules BID (Table 5). The TCVM diagnosis remained the same. Acupuncture frequency was changed to every 2 weeks and a 3- day course of IV vitamin Cⁱ therapy was added and repeated 3 more times (1 month, 8 months, 9 months). After 6 months of treatment, all snorting and gagging had subsided and excellent air flow through the nostrils was noted. One month before ending the IV vitamin C treatments, Eight Treasuresⁱ (Table 6) was introduced in conjunction with Max's Formulaⁱ to address the diagnosis of Spleen Qi Deficiency and Blood Deficiency. Huey's Formulaⁱ was discontinued at this time. These changes were followed by a final vitamin C therapy treatment.

The dog has maintained an excellent quality of life (normal appetite/body weight) and except for the short episodes of nasal bleeding noted above remained clinically stable throughout the treatment period. The dog continued to receive regular acupuncture treatment every 3 months and has now gone 6 months since the last acupuncture treatment. The dog remains on the Chinese herbal medicines, Max's Formula and Eight Treasures. Other than minor recurrent neck pain due to cervical disk disease, the dog is normal on Western exam and receives no other medications. The owner has not pursued additional diagnostic procedures as the dog continues to do well.

Case 3 was a 9-year-old spayed female Rottweiler who presented with intermittent right rear limb lameness that had been present for 1 month. The lameness was initially responsive to Rimadyl,^p but the dog was referred after the lameness worsened in the two weeks prior to presentation. She was receiving multiple medications including Metacam,^q Gabapentin,^r Tramadol,^s Fosamax,^t Selenium, vitamin E, Co Q 10, vitamin C, tumeric, fish oil,

Famotidine^u, Artemisinin,^v and Glycoflex.^w Radiographs of the affected leg and clinical presentation were consistent with a clinical diagnosis of osteosarcoma in the right femur. The owner declined more robust diagnostics.

Clinical assessment of the dog (HX) revealed pain upon palpation of the right hip during the dog's first visit. Appetite, bowel movements and urination were all reported to be normal and the patient's *Shen* was great. The TCVM pattern assessment noted that the patient's tongue was a pale purple color and the pulses were slippery. The TCVM diagnosis was Bone Stasis of the right rear limb with Qi Deficiency. The initial acupuncture treatment included dry needle technique by a certified veterinary acupuncturist at GV-14, BL-21, ST-36 (right), ST-40 (right), and SP-3/4 and aqua-acupuncture at *An-shen*, LIV-13, SP-6/9, ST-36 (left) and ST-40 (left) (Table 1). The patient was sent home with the Chinese herbal medications: Bone Stasis Formula (3 capsules, 0.5g/cap BID), Stasis Breaker (6 capsules, 0.5g/cap BID) (Table 7), and *Wei Qi* Boosterⁱ (1 capsule, 0.5g/cap BID) (Table 8). Food therapy consisting of 60% beef or pork, 20% carbohydrate (pumpkin, squash, brown rice, sweet potato) and 20% vegetable (carrots, celery, shiitake mushroom) was also incorporated. The majority of foods added were Qi tonics with neutral or warm thermal TCVM energetics.

After the initial acupuncture treatment, the patient was reported to be doing very well. During the second treatment (4 months later), the owners reported that their pet hadn't experienced any increase in pain and the degree of lameness had not worsened, even after attending a dog show. At the third visit (1 month later), pain was still absent and a complete blood count (CBC) was unremarkable. During the third visit, acupuncture treatment included dry needle at BL-20/21, LIV-3/13, GB-34, GV-20, ST-40 and BL-23, and aqua acupuncture was performed at LIV-3, SP-4, *An-shen*, GV-14, and LIV-14 (Table 1). The same herbal medications were continued.

Table 7: Ingredients, actions and parts used of the Chinese herbal medicine Stasis Breaker ⁵

English Name	Pin Yin-Name	Latin Name	Actions	Part of Plant/Animal Used
Oyster Shell	<i>Mu Li</i>	<i>Ostrea</i>	Softens the hardness and clears the masses	Shell
Zhejiang Fritillary	<i>Zhe Bei Mu</i>	<i>Fritillaria Thunbergii</i>	Softens the hardness and clears nodules	Bulb
Zedoary	<i>E Zhu</i>	<i>Curcuma Zedoaria</i>	Purges the Interior, breaks Blood Stasis, clears masses	Rhizome
Sparganium	<i>San Leng</i>	<i>Sparganium Eurycarpum</i>	Purges the Interior, breaks Stasis, clears masses	Rhizome
Hedyotis	<i>Bai Hua She She Cao</i>	<i>Hedyotis Diffusa</i>	Inhibits cell mutation and tumor growth	Whole plant
Barbed Skullcap	<i>Ban Zhi Lian</i>	<i>Scutellaria Barbata</i>	Clears Heat toxin, inhibits cell mutation and tumor growth	Whole plant

Nine months after initial presentation, the owner reported their pet was happy, doing well and enjoying all normal activities including herding sheep. After this

time, Bone Stasis and Stasis Breaker were continued while *Wei Qi* Booster was discontinued and Body Sore (Table 9) was added to keep this active pet's quality of life

Table 8: Ingredients, actions and parts used of the Chinese herbal medicine *Wei Qi* Booster ⁵

English Name	Pin Yin Name	Latin Name	Actions	Parts of Plant/ Animal Used
Codonopsis	<i>Dang Shen</i>	Codonopsis Pilosula	Tonifies <i>Qi</i> and boosts <i>Wei Qi</i>	Root
Astragalus	<i>Huang Qi</i>	Astragalus Membranaceus	Tonifies <i>Qi</i> and <i>Wei Qi</i>	Root
Dong Quai	<i>Dang Gui</i>	Angelica Sinensis	Tonifies Blood	Root
Hedyotis	<i>Bai Hua She She Cao</i>	Hedyotis Diffusa	Inhibits cell mutation and tumor growth	Whole Plant
Barbed Skullcap	<i>Ban Zhi Lian</i>	Scutellaria Barbata	Inhibits cell mutation and tumor growth	Whole Plant
Scrophularia	<i>Xuan Shen</i>	Scrophularia Ningpoensis	Cools Blood and nourishes <i>Yin</i>	Root
Tangerine	<i>Chen Pi</i>	Citrus Reticulata	Moves <i>Qi</i> and transforms Phlegm	Dried rind of mature fruit
Lindera	<i>Wu Yao</i>	Lindera Aggregata	Moves <i>Qi</i> and clears Stagnation	Tuber

Table 9: Ingredients, actions and parts used of the Chinese herbal medicine Body Sore ⁵

English Name	Pin Yin Name	Latin Name	Actions	Part of Plant/ Animal Used
Dong Quai	<i>Dang Gui</i>	Angelica Sinensis	Activates Blood, resolves Stagnation, relieves pain	Root
Corydalis Yanhusuo	<i>Yan Hu Suo</i>	Corydalis Yanhusuo	Moves <i>Qi</i> /Blood, resolves Stagnation, relieves pain	Tuber
Chinese Peony	<i>Chi Shao</i>	Paeonia Lactiflora	Relieves pain and Cools Blood	Root with bark
Sichuan Lovage	<i>Chuan Xiong</i>	Ligusticum Sinense	Relieves pain and activates Blood	Rhizome
Pubescent Angelica	<i>Du Huo</i>	Angelica Pubescens	Relieves pain and eliminates Wind-Damp	Root
Myrrh	<i>Mo Yao</i>	Commiphora Myrrha	Moves Blood and relieves pain	Gum-resin
Notopterygium	<i>Qiang Huo</i>	Notopterygium Incisum	Relieves pain and activates Blood	Root and rhizome
Frankincense	<i>Ru Xiang</i>	Boswellia Sacra	Moves Blood and relieves pain	Gum-resin
Psoralea	<i>Bu Gu Zhi</i>	Cullen Corylifolium	Strengthens back and tonifies <i>Yang</i>	Fruit
Cyathula	<i>Chuan Niu Xi</i>	Cyathula Officinalis	Strengthens bones and limbs	Root
Eucommia	<i>Du Zhong</i>	Eucommia Ulmoides	Strengthens back and tonifies <i>Yang</i>	Stem bark
Safflower	<i>Hong Hua</i>	Carthamus Tinctorius	Breaks down Blood Stasis and relieves pain	Flower
Spatholobus	<i>Ji Xue Teng</i>	Spatholobus Suberectus	Nourishes Blood	Stem
Peach	<i>Tao Ren</i>	Prunus Persica	Breaks down Blood Stasis, relieves pain	Seed
Chinese Dodder	<i>Tu Si Zi</i>	Cuscuta Chinensis	Nourishes Kidney and Liver	Seed
Epimedium	<i>Yin Yang Huo</i>	Epimedium Koreanum	Tonifies Kidney <i>Yang</i> and <i>Yin</i>	Parts above ground or leaf

stable. The patient continued to receive treatments every 4-6 weeks as needed, doing well until 15 months after initial presentation. At that time, the patient was humanely euthanized due to the sudden and fast growth of the mass and subsequent poor quality of life.

Case 4 was a 7-year-old, 136-pound, castrated male Great Pyrenees. The dog presented with snoring that had suddenly worsened over the previous 6 months. The patient was diagnosed by the referring veterinarian with osteosarcoma in the left maxilla 2 weeks prior to acupuncture appointment. Upon presentation, the left jaw and tumor were noted to be painful to touch and there was a mucoid nasal discharge. The TCVM pattern assessment noted that the patient's pulses were wiry, but *Shen* was good and the gastrointestinal tract (GI) was normal (appetite, stools). The tongue was wet, pale, and purple with overall general weakness noted. The TCVM diagnosis was Blood Stasis in the bone with local Stagnation in the maxilla and Qi Deficiency. The dog was started on Chinese herbal medications: Huey's Formula (5 capsules, 0.5g/cap BID), Bone Stasis Formula (5 capsules, 0.5g/cap BID), and Stasis Breaker^b (5 capsules, 0.5g/cap BID). Acupuncture treatment was instituted every 2 to 3 months and included dry needle at GV-20, GV-14, BL-20, BL-21, ST-36, ST-40, LI-4 and LI-11, and aqua acupuncture was performed at ST-36 and ST-40 (Table 1).

The herbal formulas were continued for 3 months. There was steady improvement with less nasal discharge and snoring. The dog's energy level improved to the point where he was able to go on walks twice daily for 30 minutes. At 11.5 months after initial presentation, the patient had increased congestion, thick yellow discharge from the left nostril with panting, anorexia, lethargy, weight loss of 10 pounds and bilaterally weak pulses. The TCVM pattern was identified as Blood Stasis in the bone, local Stagnation in the maxilla with Heat, and Qi Deficiency. The dog was sent home with a topical application of Stasis Breaker and his herbal formulas were changed to predominately improve quality of life (*Wei Qi* Booster for Qi, Eight Gentlemen for appetite, Bone Stasis for local Stagnation and *Xin Yi San* for nasal congestion). The dog returned to a fair quality of life, until 15 months after initial presentation when he was humanely euthanized. The patient survived for over a year with an aggressive cancer and was able to live with a good quality of life.

Case 5 was a 6-year-old castrated male Irish Setter diagnosed with osteosarcoma. The day after diagnosis, a left forelimb amputation was performed. The patient received five doses of doxorubicin.^x Two weeks after completing chemotherapy, the dog was presented for TCVM assessment with the following findings noted: deep, weak pulses; pale purple tongue; depressed *Shen* with normal GI tract (appetite, stools). The TCVM pattern diagnosis was Blood Stasis in the Bone and Qi Deficiency. The goal of TCVM therapy was to prevent or slow reoccurrence of the cancer. Acupuncture treatment

included dry needle at GV-20, GV-14, BL-20, BL-21, BL-23, *Bai-hui*, ST-36, ST-40, LIV-3 and GB-41 (Table 1). The patient was sent home with Chinese herbal medications: Bone Stasis (1 tsp or 2 grams BID), Stasis Breaker (1 tsp or 2 grams BID), and *Wei Qi* Booster (2 tsp or 4 grams BID).ⁱ The patient continued Chinese herbal medicine therapy and acupuncture (one session per every 2-4 months), extending life an additional 3 years after amputation. The patient was humanely euthanized due to metastasis in the lungs and rear limbs. Quality of life was reportedly good throughout the 3 years.

DISCUSSION

Osteosarcoma is a malignant highly aggressive neoplasia, which often results in a reduced life expectancy of only several months in dogs. While chondrosarcomas are rare to metastasize, they can be locally aggressive masses that cause tissue destruction, pain and a decrease in the patient's quality of life. From a TCVM perspective, disease develops when the *Zheng Qi* is weak and unable to defend itself against *Xie Qi* (pathogenic factors).³ When the body's defenses are weakened, the body is unable to detect abnormal cells and cancer is able to grow and spread. The most common patterns seen in TCVM cancer patients include Qi and Blood Deficiency (the root of all cancers), Phlegm accumulation, Qi/Blood Stagnation, Blood Stasis, and Stagnant Toxic Heat.⁴ Patterns such as these can be diagnosed using the TCVM examination format with tongue and pulse diagnosis as the foundation. Once a pattern(s) is determined, a comprehensive TCVM approach can be used either as a stand-alone treatment or alongside conventional therapies.

In order to achieve success with TCVM therapies, all secondary and underlying patterns present must be identified and treated. While conventional medicine targets cancer cells using chemotherapy, radiation and surgical techniques, TCVM addresses the cancer by working to correct imbalances that are present. The most common Chinese herbal medicine formulas used in this series of clinical cases to slow the growth of the neoplastic cells were Bone Stasis, Stasis Breaker, Max's Formula and *Wei Qi* Booster.

Bone Stasis Formula is a TCVM formula that breaks down Stasis, activates the Blood, relieves pain and clears the Channels to prevent blockage. Bone Stasis Formula is derived from the classical formula *Gu Yu Fang*¹. The King Herbs, *Chaenomeles* (*Mu Gua*), *Corydalis* (*Yan Hu Suo*), *Ligusticum* (*Chuan Xiong*) *Carthamus* (*Hong Hua*), *Myrrh* (*Mo Yao*), and *Olibanum* (*Ru Xiang*) work synergistically to dispel Blood Stasis and relieve pain.¹ Pharmaceutical studies have shown that *Ligusticum* (*Chuan Xiong*) has a number of pharmacological effects, including antioxidative, anti-inflammatory, and antineoplastic properties.⁵ The Minister Herbs *Drynaria* (*Gu Sui Bu*) and *Cyathula* (*Chuan Niu Xi*) are used to tonify and strengthen the bones. *Paeonia* (*Chi Shao Yao*)

is added to nourish Liver Yin and Blood which can further enhance the effects of the King Herbs. Both Adjuvant Herbs, Cinnamomum (*Gui Zhi*), Morus (*Sang Zhi*), benefit the thoracic limbs while Cyathula (*Chuan Niu Xi*) will benefit the hind limbs (Table 2).⁵

Stasis Breaker is a Chinese herbal medicine derived from the classical formula *Nei Xiao Wan*. It is used to treat cancer stemming from the TCVM pattern Blood Stagnation/Stasis. The herbs in the formula clear swelling, soften hardness, and break Blood Stasis. It is comprised of the herbs Oyster Shell (*Mu Li*), Zhejiang Fritillary (*Zhe Bei Mu*), Zedoary (*E Zhu*), Sparganium (*San Leng*), Hedyotis (*Bai Hua She She Cao*), and Barbed Skullcap (*Ban Zhi Lian*). In a study of human patients with late gastric carcinoma, patients who received a formula containing *Bai Hua She She Cao* along with chemotherapy (n=158) had better survival rates than those who received chemotherapy alone. Another human study in patients with carcinoma of the liver used injections of Sparganium (*San Leng*) and Zedoary (*E Zhu*) along with administration of an oral formula also containing these herbs. This study demonstrated improved patient condition without adverse side effects at a 43.3% efficacy rate.⁵

The third important herbal formula used, *Wei Qi Booster* is modified from the classical formula, *Si Jun Zi Tang*, with actions to tonify Qi and Blood while boosting *Wei Qi* and inhibiting mutation. The herbs in *Wei Qi Booster* have demonstrated anti-neoplastic effects. One study showed that patients with malignant gastrointestinal tumors had increased antibody levels and total lymphocytes when the Chinese herbal medication *Si Jun Zi Tang* was administered post-operatively.⁵

Max's Formula is derived from the classical antecedent *Nei Xiao Luo Li San*. Like its counterpart, Stasis Breaker, this is an anti-cancer formula which is used to treat the TCVM patterns of Blood Stasis/Stagnation. While Stasis Breaker is used in stronger animals, Max's Formula is a safer option in weaker animals when risk of side effect is a stronger possibility. The herbs in Max's Formula will break Blood Stasis, transform Phlegm, soften hardness, and clear nodules. Animal studies have shown the herb *Xia Ku Cao* will affect cancer cells by inhibiting matrix metalloproteinase enzymes to inhibit tumor growth and stop metastasis. Likewise, a compound isolated from *Da Huang* has been shown to induce death of neoplastic cells.⁵

In order for TCVM treatments to have the potential for success, it is important to address all patterns found during patient assessment. Additional Chinese herbal medicines in this case series chosen based on TCVM patterns and clinical signs associated with secondary disease created by neoplasia included Eight Treasures, *Yunnan Bai Yao*, Huey's Formula and Body Sore.

Eight Treasures is a formula utilized to address weakness and immune deficiency caused by the TCVM pattern Qi-Blood Deficiency. It is derived from the classical

formula *Ba Zhen Tang* and was initially used to treat deficiencies caused by excessive bleeding.⁵ *Yunnan Bai Yao* was utilized to address excessive bleeding. It contains *San Qi* as part of its herbal formula and is responsible for normalizing blood flow and addressing internal bleeding.⁶ Huey's Formula breaks up Phlegm Stagnation in the sinuses, clearing Wind-Cold and Wind-Heat and opening the nares. It can also act as a transporter to bring the anti-cancer formulas directly to the affected area. The classical antecedent is Dr. Pei-Yao-Qing's Formula.⁵ Finally, Body Sore clears Stagnation in the Channels and relieves pain while invigorating Qi and Blood. Conventional medical indications include musculoskeletal pain and soft tissue injuries. In animal studies, components of the herbal formula of Body Sore have been shown to have anti-inflammatory and analgesic properties. *Mo Yao* and *Ru Xiang* have been shown to have antineoplastic effects adding to the usefulness of this formula in these cases.⁵

In veterinary medicine, neoplastic disease of bony origin is a frustrating disease to treat because it often has a poor long-term prognosis and complications when using conventional medicine techniques. For osteosarcomas, these include pathologic fractures, uncontrollable pain, and metastasis, despite the use of surgical and chemotherapeutic modalities. For chondrosarcomas, complications can include: chronic infection, severe nose bleeds, and while rare, metastasis and local growth can cause extensive destruction of tissues. All 5 of these cases had malignant aggressive neoplasms which have poor quality of life and survival rates in affected dogs (Tables 10 and 11). In case 1, TCVM integrated with other nutraceuticals extended the dog's life (1 year, 9 months) which is well beyond the expected best-case scenario of several months without conventional therapies while also providing a good quality of life for this patient.⁷ In case 2, the dog was diagnosed with nasal chondrosarcoma which is a malignant aggressive neoplasm usually beginning as unilateral disease but often progressing to bilateral disease by the time the patient is seen.⁸ When left untreated, the median survival time is 3 months or after radiotherapy a median disease-free interval of 8-23 months.⁸ The oncologist had given the patient a median survival time, even with radiation, between 8 months and 1.5 years. The dog, however, has survived 38 months since initial presentation and is still in good health.

TCVM treatment in cases 3, 4 and 5 demonstrate the benefit of using this therapeutic modality to improve the quality of life in veterinary patients with an aggressive cancer that can create severe pain and disability. All 3 of these patients went beyond the predicted survival rate, were maintained with reduced levels of pain and were able to eat and exercise until the last months of their disease. Case 5 was a good demonstration of how to increase the effectiveness of treatment by integrating TCVM with Western medicine to achieve a better outcome for veterinary patients.

Table 10: The signalment, diagnosis and treatment along with survival outcomes for 5 dogs diagnosed with malignant bony tumors.

Case	Signalment	Western Diagnosis	Chemo-therapy Or Radiation	Chinese Herbal Medicine	AP	Expected Survival	Actual Survival Period
1	6-year-old, Female spayed Greyhound	Osteosarcoma Metatarsal 5, RHL	No	Bone Stasis F	Weekly (6) Then 2x/Mo (4 Mo) Then Monthly	10-12 weeks for amputation 10-12 mo With Chemo + Amputation	1 Yr 9 mo
2	8-year-old, Male neutered, Mixed Breed	Chondrosarcoma Nasal Cavity	Piroxicam 5.5 mg tab SID for 4.5 Mo Radiation (18 T)	Yunnan Bai Yao, Huey's Formula, Max's Formula	Weekly (7) 2X/Mo (2) Monthly (6) Then every 3 months as needed	8 Mo-1.5 Yr With Radiation	38 mo (Still Alive)
3	9-year-old, Female spayed, Rottweiler	Osteosarcoma R Femur	No	Bone Stasis F, Stasis Breaker, Wei Qi Booster	Every 4-6 Wks.	10-12 weeks for amputation 10-12 mo With Chemo + Amputation	15 mo
4	7-year-old, Male neutered, Great Pyrenees	Osteosarcoma L Maxilla	No	Bone Stasis F, Stasis Breaker (oral + topical) Huey's F	Every 2-3 months	7.9 months (median value all treatments)	15 mo
5	6-year-old, Male neutered, Irish Setter	Osteosarcoma LFL	Amputation + Doxorubicin (5 T)	Bone Stasis F, Stasis Breaker, Wei Qi Booster Lily Combo	Every 2-4 months	10-12 weeks for amputation 10-12 mo With Chemo + Amputation	3 Yr (metastasis to lungs and rear limbs)

AP=Acupuncture, T=Treatment, RHL=Right Hind leg, L=Left, LFL=Left Front leg, Yr=Year, Mo=Month, Wks=Weeks, Chemo=Chemotherapy, F=Formula, Combo=Combination

Table 11: TCVM examination and pattern diagnosis for 5 dogs diagnosed with a malignant bony tumor.

Case	Clinical Signs at Presentation	TCVM Findings	Tongue Color	Pulse	TCVM Pattern
1	Acute lameness in RHL with swelling	Good <i>Shen</i> , Cool Seeking, Normal GI, Normal Urination, Sleeping Well, No behavior Change	Dark Pink Purple	Fast Wiry	Stagnation with Heat
2	Right sided epistaxis	Good <i>Shen</i> , excellent energy, excellent appetite, normal MM, increased water consumption, normal GI and urination	Pale Purple Phlegm lines	Bilateral Weak Slippery	<i>Qi</i> Deficiency, Blood Def, Stagnation of Phlegm
3	Intermittent R rear lameness duration of 1 Mo with increased severity 2 wks prior to presentation	Good <i>Shen</i> , normal GI, normal urination	Pale Purple	Slippery	Bone Stasis of the R rear limb with <i>Qi</i> Deficiency
4	Snoring that was worsening with duration of 6 months	Good <i>Shen</i> , normal GI, mucous nasal discharge, L Jaw-painful to touch	Pale purple when mass started enlarging again after 9 mos	Wiry	Blood Stasis in bone, Local Stagnation in Maxilla with Heat, <i>Qi</i> Deficiency
5	Presented with cough and lameness	Depressed <i>Shen</i> , normal GI	Pale Purple Phlegm lines	Deep Weak	Blood Stasis in bone, <i>Qi</i> Deficiency

GI=Gastrointestinal, R=Right, Mo=Month, Def=Deficiency, MM=Mucous Membranes

Using TCVM as an alternative or integrative approach can improve the quality of life and longevity of canine patients afflicted with neoplastic disease. While this is a small sampling of cases, this case series demonstrates the promise of TCVM as an untapped resource in the veterinary medical community and it calls for further research to validate TCVM as a viable therapeutic option for osteosarcoma and chondrosarcoma in canine patients.

FOOTNOTES

- a. Antech Laboratories, Fountain Valley, CA, USA
- b. Propofol, Zoetis, Inc., Parsippany, NJ, USA
- c. Animal Hospital of Dunedin, Dunedin, FL, USA
- d. CAS Options, VetClassics, Temecula, CA, USA
- e. Immustim Complex, Professional Formulas, Lake Oswego, OR, USA
- f. V4 Vetzymes, Emerson Ecologics, Inc., Manchester, NH, USA
- g. Lekon Sterile Needles, CAI Corporation, South El Monte, CA, USA
- h. Traumeel, Heel, Inc (No longer being manufactured)
- i. Jing Tang Herbal, Reddick, FL, USA
- j. IV Vitamin C (500 mg/ml), McGuff Pharmaceuticals, Santa Ana, CA, USA
Therapy for 3 days included: Day 1: 15cc, Day 2 :30cc, Day 3: 45cc (mixed with 250 ml saline + 1.5cc B-12 + 1.5cc B-vitamin complex) given at 60 ml/hr.
- k. Piroxicam, NSAID for dogs, dispensed by oncologist
- l. Yunnan Bai Yao, Yunnan Bai Yao Group, Ltd, Kuiming, Yunnan Province, China
- m. Animal Nutrition Technologies, Westport, CT, USA
- n. University of Florida Veterinary School, Gainesville, Florida, USA
- o. Baytril, Bayer Healthcare LLC, Animal Health Division, Shawnee Mission, KS, USA
- p. Rimadyl, Zoetis, Inc., Lincoln, NE, USA
- q. Metacam, Boehringer Ingelheim Vetmedica, Inc., Ingelheim am Rhein, Germany
- r. Gabapentin, generic, dispensed by referral veterinarian

- s. Tramadol, generic, dispensed by referral veterinarian
- t. Fosamax, Merck & Co., Whitehouse Station, NJ, USA
- u. Famotidine, generic, dispensed by referral veterinarian
- v. Artemisinin, multiple products available, dispensed by referral veterinarian
- w. Glycoflex, Vetriscience Laboratories, Williston, VT, USA
- x. Doxorubicin, chemotherapeutic agent, dispensed by oncologist

REFERENCES

1. Kahn C (Ed), The Merck Veterinary Manual 9th Ed. Whitehouse Station, NJ : Merck and Co. 2005 : 974.
2. Fossum T, Hedlund C, Johnson A, et al. Small Animal Surgery 3rd Ed. Elsevier Health Sciences 2007: 1338-9.
3. Xie H, Preast V (Eds), Traditional Chinese Veterinary Medicine: Fundamental Principles 2nd Ed. Reddick, FL: Chi Institute Press 2013: 61,161.
4. Xie, H (Ed), Practical Guide to Traditional Chinese Veterinary Medicine, Chi Institute Press 2014: 580-589.
5. Ma A. Clinical Manual of Chinese Veterinary Herbal Medicine. Gainesville, FL: Ancient Art Press 2016: 77-79, 110-111, 142-144, 156-158, 161-162, 163-164, 269.
6. Xie H, Preast V (Eds), Xie's Chinese Veterinary Herbology. Ames, Iowa: Wiley-Blackwell 2010: 447-448.
7. Kahn C (Ed), The Merck/Merial Manual for Pet Health: The complete health resource for your dog, cat, horse, or other pets. Simon and Schuster 2007: 453.
8. Tilley L, Smith F (Eds), Blackwell's Five-Minute Veterinary Consult: Canine and Feline 4th Ed. Ames, Iowa: Blackwell Publishing 2007: 245.
9. Chi Institute Small Animal Acupuncture Training Program Wet Lab Manual, Chi Institute of Chinese Medicine, Reddick, FL, 2017. 25-53.

ABSTRACT

Kim M, Seo K, Nam T

Effect of acupuncture on intraocular pressure in normal dogs

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The effect of acupuncture on intraocular pressure (IOP) was evaluated in normal dogs. After determination of baseline pressure, acupuncture was applied at 3 acupoints (LI-4, LIV-3 and GB-37) for 20 min. After acupuncture treatment, IOP was significantly lowered 2.7 +/- 0.1 in left eye, 1.7 +/- 0.7 in right eye, respectively (p<0.05). From the results of this study, acupuncture therapy may be a valuable treatment for decreasing IOP in dogs.