

Acupuncture, Chinese Herbal Medicine, *Tui-na* and Food Therapy Integrated with other Treatments for Chronic Renal Disease of a Cat

Lisa J. Donato DVM

ABSTRACT

A 10-year-old 2.77-kg neutered male Abyssinian cat was presented for lethargy, vomiting and anorexia due to renal failure. He had been treated with intravenous fluid therapy, an anti-emetic drug and an appetite stimulant, but his clinical signs and laboratory tests did not appreciably improve. Treatment with a dry needle acupuncture technique and aqua-acupuncture using the homotoxicologic formula *Berberis Homaccord* and vitamin B-12 was instituted. In addition, *Tui-na*, Food therapy and conventional medications were also administered. In subsequent treatment sessions the Chinese herbal formulas *Shen Qi Wan* and *Rehmannia 6* were added. With the addition of these treatments, the cat's renal function significantly improved and his clinical signs resolved. It has been over three and one-half years since the cat's initial presentation and he continues to have acupuncture treatments every six weeks and is doing well. This case demonstrates that acupuncture, Chinese herbal medicine and other TCVM treatments can be an important adjunct to the treatment of cats with chronic kidney disease and may significantly increase the length and quality of life for cats presented in renal failure.

Key words: chronic renal failure, chronic kidney disease, acupuncture, Chinese herbal medicine, *Tui-na*, Food therapy, feline, Kidney *Yin* and *Yang* Deficiency, Traditional Chinese Veterinary Medicine

A 10-year-old 2.77-kg neutered male Abyssinian cat was originally presented to a conventional veterinarian for lethargy, anorexia and difficulty chewing his food for one week duration. He had intermittent vomiting of food, polydipsia and weight loss. He was also urinating and defecating less than normal and had soft stools when he did defecate. Additionally, he exhibited labored breathing for one day and had a mucoid nasal discharge. He was mostly an indoor cat, but would occasionally escape outdoors. He was current on vaccinations including feline viral rhinotracheitis-calicivirus-panleukopenia^a, feline leukemia^b and rabies^c vaccines, which had been administered four months prior to presentation. The cat had been negative for feline leukemia virus in the past and the caretaker felt that there was no possibility of toxin ingestion.

A complete blood count, serum biochemistry profile and urinalysis were performed. Renal azotemia was diagnosed based on a BUN >130 mg/dL (reference range 16-36 mg/dL), creatinine >13.6 mg/dL (reference range 0.8-2.4 mg/dL), a urine specific gravity was 1.014 (reference range 1.015-1.060) and hyperphosphatemia

>16.1 mg/dL (reference range 3.1-7.5 mg/dL) (Table 1). Hematuria (3+ blood, 4-10 red blood cells per high power field) and transitional epithelial cells were also seen in the urinalysis and a urine culture was negative for bacteria.¹ A urine microalbumin test was normal at 2.2 mg/dL (reference range <2.5 mg/dL). Abdominal ultrasound showed both kidneys to be normal in size and shape, but with decreased definition and renal pelvic dilation. Neither masses nor calculi were seen, but a small amount of sediment was found in the urinary bladder. Based on these findings, a diagnosis of pyelonephritis of unknown origin with concomitant acute or chronic renal failure was made.

The cat was hospitalized and treated with intravenous fluid therapy (lactated Ringers solution, 3.23 mL/kg/hour IV) an antiemetic, metoclopramide (1.55 mg/kg PO q 12 h), and an appetite stimulant, cyproheptadine hydrochloride (0.62 mg/kg PO q 12 h) for five days.² Four days after therapy was initiated, a second serum biochemistry profile revealed little change from the initial profile except for a mild hypoproteinemia of 5.5 g/dL (reference range 5.7-8.9 g/dL) (Table 1). The caretaker was neither interested in using hemodialysis nor considering renal transplantation for her cat. Since only a minor response had been seen

From: Veterinary Acupuncture and Healing Arts, Albertson, New York

Table 1: Selected serial clinicopathological findings over time of a 10 year old Abyssinian cat with renal failure

Tests	Pre-Tx (initial)	Pre-Tx (4 days post-diuresis)	2.5 weeks*	3 weeks* (5 th Tx)	5 weeks* (6 th Tx)	14 weeks* (10 th Tx)	3 years, 4 months*
WBC x 10 ³ /μl	9.6 (5.0-18.9)	NA	15.0 (5.0-18.9)	NA	NA	8.3 (5.5-19.5)	12.8 (3.5-6)
RBC x 10 ⁶ /μl	NA	NA	NA	NA	NA	9.02 (5.0-11.0)	5.10 (5.92-9.93)
Hematocrit %	32.3 (24.0-45.0)	NA	25.7 (24.0-45.0)	NA	25.5 (25.0-45.0)	32.7 (25.0-45.0)	20.5 (29-48)
BUN mg/dL	>130 (16-36)	>130 (16-36)	NA	19 (14-36)	27 (16-36)	28 (16-36)	47 (14-36)
Creatinine mg/dL	> 13.6 (0.8-2.4)	>13.6 (0.8-2.4)	2.8 (0.8-2.4)	2.2 (0.6-2.4)	3.0 (0.8-2.4)	3.7 (0.8-2.4)	2.7 (0.6-2.4)
Phosphorus mg/dL	>16.1 (3.1-7.5)	>16.1 (3.1-7.5)	NA	4.3 (2.4-8.2)	4.3 (3.1-7.5)	3.6 (3.1-7.5)	4.3 (2.4-8.2)
Total Protein g/dL	6.8 (5.7-8.9)	5.5 (5.7-8.9)	NA	6.1 (5.2-8.8)	6.5 (5.7-8.9)	7.2 (5.7-8.9)	6.3 (5.2-8.8)
Albumin g/dL	2.9 (2.3-3.9)	2.4 (2.3-3.9)	NA	2.7 (2.5-3.9)	2.6 (2.2-4.0)	2.8 (2.3-3.9)	3.4 (2.5-3.9)
Sodium	NA	NA	NA	152 mEq/L (145-158)	158 mmol/L (150-165)	163 mmol/L (150-165)	157 mEq/L (145-158)
Potassium	NA	NA	NA	4.5 mEq/L (3.4-5.6)	4.1 mmol/L (3.5-5.8)	4.9 mmol/L (3.5-5.8)	4.6 mEq/L (3.4-5.6)

Tx= acupuncture treatment; * time after initial acupuncture; normal ranges supplied by each clinical pathology laboratory indicated in parentheses above; NA=not assessed

both clinically and on re-evaluation of the serum biochemistry profile, the cat was discharged from the hospital with cyproheptadine at the aforementioned dose and the caretaker was instructed to bring him back for euthanasia. The cat's clinical signs continued to worsen over the following five days and the caretaker asked her veterinarian for a referral for acupuncture.

At the time of his initial acupuncture appointment, the cat was slightly depressed, had a body condition score of 3/9 (body condition score scale of 1-9; 5 is ideal weight, less than 5 is underweight, more than 5 is overweight) and had generalized weakness.³ He had pink mucous membranes with a normal capillary refill time, but was 5-7% dehydrated. Moreover, he was reluctant to allow his mouth to be opened, had dental tartar and uremic breath. A grade 2/6 holosystolic heart murmur was ausculted with a heart rate of 180 beats per

minute and respiratory rate of 36 breaths per minute. Abdominal palpation revealed small, tender kidneys and a tender stomach. All peripheral lymph nodes were normal on palpation.

During the examination, the cat was friendly, but somewhat nervous. He watched every movement the author made and during his acupuncture treatment, he hid his head under the caretaker's arms or sweater. Once the needles were all in place, he became more relaxed and stopped hiding his head. He listened to the caretaker, when she ordered him to stay still. The caretaker stated that he was fine with other animals, including her dog and he was friendly with people, but he was basically a "one-person" cat. Thus, he appeared to have a mostly Water (mixed with Metal) constitution.⁴ His *Shen* was slightly weak. A weak *Shen*, which is housed in the Heart, could indicate weak Essence since

the Essence provides the substance from which the *Shen* is derived.^{4,5} His tongue was pink and his pulses were thready in general with weakness in both Kidney *Yin* and Kidney *Yang* positions.

There was a deficiency (depression) palpated at BL-20, the Spleen Back-*Shu* Association point. His ears and feet felt cool, but his lumbar region felt warm. The caretaker noted that he liked heat and liked to be in the sun. He also liked to be on top of the television cable box or under blankets. The cat had always eaten dry cat food^d, but now the caretaker was trying a variety of canned cat foods in order to promote his appetite. Additionally, he had a history of dental disease and had dental extractions in the past. Dental disease could indicate weakness in Kidney Essence since teeth are considered surplus of bone, which the Kidney controls.⁴ The cat's older age would also contribute to decline of Kidney Essence leading to Deficiency of Kidney *Qi*, *Yang* and/or *Yin*.^{5,6} The cat's mostly Water constitution would additionally predispose him to Kidney related problems.⁴

Renal failure in Traditional Chinese Veterinary Medicine (TCVM) is called *Long Bi*.⁶ Since this was an older cat who was lethargic and depressed, had decreased kidney function (as evidenced by the serum biochemical and urine tests), had a decrease in the pulse in the Kidney *Yang* position, and had signs of Coldness (such as cold ears and feet and seeking heat), the cause of his *Long Bi* would be mostly from Kidney *Yang* Deficiency.^{4,6} He also exhibited some signs of Kidney *Yin* Deficiency, which included a fast, thready pulse with weakness in the Kidney *Yin* position, the warm lumbar region and signs of dryness such as general dehydration and decreased urine and bowel movements (possibly indicating constipation).^{4,5} Thus, the main TCVM diagnosis in this cat using Eight Principles and *Zang-fu* Patterns was Kidney *Yang* and *Yin* Deficiency with a predominance of Kidney *Yang* Deficiency.^{4,7-8}

Some authors feel that this pattern of combined *Yin* and *Yang* Deficiency is one of seven main TCVM disease patterns seen in chronic renal failure patients.⁸ The cat also had signs of Spleen *Qi/Yang* Deficiency such as decreased appetite, generalized weakness, loose stools, weight loss, cool feet and ears and a deficiency palpated at BL-20, the Spleen Back-*Shu* Association point.⁴ The cat's reluctance to open his mouth could have been due to Spleen *Qi* Deficiency, since the mouth (especially the lips) is the opening of the Spleen Channel.⁴ If the Stomach, the husband of the Spleen is also Deficient, or if Stomach *Qi* is not descending, then this could lead to rebellious *Qi* (vomiting).^{4,6,9}

When Spleen *Qi* is Deficient, there is decreased transformation and transportation of Body Fluids causing Dampness to accumulate and affecting the ability of Kidney to govern Water.⁴ Furthermore, this causes insufficient *Qi* being produced to maintain the

supply of Kidney Essence since Spleen is the Root of Post-natal Essence (*Jing*).⁴ On the other hand, if Kidney *Yang* is Deficient, there is not enough *Ming Men* Fire to warm the Spleen, thereby affecting the Spleen's ability to transport and transform food and transform Body Fluids.^{4,9} Thus, Kidney *Yang* Deficiency may lead to Spleen *Yang* Deficiency and vice-versa.⁴

Local *Qi* and Blood Stagnation were also present based on the clinical finding of painful kidneys, a warm back initially and a dilated renal pelvis seen on abdominal ultrasound. A dilated renal pelvis is distended or swollen which is a sign of Stagnation.^{4,5} This distension is indicative of an anatomic or functional blockage of urine flow. This in turn can be indicative of an impairment of Kidney *Qi* to transmit the Impure Fluid down to the Bladder, which then leads to Stagnation.⁴ Stagnation is often a major pathological factor in chronic renal failure.⁸ This was not the primary problem in this cat, because the tongue was not purple and the pulses were not wiry.⁵

The TCVM treatment strategies were to tonify *Qi*, tonify and warm Kidney *Yang* and to nourish Kidney *Yin*.⁵ Kidney *Yin* needed to be nourished because there were Kidney *Yin* Deficiency signs and also because it would help in turn to tonify Kidney *Yang*.¹⁰ Moreover, Blood needs to be invigorated and *Qi* moved to decrease the local Stagnation.⁸ Both the Spleen and Kidney needed to be strengthened, since these were the main organs that were weak.

Dry needle acupuncture was instituted using Kingli^c 0.20 mm x 13 mm needles placed at a depth of 6 mm in the Back-*Shu* Association points and for most other points, and at a depth of 2-4 mm in the leg points (Table 2). For deeper points, Kingli^c 0.20 mm x 25 mm needles were placed at a depth of 15-20 mm. Needles were placed perpendicularly using an even needle technique. The even (neutral) needle technique is called *Ping-bu-ping-xie*, or half-tonifying and half-sedating ("double H").¹¹ In this technique, the needles are inserted, lifted, thrust and rotated evenly and gently at a moderate speed and are often used to balance both Excess and Deficiency patterns.¹¹ The author then allows the body to determine the needle angle at rest. The exception to this was the point *Da-feng-men* which was placed in a sedation technique by inserting the needle tip against the direction of normal *Qi* flow in the channel.^{11,12} The needles were originally kept in place for 12 minutes, but in later treatment sessions, they were kept in place for gradually longer time periods, up to 30 minutes. The acupuncture points chosen for each treatment session varied with changes in clinical signs and tongue and pulse findings (Table 3). Aqua-acupuncture was performed using the homotoxicologic formula Berberis Homaccord^f (1.1 ml) mixed with vitamin B-12 (0.4 ml) and sterile water (0.4 ml). Injections (0.2-0.5 ml per acupuncture point) were given

Table 2: The attributes and indications of the acupoints used during the first acupuncture treatment^{4,5,12,15,16}

Acupoint	Attributes and Indications
Da-feng-men	Calms <i>Shen</i> (Location: Head, dorsal midline, level of cranial ear bases)
Bai-hui	Tonifies <i>Yang</i> (Location: Dorsal midline between L7-S1)
BL-20	Spleen Back- <i>Shu</i> Association point, tonifies Spleen and Stomach, reduces Damp and Phlegm, nourishes Blood, treats Spleen <i>Qi</i> Deficiency
BL-23	Kidney Back- <i>Shu</i> Association point, nourishes Kidney Essence, nourishes Kidney <i>Yin</i> and tonifies Kidney <i>Qi</i> and <i>Yang</i> , strengthens the lower back and nourishes Blood, benefits the bones and Marrow, resolves Damp from the Lower Burner (<i>Xia Jiao</i>)
KID-3	Kidney <i>Yuan</i> Source point, <i>Shu</i> -Stream (Earth) point, tonifies Kidney <i>Yin</i> , <i>Yang</i> and Essence, strengthens <i>Yuan</i> (Source) <i>Qi</i>

using a 25 gauge (0.5mm) x16 mm long hypodermic needle placed in an even needle technique whereby the needle was gently inserted and withdrawn with moderate speed.

Tui-na techniques were shown to the caretaker to perform on the cat at home on a daily basis (Table 4). These techniques included *An-fa* of GV-14, KID-1 and *Shan-gen*, a classical point used for appetite stimulation located on the dorsal midline of the head, on top of the nose in a depression at the junction of the haired and non-haired region.¹² Acupuncture had been attempted at this point, but the cat showed great reluctance to allow it.

Likewise, due to the cat's nervous attitude and inclination to hide under his caretaker's arms, acupuncture points on the Lung Channel, the mother of Kidney, often used to treat Kidney Deficiency were not used.^{4,9} KID-7, the Metal (mother) point on the Kidney Channel, was used though (Table 3).¹³ In the author's experience, the patient will often indicate, by their body position and response, what acupuncture point locations will be acceptable to use.

Other *Tui-na* techniques shown to the cat's caretaker included *Mo-fa*, *Ca-fa* and *Rou-fa* down his spine in a cranial to caudal direction, concentrating especially around BL-23 (Table 4).¹⁴ *Tui-na* techniques were used to tonify *Qi*, strengthen Kidney and to move *Qi* and Blood, thereby decreasing Stagnation.¹⁴ While moxibustion is often used to warm the *Yang* over acupuncture points such as GV-4, this method of treatment was not utilized in this particular patient because of a lack of appropriate ventilation in the treatment room.⁶ The *Tui-na* technique of rubbing called *Ca-fa* can be considered a manual substitute for moxa, since it can warm the Channels and the *Yang*.¹⁴ Kidney tonic foods such as cooked organic eggs and kidney

meat were recommended.⁴

Subcutaneous fluids (120 mL Lactated Ringer's solution) were administered to the cat and this was recommended to be continued daily at home. It was suggested to start famotidine^g 0.9 mg/kg PO q 12 h, and to feed the cat a high-quality canned cat food warmed. Feeding just dry cat food was discouraged, since these can be drying in nature and further damage the *Yin*.⁴ Prescription diet foods made for cats with kidney disease were not recommended, since these had already been tried and the cat refused to eat them.

Three days after the first acupuncture treatment, the cat's appetite was normal and he was acting more like himself around the caretaker. There was neither vomiting nor diarrhea and he had normal consistency and frequency of bowel movements. On examination, his hydration had improved and his kidneys were not painful. His breath had improved and his mouth was less tense and easier to open. His tongue was pale pink (indicating Deficiency of *Qi* and/or Blood) and his pulse was fast and thready with weakness in both the Kidney *Yin* and *Yang* positions. There were deficiencies palpated at BL-20 and BL-23, the Spleen and Kidney Back-*Shu* Association points, respectively. His ears and back remained cool, but the feet were normal in temperature. He was given his second acupuncture treatment at this time, and a probiotic (Azodyl^h 1 capsule PO q 24 h) was dispensed.

The third acupuncture treatment was performed four days later (seven days after the initial treatment) and the fourth treatment was performed a week later (two weeks after the initial treatment). By the fourth treatment session, the caretaker said that the cat had a great appetite and had become more active at home, including being able to jump onto furniture. A phosphate binding

Table 3: The locations, attributes and indications of additional acupoints used after the first acupuncture treatment (Note: Different combinations of points from Table 2 and 3 were used for each treatment based on changes in the TCVM examination findings)^{4,5,12,15,16}

Acupoint	Attributes and Indications
GV-14	Crossing Point of the Governing Vessel with the six <i>Yang</i> Channels, clears Heat, treats <i>Yin</i> Deficiency, tonifies <i>Yang</i> , regulates the <i>Ying</i> and <i>Wei Qi</i> , (immune system), releases the Exterior, clears external Wind-Heat
GV-4	Tonifies Kidney <i>Yang</i> to treat <i>Yang</i> Deficiency, nourishes <i>Yuan</i> (Source) <i>Qi</i> and the <i>Yang</i> aspect of the Essence, warms <i>Ming Men</i> , decreases Internal Cold
Shen-shu	Tonifies Kidney <i>Qi</i> and <i>Yin</i> (such as in renal failure) (Location: 1 cun lateral to <i>Bai-hui</i>)
BL-17	Diaphragm Back- <i>Shu</i> Association point, Influential Point for Blood, nourishes and invigorates Blood, treats both Blood Deficiency and Stagnation, nourishes <i>Yin</i> , tonifies <i>Qi</i> and the whole body, opens the chest, clears Heat, pacifies Stomach <i>Qi</i>
BL-18	Liver Back- <i>Shu</i> Association point, benefits Liver and Gall Bladder, moves Stagnant <i>Qi</i> (particularly Liver <i>Qi</i>), reduces Damp-Heat from Liver and Gall Bladder, reduces Wind
BL-21	Stomach Back- <i>Shu</i> Association point of the Stomach, regulates and tonifies Stomach and Spleen <i>Qi</i> , pacifies the Stomach, relieves Food Stagnation, reduces Damp
BL-24	Sea of <i>Qi</i> , tonifies <i>Qi</i> , regulates <i>Qi</i> and Blood, removes obstruction from Channel, treats Spleen and Kidney <i>Qi</i> Deficiency
BL-25	Large Intestine Back- <i>Shu</i> Association point, promotes Large Intestine functions, treats constipation and diarrhea, prevents Damp-Heat accumulation
BL-27	Small Intestine Back- <i>Shu</i> Association point, promotes Small Intestine function, reduces Damp, clears Heat and benefits urination
BL-60	<i>Jing</i> -River (Fire) point, clears Heat, invigorates Blood, decreases pain, removes obstruction from the Channels, strengthens the back
ST-36	Master Point for the gastrointestinal tract and abdomen, <i>He</i> -Sea (Earth) point, a Lower <i>He</i> -Sea point, a Horary Point, tonifies <i>Qi</i> and Blood, tonifies Spleen <i>Qi</i> , benefits Stomach and Spleen, strengthens the body, dispels Cold, expels Wind/Damp, raises <i>Yang</i> , regulates the <i>Ying</i> and <i>Wei Qi</i> , regulates intestines
KID-1	<i>Jing</i> -Well (Wood) point, tonifies <i>Yin</i> , clears Heat in <i>Yin</i> Deficiency, calms <i>Shen</i> , raises <i>Yang Qi</i>
KID-7	<i>Jing</i> -River (Metal, the mother point) point, tonifies Kidney <i>Yin</i> and <i>Yang</i> , reduces Damp in the Lower Burner (<i>Xia Jiao</i>)
SP-6	Master Point of the caudal abdomen and urogenital tract, Crossing Point for three <i>Yin</i> Channels (Spleen, Liver and Kidney), strengthens the Spleen, tonifies <i>Qi</i> , treats Spleen Deficiency, nourishes <i>Yin</i> and Blood, clears Damp and Damp-Heat, promotes Liver function and the smooth flow of Liver <i>Qi</i> , tonifies the Kidney, benefits urination, moves Blood to reduce Stagnation, stops pain, cools Blood, calms the <i>Shen</i>
SP-10	Sea of Blood, nourishes, cools and invigorates Blood, treats Blood Deficiency and Blood Stagnation
GB-34	Lower <i>He</i> -Sea point for the Gall Bladder and a <i>He</i> -Sea (Earth) point, promotes the smooth flow of Liver <i>Qi</i> , helps Stomach <i>Qi</i> descend to reduce vomiting, reduces Damp-Heat in the Liver and Gall Bladder, Influential point for the ligaments and tendons
GB-39	Influential point for Marrow, nourishes marrow and benefits Kidney Essence
LIV-3	Liver <i>Yuan</i> (Source) point, <i>Shu</i> -Stream (Earth) point, subdues Liver <i>Yang</i> , promotes the smooth flow of Liver <i>Qi</i> , reduces Liver Stagnation, calms the <i>Shen</i> and nourishes Liver Blood

agent containing lactose, calcium carbonate and chitosan¹ (Epakitin™ 179.2 mg/kg PO q 12 h with food) was dispensed.

Three days after the fourth treatment, the referring veterinarian repeated some clinicopathological

tests. The cat had a serum creatinine of 2.8 mg/dL (reference range 0.8-2.4 mg/dL) which was a great improvement. The cat's hematocrit had decreased to 25.7 % although still was in the reference range (reference range 24.0-45.0%). This may have been

Table 4: *Tui-na* techniques, their actions and location of treatment used in an Abyssinian cat with chronic renal disease¹⁴

Technique	Description	Actions	Location
<i>An-fa</i>	Pressing	Invigorates <i>Qi</i> and Blood, unblocks obstructions	GV-14, KID-1, <i>Shan-gen</i>
<i>Mo-fa</i>	Touching	Calms, harmonizes the Middle Burner (<i>Zhong Jiao</i>), regulates <i>Qi</i> , drains Stagnation, removes accumulation	Cranial to caudal along spine, BL-23
<i>Ca-fa</i>	Rubbing	Warms Channels, unblocks collaterals, tonifies <i>Zang-Fu</i> Organs, for <i>Yang</i> Deficiency and geriatric animals	Cranial to caudal along spine, BL-23
<i>Rou-fa</i>	Rotary and kneading	Regulates <i>Ying</i> and <i>Wei Qi</i> , unblocks <i>Qi</i> and Blood, eliminates Food retention, relieves pain, for Deficiency patterns	Cranial to caudal along spine, BL-23

associated with an underlying Blood Deficiency. The Blood Deficiency probably occurred secondary to Spleen *Qi* Deficiency, since Blood is produced mostly from *Gu* (Food) *Qi* made by the Spleen.^{4,9} Blood Deficiency can lead to further *Qi* Deficiency, since Blood is the mother of *Qi* and there would be less Blood to carry *Qi* to the body.⁴ Additionally, if the Kidney (especially Kidney Essence) is weak, it will not nourish its child (Liver) and this could lead to Liver Blood Deficiency, since Essence is transformed into Blood in the Liver.^{4,8,9} Furthermore, Essence produces Marrow, which then generates bone marrow, which helps make Blood.⁵ Blood that is not consumed is transformed into Essence in the Kidney.⁴

It is interesting to note that this relationship between Kidney and Blood is also recognized in conventional medicine. Erythropoietin, a hormone produced in the kidney, stimulates erythrocyte production by promoting the division and differentiation of committed erythroid progenitors in the bone marrow, similar to the action of Kidney Essence.^{2,5,17} In fact, erythropoietin deficiency has been determined to be the primary cause of anemia in some humans and animals with chronic renal failure.^{17,18} Acupuncture points such as BL-17, SP-10, GB-39, ST-36 and LIV-3 were used to help treat the Blood Deficiency.⁴

The cat was treated for the fifth time, seven days after the fourth acupuncture treatment (three weeks after the initial treatment). He remained active and was eating well and had gained 0.4 kg of body weight. A serum biochemistry profile was performed and the cat had a BUN of 19 mg/dL (reference range 14-36 mg/dL), creatinine 2.2 mg/dL (reference range 0.6-2.4 mg/dL) and phosphorus of 4.3 mg/dL (reference range 2.4-8.2 mg/dL) (Table 1).

A sixth acupuncture treatment was performed two weeks after the fifth treatment (five weeks after the

initial treatment). Two weeks later (7 weeks after initial treatment) a seventh acupuncture treatment was performed and the Chinese herbal formula *Shen Qi Wan*^j (*Jin Gui Shen Qi*TM) 62.5 mg/kg PO q 24 h for 2 days and then increased to 62.5 mg/kg PO q 12 h was prescribed. This formula tonifies the Kidney and warms the *Yang* and also nourishes Kidney and Liver *Yin*.^{10,19,20} Although it may be considered a Kidney *Yang* tonic, this formula is appropriate in treating Deficiency of both Kidney *Yin* and *Yang*, as long as there are no major Deficient Fire signs.^{8,10} *Shen Qi Wan* is a well-balanced formula that tonifies *Yin* Deficiency in order to generate *Qi*, which stimulates *Yang* and restores the function of Kidney. Thus, “tonifying *Yang* is sought in tonifying *Yin*.”²¹ Its herbal components and actions are shown in Table 5.

One week after the seventh acupuncture treatment (about eight weeks after acupuncture was initiated), the cat was presented to an emergency clinician for lethargy and decreased appetite. It was felt that his clinical signs could have been related (at least partially) to the commencement of the *Shen Qi Wan*. The formula was discontinued for two days and the clinical signs resolved. The formula was then restarted and continued on a once daily basis. After two months, the formula was increased to twice daily administration without incident.

The eighth acupuncture treatment was performed six days after the emergency presentation (nine weeks after acupuncture was initiated). At that time, the dose of the phosphate binder was lowered to 77.64 mg/kg PO q 24 h. Additionally, a lyophilized kidney gland concentrate^k was prescribed, to be given at a dosage of 27.17 mg/kg PO q 24 h for 3 days then increased to 54.34 mg/kg PO q 24 h. One week later, a biosynthetic erythropoietin or recombinant human Epo alfa (r-HuEPO-alpha)^l, 93.2U/kg SQ three times per

Table 5: The ingredients of the Chinese herbal formula *Shen Qi Wan*^j and their actions^{10,19,22}

<i>PinYin Name</i>	<i>English Name</i>	<i>Actions</i>
<i>Fu Zi</i>	Aconite	Tonifies and warms Kidney <i>Yang</i> , dispels Cold, decreases Damp
<i>Rou Gui</i>	Cinnamonum	Tonifies and warms Kidney and Spleen <i>Yang</i> , warms and unblocks Channels
<i>Shu Di Huang</i>	Rehmannia	Nourishes <i>Yin</i> , Blood and Essence
<i>Shan Zhu Yu</i>	Cornus	Nourishes <i>Yin</i> , tonifies Liver, Kidney, Essence and Blood, astringes leakage of Essence
<i>Shan Yao</i>	Dioscorea	Tonifies <i>Qi</i> , nourishes and consolidates Kidney Essence, strengthens Spleen
<i>Mu Dan Pi</i>	Moutan	Cools the Liver, decreases Blood Stasis
<i>Fu Ling</i>	Poria	Drains Damp, strengthens the Spleen
<i>Ze Xie</i>	Alisma	Drains Damp, clears Kidney False-Fire

week was initiated by the referring veterinarian. The ninth acupuncture treatment was performed two weeks after the eighth treatment (eleven weeks after acupuncture was initiated).

Three weeks after the ninth acupuncture treatment (fourteen weeks after acupuncture was initiated) a tenth acupuncture treatment was given. At that time the cat was clinically stable and clinicopathologic tests were re-evaluated. The hematocrit was normal at 32.7 % (reference range 25.0-45.0 %) and the WBC was also normal at $8.3 \times 10^3/\mu\text{l}$ (reference range $5.5-19.5 \times 10^3/\mu\text{l}$). On the serum biochemistry profile the BUN was 28 mg/dL (reference range 16-36 mg/dL), creatinine 3.7 mg/dL (reference range 0.8-2.4 mg/dL) and the phosphorus and potassium were normal (Table 1). A urinalysis performed a few weeks later showed a urine specific gravity of 1.029 which was also an improvement.

The cat continues to be treated with dry needle acupuncture and aqua-acupuncture using Berberis Homaccord, vitamin B-12 and sterile water in the aforementioned technique every 6 weeks (Figure 1). One year ago (30 months after acupuncture treatment was initiated), he developed polycythemia and hypertension, which were thought to be partly due to the erythropoietin therapy.^{2,17} This was discontinued for a period and amlodipine besylate^m (0.20 mg/kg PO q 12 h) was begun and is still being administered to the cat. The Chinese herbal formula *Shen Qi Wan* was discontinued in the evening and Rehmannia 6^j, a formula based on the classic formula *Liu Wei Di Huang Wan* at a dose of 65.36 mg/kg PO q 24 h was used instead. This formula nourishes the *Yin* and tonifies the Kidney.^{10,19} Thus, for the past year, the cat currently receives a *Yang* tonic in the morning and a *Yin* tonic in the evening.

The cat has responded very well to acupuncture,

the Chinese herbal medicines, *Tui-na*, and Food therapy. When this cat was first examined, he was given a grave prognosis by the referring veterinarian and would have been euthanized in a matter of days, if the caretaker had not persisted to receive a TCVM opinion. Now with the integration of TCVM therapies with some conventional treatments this cat is still living three years and six months later and leads a very happy and comfortable life (Figure 2). This case illustrates the power of TCVM techniques especially acupuncture and Chinese herbal



Figure 1: A relaxed 13.5-year-old Abyssinian cat listening to his caretaker during an acupuncture treatment session for chronic renal disease; this treatment was performed 3 years and 4 months after acupuncture was originally initiated; visible acupoints include BL-17, BL-20, BL-21, BL-23, ST-36 and KID-3



Figure 2: A 13.5-year-old Abyssinian cat presented for TCVM evaluation 3.5 years ago for renal failure and a euthanasia recommendation from a conventional veterinarian, now still living a high quality life with maintenance dry needle acupuncture, aqua-acupuncture, *Shen Qi Wan*^j and *Rehmannia 6*^j, *Tui-na* and Food therapy

medicines to manage chronic internal medicine diseases, like chronic renal failure, with a poor conventional prognosis. Additionally, this case illustrates the commitment of an animal caretaker who had the foresight to question conventional practices, the fortitude to seek out other healing approaches and the patience to follow through with all the treatments necessary for her animal companion to heal to the best of his ability.

FOOTNOTES

- ^a FVRCP, Feline Rhinotracheitis-Calici-Panleukopenia MLV vaccine, Merial, Duluth, GA
^b Leukocell® 2 Feline leukemia killed virus vaccine, Pfizer Animal Health, Inc, Exton, PA
^c Imrab®3 TF killed rabies virus vaccine, Merial, Duluth, GA
^d Hill's® Science Diet® Nature's Best,™ Hill's Pet Nutrition, Inc, Topeka, KS
^e KINGLI, Kingli Medical Appliance Co., Ltd., Wuxi, China
^f Berberis Homaccord®, Heel Inc, Albuquerque, NM
^g Pepcid AC®, Consumer Pharmaceuticals Co, Fort Washington, PA

- ^h Azodyl™, Kibow Biotics®, Vetoquinol USA Inc, Buena, NJ, under license from Kibow Biotech Inc, Newtown Square, PA
ⁱ Epakitin™, Vetoquinol USA Inc, Buena, NJ
^j Jing-Tang Herbal, Reddick, Fl. www.tcv.com
^k Pure Kidney, lyophilized kidney gland concentrate, Professional Complementary Health Formulas, Portland, OR
^l Epogen®, epoetin alfa, Amgen Inc, Thousand Oaks, CA
^m Norvasc®, Pfizer Inc, NY, NY

REFERENCES

- Willard MD, Tvedten H. Small Animal Clinical Diagnosis by Laboratory Methods 4th ed. St. Louis, MO:Saunders 2004:67-68,159-160.
- Plumb DC. Plumb's Veterinary Drug Handbook 6th Ed. Stockholm, WI:PharmaVet, Inc 2008:44-45,240-241,349-351,606-608.
- Hoskins JD. Geriatrics and Gerontology of the Dog and Cat. St. Louis, MO:Saunders 2004:24.
- Xie H, Preast V. Traditional Chinese Veterinary Medicine Volume I: Fundamental Principles. Reddick, FL:Jing Tang 2002:31-36,42-43,50,77-78, 83-85, 106-107, 112, 115-116, 126-128, 130, 220, 256, 305-315,373,375,377,416,432,437-438,442-443,561-563,570, 573.
- Maciocia G. The Foundations of Chinese Medicine: A Comprehensive Text for Acupuncturists and Herbalists. Philadelphia, PA: Churchill Livingstone 1989: 49,107, 152,192-193,252-254,388-389,394-396,414-418,424,427-430,449-450,459,469-470.
- Xie H. Acupuncture for internal medicine. Xie's Veterinary Acupuncture. Xie H, Preast V (eds). Ames, IA:Blackwell Publishing 2007:276-277,296-298.
- Maciocia G. Diagnosis in Chinese Medicine: A Comprehensive Guide. Philadelphia, PA: Churchill Livingstone 2004: 363-367,814,907.
- Wu C. Chronic renal failure: a TCVM approach. Proceedings-The TCVM Kidney: Physiology and Pathology. 8th Adv Trad Chinese Vet Med Conf. Beijing, China 2006; 190-195.
- Yu C. Traditional Chinese Veterinary Acupuncture and Moxibustion. Beijing, China:China Agricultural Press 1995:192-193,197-199,201,203,212,230.
- Bensky D, Barolet R. Chinese Herbal Medicine: Formulas and Strategies. Seattle, Wa:Eastland Press Inc 1993:263-264,275-278.
- Xie H, Preast V. General rules of acupuncture therapy. Xie's Veterinary Acupuncture. Xie H, Preast V (eds). Ames, IA:Blackwell 2007:236.

12. Chrisman C, Xie H. Canine classical acupoints. Xie's Veterinary Acupuncture. Xie H, Preast V (eds). Ames, IA:Blackwell 2007:217-219,224.
13. Limehouse JB, Taylor-Limehouse PA. Eastern concepts of acupuncture. Veterinary Acupuncture: Ancient Art to Modern Medicine 2nd Ed. Schoen AM (ed). St. Louis, MO: Mosby Inc 2001:89.
14. Deng X, Xie H. The Secret of Professor Han Ping's *Tui-na* Techniques. Reddick, FL: Chi Institute of Chinese Medicine 2000:4-7,45-51,114-115,119.
15. Chrisman C, Xie H. Canine transpositional acupoints. Xie's Veterinary Acupuncture. Xie H, Preast V (eds). Ames, IA:Blackwell 2007:148,151-152,164-165,168-169,171-172,188-190,195,198.
16. Wynn S, Marsden S. Manual of Natural Veterinary Medicine: Science and Tradition. St. Louis, MO: Mosby Inc 2003:674, 677-678, 683-686, 688-690, 696-698.
17. Physician's Desk Reference 62nd ed. Montvale, NJ: Thomson PDR 2008:565-571.
18. Polzin D. Treating kidney disease in dogs-standards of care. Veterinarian Proceedings. Atlantic Coast Vet Conf 2005; 715-718.
19. Xie H. Chinese Veterinary Herbal Handbook 2nd ed. Reddick, FL: Chi Institute of Chinese Medicine 2008:116,124.
20. Ellis A. Notes from South Mountain: A Guide to Concentrated Herb Granules. Berkeley, CA: Thin Moon Publishing 2003:7-8.
21. Zhang K. The TCVM Kidney. Proceedings-The TCVM Kidney: Physiology and Pathology. 8th Adv Trad Chinese Vet Med Conf. Beijing, China 2006: 12.
22. Bensky D, Clavey S, Stoger E. Chinese Herbal Medicine-Materia Medica 3rd ed. Seattle, WA: Eastland Press Inc 2004:126-128,267-274,673-677,684-687,723-725,744-746,857-860.

ABSTRACT

Bi CW, Xie HQ, Xu L et al.

***Fo Shou San*, an Ancient Herbal Decoction Prepared from Rhizoma *Chuanxiong* and Radix *Angelicae Sinensis*, Stimulates the Production of Hemoglobin and Erythropoietin in Cultured Cells.**

Planta Med. 2010 Mar 22.

Fo Shou San (FSS) is an ancient herbal decoction comprised of Rhizoma Chuanxiong (RC; Chuanxiong) and Radix Angelicae Sinensis (RAS; Danggui) in a ratio of 2 : 3. It is mainly prescribed for patients having a blood deficiency. This combination is considered the most popular herb pair among Chinese medicines; however, the rationale of having these two chemically similar herbs within the decoction has historically not been made clear. Here, we attempted to reveal the chemical and biological properties of this decoction as a means to deduce its mechanism of action. The effects of FSS were determined in different cell culture models. With respect to stimulation of blood circulation, FSS inhibited ADP-mediated platelet aggregation in a dose-dependent manner. In order to reveal the hematopoietic effect of this decoction, FSS was applied onto cultured K562 human leukemia cells and Hep3B human hepatocellular carcinoma cells. Application of FSS in cultured K562 cells inhibited cell proliferation and subsequently induced the production of hemoglobin. Additionally, the mRNA expression of erythropoietin (EPO) was induced in a dose-dependent manner when FSS was applied to Hep3B cells. The current results reveal the effects of FSS in different cell models, paving a direction for mechanistic studies.