

# **CASE REPORT**

**2017 - 2018 COURSE**

**Belgium**

## **ACUPUNCTURE USED TO TREAT HEREDITARY ATAXIA IN A JACK RUSSEL TERRIER**

Lucie DEVEUGLE  
Bordeaux (33)  
FRANCE  
+33.6.10.96.11.53  
lucie.deveugle@hotmail.com

## **TITLE**

Acupuncture Was Used To Treat Hereditary Ataxia in a Jack Russel Terrier

## **ABSTRACT**

Acupuncture therapy was used to treat a Jack Russel Terrier suffering from hereditary ataxia. Dry needle acupuncture therapy and direct moxibustion were selected. Currently, 4 sessions have been carried out, showing a partial improvement. Muscle tremors are gone and ataxia has significantly decreased.

## **HISTORY**

Nina is a 1,5 year old female Jack Russel Terrier who was presented in August 2018 for a chronic permanent ataxia and muscle tremors since she was 3 months old. Since then, the owners noted a slow progressive degradation. The symptoms got worse with exercise or activity, and at the time of presentation the dog had not the capacity to go without falling down or jumping small heights without assistance. A discreet head tilt was noted by her owners, only when she was eating and muscle tremors had been seen, especially on the thighs and after exercise. No pain or no behavioral problem was reported. She ate, drank and slept well. At the age of 6 months, bloodwork, including Chemistry and Complete Blood Count were performed and were normal. A one month treatment of Prednisolone 10 mg q24 had been prescribed by the primary veterinarian in October 2017, without significantly affecting either the ataxia or the muscle tremors. There were no other past medical problems noted in the history. After a phone call to the breeder, no similar case was reported in the siblings. At this point, the owner became slightly frustrated with the ongoing symptoms, lack of response to treatment, and continuous ataxia. He agreed to a course of TCVM treatment consisting of weekly acupuncture for a month.

## **CLINICAL SIGNS/DIAGNOSTICS/DIAGNOSIS – CONVENTIONAL (WESTERN)**

Nina was bright and alert and in good condition. The clinical examination did not reveal abnormality. The orthopedic examination revealed a left patellar dislocation without pain or swelling. The other joints had normal range of motion. She did not have muscle atrophy. She could stand and walk on her own, but had some balance losses. The neurological examination highlighted a cerebellar-type ataxia with hypermetria on the four legs, discreet hind limbs spasms and tremors only during the manipulation, especially on the lateral side of the thighs. She had bilateral balance losses, wide base stance and moderate proprioceptive deficits on the four legs. The spinal reflexes were normal as well as cranial nerves reflexes and responses. Her spinal column had no tenderness to palpation.

Bloodwork, including Chemistry and Complete Blood Count done when she was 6 months old were normal. Brain MRI and genetic test were proposed to the owners but they declined due to the cost.

The breed, anamnesis, clinical, orthopedic and neurological examinations evoked a spinocerebellar tracts ailment. A cerebellar affection was also possible.

A presumptive hereditary ataxia of the Jack Russel Terrier, a degenerative congenital disorder of the central nervous system described in this breed, was strongly suspected.

## **CLINICAL SIGNS/DIAGNOSIS – TCM (EASTERN)**

Nina had an abnormal gait, balance losses since she was three months old. However, she enjoyed exercise and walks despite she was easily tired. She could not jump on the couch without assistance. A discreet head tilt was noted by her owners, only when she was eating and muscle tremors had been seen, especially on the thighs and after exercise. No pain or no behavioral problem was reported. The symptoms worsened with activity or exercise and were better with rest. The ataxia was characterized by the owners as permanent. She did not often bark and her voice was pretty weak. She already had a lot of tartar on teeth. Nina slept well and often, and preferred soft bedding. She also preferred a warm, sunny place to lie down, but the warmer summer weather did not seem to make any difference in the ataxia or the mobility. The owners noted that Nina's appetite was still very good and her thirst was normal. Her stool and urine consistency and rate were normal as well.

She was easily feared with unknown people or dogs. She had a normal overall body appearance and a quite good coat quality. Her nails were a little bit brittle.

Nina is a Fire constitution.

On examination, Nina's tongue appearance was small, thin, pale and slightly dry. Her pulse diagnosis was wiry and fine, and it was equal between the right and left legs. Her pulse rate was normal. Her Association and Alarm Gall Bladder, Liver and Kidney points were tender. Gall Bladder and Liver Association points were very sensitive while Kidney Association points felt deficient.

A diagnosis of Liver Blood Deficiency creating Internal Wind was made based on the following findings :

- ataxia
- discreet muscle tremors
- intermittent head tilt
- reactive Gall Bladder and Liver Association and Alarm points
- brittle nails
- pale, thin and slightly dry tongue
- wiry and fine pulse

An underlying Kidney Jing Deficiency was suspected to be the root of the problem with the following symptoms :

- congenital problem
- easily tired
- left patellar dislocation
- infrequent and weak barking
- tartar on teeth
- fear with unknown people or dogs
- small tongue
- deficient Kidney Alarm and Association points

## CONVENTIONAL (WESTERN) TREATMENT

A conventional treatment was done when Nina was 6 months old (October 2017). She received a corticosteroid therapy - Prednisolone 10mg q24 PO during a month. No improvement was noted. Currently, there is no conventional treatment for this degenerative disease<sup>31,32</sup>.

## TCM (EASTERN) TREATMENT

### Principles :

Liver Blood Deficiency generating Internal Wind<sup>4,5</sup> :

- Extinguish Wind
- Open some Wind doors
- Tonify the Liver
- Nourish Blood

Underlying Kidney Jing Deficiency :

- Fill up Kidney Deficiency
- Promote Kidney Yin to support the formation of Blood
- Tonify Kidney Essence
- Tonify the Qi

### Acupuncture :

Dry Needle Acupuncture Treatment using 0,20 mm x 15 mm copper wired handle, silicone-coated needles were placed at a depth of 5 mm, using an identical needle technique at all points. These needles remained in place for 10-15 minutes. The same needles and technique were utilized for each visit.

Moxibustion using L 21 x Ø 1,8 cm standard thick Moxa roll made of pure mugwort was used to warm CV4 at a distance of approximately 2 cm for 5 minutes at the third and fourth sessions.

### Points<sup>30</sup> :

<b>GV 14</b> Da Zhui	In the depression on the midline between the dorsal spinous processes of the 7 <sup>th</sup> cervical and 1 <sup>st</sup> thoracic vertebrae	Meeting point for all Yang channels. Point of the Sea of Qi Extinguishes interior Wind, clears the brain, stimulates the marrow to reach the brain <sup>6,17,27</sup> and calms the spirit
<b>GV 17</b> Nao Hu	In the depression on dorsal midline just in front of the occipital protuberance, at the level of the caudal ear base	Extinguishes interior Wind, benefits the brain (stimulates the nourishment of the brain by Marrow), calms the mind <sup>6,18,19</sup>
<b>GB 20</b> Feng Chi	In the depression in the craniodorsal aspect of the neck, caudal to the occipital bone, medial to the jugular process of the occipital bone, between the sternomastoideus and the sterno-occipitalis mm.	Extinguishes interior Wind, nourishes marrow and clears the brain <sup>13,25</sup>

<b>LI 4</b> Hegu	In the depression between the 1 <sup>st</sup> and 2 <sup>nd</sup> metacarpal bones, approximately in the middle of the 2 <sup>nd</sup> metacarpal bone on the radial side	Source (Yuan) point. Combined with LIV 3 (called the 'Four Gates') : expels interior Wind from the head and promotes calming <sup>5,7,20</sup>
<b>KI 3</b> Tai Xi	In the depression cranial to the tuber calcanei, at approximately the midpoint of a line drawn from the tip of the medial malleolus to the point of insertion of the common calcanean tendon	Earth, Source and Shu-Stream point. Tonifies the Kidneys to produce Blood, benefits Essence, nourishes (Liver-)Blood <sup>11,24</sup>
<b>KI 6</b> Zhao Hai	In the depression overlying the joint space between the talus and calcaneus, distoplantar to the medial malleolus in the standing position and directly distal to the medial malleolus when the hock is flexed at a 90 degree angle	Tonifies Kidney Yin and so tonifies the Kidneys to produce Blood and calms the mind <sup>6,12,24</sup>
<b>BL 23</b> Shen Shu	In the depression 1.5 cun lateral to the caudal border of the spinous process of the 2 <sup>nd</sup> lumbar vertebra	Association (Shu) Point for the Kidney. Tonifies the Kidneys and nourishes the Kidney-Essence, nourishes Blood, strengthens the brain, bones and marrow, benefits the mind <sup>4,10,23</sup>
<b>SP 6</b> San Yin Jiao	In the depression 3 cun proximal to the tip of the medial malleolus of the tibia, on the caudal border of the tibia	Meeting Point of three Yin of the leg. Tonifies the Post-Heaven Qi to produce Blood, harmonizes the Liver, tonifies the Kidneys, moves and nourishes Blood, calms the mind <sup>9,22</sup>
<b>ST 36</b> Zu San Li	In the depression just lateral to the distal aspect of the cranial border of the tibial tuberosity (tibial crest), approximately in the middle of the cranial tibialis muscle	Earth, He-Sea and Horary Point. Tonifies the Post-Heaven Qi to produce Blood <sup>8,21</sup>
<b>LIV 3</b> Tai Chong	In the depression on the dorsum of the rear foot, between the 2 <sup>nd</sup> and 3 <sup>rd</sup> metatarsal bones, at the level of the junction of their heads and shaft, just proximal to their associated metatarsophalangeal joints	Source, Shu-Stream and Earth Point. Extinguishes interior Wind, calms the mind and spasms. Combined with LI 4 (called the 'Four Gates') : has a much more profound effect on expelling Wind from face and calming mind <sup>14</sup>
<b>LIV 8</b> Ququan	In the depression caudal to the medial condyle of the femur, dorsal to the medial condyle of the tibia. With the stifle flexed, this is proximal to the medial end of the transverse popliteal crease	He-Sea, Water and Tonification point. Nourishes Liver-Blood, relaxes the sinews <sup>15,26</sup>

<b>CV 4</b> Guanyuan	In the depression on the ventral midline 3 cun caudal to the umbilicus (with the sheath reflected laterally in the male)	Alarm (Mu) Point for the Small Intestine, Meeting point for the three Yin channels : Spleen, Kidney and Liver. Nourishes Blood, Yin and Qi metabolism, strengthens the Kidneys, benefits Original Qi (Yuan Qi) <sup>16,28</sup>
-------------------------	--	---

## Treatments :

### August 6<sup>th</sup>, 2018 :

**LI 4 + LIV 3** was used in combination called the 'Four Gates' to expel interior Wind and to calm the mind. LIV 3 is a major point. It can be used to nourish Liver-Blood. It also extinguishes interior Wind and it has a specific action in calming spasms, contractions and cramps of the muscles. Combined with LI 4, it has a much more profound effect on expelling Wind from the face, and is used for head tilt in this case<sup>14</sup>.

**GB 20** was used to extinguish interior Wind, to nourish marrow and to clear the brain<sup>13</sup>.

**GV 17** was also selected to extinguish interior Wind, to benefit the brain (this point stimulates the nourishment of the brain by Marrow) and to calm the mind<sup>6,18</sup>.

**KI 3** was needled because it is one of the main points to tonify the Kidneys<sup>11</sup>.

### August 13<sup>th</sup>, 2018 :

The owners noted that on August 6<sup>th</sup>, Nina seemed worse with much difficulty walking and was very lethargic all that day, but on the next day she was improved. Her tremors had decreased significantly, only appeared after long walking. The physical exam still shown moderate ataxia but the pulses were improved in consistency while still wiry. Her tongue was less pale but still slightly dry. Her Gall Bladder, Liver and Kidney Association and Alarm points were still sensitive.

The same acupuncture points were chosen to continue to support their actions.

**LI 4 + LIV 3** was used in combination called the 'Four Gates' to expel interior Wind and to calm the mind. LIV 3 is a major point. It can be used to nourish Liver-Blood. It also extinguishes interior Wind and it has a specific action in calming spasms, contractions and cramps of the muscles. Combined with LI 4, it has a much more profound effect on expelling Wind from the face, and is used for head tilt in this case<sup>14</sup>.

**GB 20** was used to extinguish interior Wind, to nourish Marrow and to clear the brain<sup>13</sup>.

**GV 17** was also selected to extinguish interior Wind, to benefit the brain (this point stimulates the nourishment of the brain by Marrow) and to calm the mind<sup>6,18</sup>.

**KI 3** was needled because it is one of the main points to tonify the Kidneys<sup>11</sup>.

### August 20<sup>th</sup>, 2018 :

The owners noted that Nina was tired after last visit. The improvement of the symptoms were less noticeable compared to the first session. During the examination, her tongue was light pink and less dry, and her pulse less wiry. Liver Association and alarm points were still sensitive but not the Gall Bladder Shu and Mu points. Kidney Association and Alarm points felt less deficient.

I would change my points selection to see if I could have more results.

**GV14** replaced GV 17. GV 14 was used to extinguish interior Wind, to clear the brain, to stimulate Marrow to reach the brain and to calm the spirit<sup>6,17</sup>.

I wanted to tonify more strongly the Kidneys because in this case, I supposed Kidney Jing Deficiency was the root of the disease. So, I selected the following points :

**CV 4** with Moxa roll because CV 4 is an extremely important point. It is one of the most powerful points to tonify Qi, Blood and Essence, and to strengthen the body and mind. First of all, it can be used to tonify Blood and Yin in any pattern of deficiency of Blood or Yin, or both. It nourishes Yin, first, because the Directing Vessel controls all the Yin Channels, and secondly, because CV 4 is the meeting point of the Directing Vessel with the Liver, Spleen and Kidney Channels.

Besides this, it tonifies the Kidneys and Original Qi and is a very powerful point to strengthen the general level of energy and the Kidneys. It is thus an important point to treat chronic diseases or patients with a poor constitution. CV 4 can tonify both Kidney Yang and Kidney Yin<sup>16</sup>.

**KI 6** was used to tonify Kidney Yin and so tonify the Kidneys to produce Blood and to calm the mind<sup>6,12</sup>.

**BL 23** was picked to tonify the Kidneys and to nourish the Kidney-Essence, to nourish Blood, to strengthen the brain, bones and marrow and to benefit the mind<sup>4,10</sup>.

### **August 27<sup>th</sup>, 2018 :**

The owners reported an obvious greater stamina. Compared to the past, Nina did not need to be carried in the arms after a very long walk on the beach. They told me that they did never see her like this before. Her muscle tremors and head tilt were completely gone and her overall exercise tolerance was much better. She was still having balance losses and was still ataxic.

Her pulse today was more full and her tongue was pink. Only Liver Association and Alarm points were tender.

The same acupuncture points were needled and I added LIV8, ST 36 and SP 6 for the last session. This combination is excellent to nourish Blood.

**GV14** was used to extinguish interior Wind, to clear the brain, to stimulate Marrow to reach the brain and to calm the spirit<sup>6,17</sup>.

**CV 4** with Moxa roll because CV 4 nourishes Blood, Yin and Qi metabolism, strengthens the Kidneys, benefits Original Qi (Yuan Qi)<sup>16</sup>.

**KI 6 + BL 23** were both picked to tonify the Kidneys as well<sup>10,12</sup>.

**LIV 8** was needled to nourish Liver-Blood and to relax the sinews<sup>15</sup>.

**ST 36** was used because it is a major point to tonify Qi and Blood in Deficiency patterns. It is a good point for chronic disease. ST 36 tonifies also the Original Qi (Yuan Qi) residing in the Kidneys<sup>8</sup>.

**SP 6** was selected because SP 6 has a deep influence on Blood. It can nourish Blood and Yin, and it is very frequently used in both Blood and Yin Deficiency, often combined with ST 36<sup>9</sup>.

After last session, the plan for Nina was to schedule a recheck/acupuncture session in a month to continue to support and treat her underlying Kidney Jing Deficiency.

## DISCUSSION

A 1,5 year old female Jack Russel Terrier was presented with a chronic, worsening ataxia, discreet muscle tremors and intermittent head tilt. The symptoms appeared at the age of 3 months. A presumptive diagnosis of hereditary ataxia was established according to the breed, the age of onset and nature of the typical clinical signs, as well as the normal results of bloodwork (CBC and Biochemistry). An anti-inflammatory medication was prescribed based on corticosteroid therapy (Prednisolone 10 mg q24) when Nina was 6 months old but did not help the ataxia neither other symptoms, suggesting that her issues were not currently inflammatory. No other complementary exams (brain MRI, brain stem auditory-evoked potentials, total cell count and protein concentration of the cerebrospinal fluid, radiographs of the vertebral column, genetic test or myelography) were performed due to the cost.

From a Western point of view of this disease, hereditary ataxia in the Jack Russel Terrier is a well-known but rarely described disease in small animal practice. It occurs in both types of the Jack Russel Terrier : the Parson Russel Terrier and the Jack Russell Terrier. The disease can be diagnosed clinically by its characteristic gait disturbance with symetric generalized ataxia and hypermetric and spastic movements similar to findings in animals with cervical lesions. During activity or excitement, the clinical signs worsen, and muscle fasciculations may occur. Gait abnormalities are observed for the first time in dogs between 2 and 6 months ages, but the course of the disease thereafter is variable. Severe spasticity and ataxia may provoke bad falls after a few steps in most affected dogs at 1-2 years ages. Seizures and respiratory distress can be observed for some dogs. On hisopathology, lesions characterized by bilateral axonopathy and myelopathy are observed in the central nervous system. Changes are found mainly in the dorsal and ventral funiculi of the cervical spinal cord. Similar lesions are found in the brain, predominantly in the central auditory pathways of the midbrain and the medulla oblongata. The lateral lemniscus and trapezoid body (olivary nucleus) are especially affected. However, auditory function is not impaired. Occasionally, the spinal ganglia of the lumbar spinal cord and the cauda equina are affected.

The life expectancy of Jack Russel Terriers suffering from hereditary ataxia is not predictable, because the disease has a variable course. Affected dogs were usually euthanized at their owners' request in their first year of life because of a poor prognosis or severe clinical deterioration, but the disease itself is not lethal. However, for some dogs, the disease stabilizes near 2 years-old<sup>31,32</sup>.

In this case, the owners looked for alternative treatment because Western conventional treatment currently do not exist for this disease. They wanted to increase her quality of life, while understanding that all the symptoms cannot be solved.

In the Western examination, Nina was bright and alert and in good condition. The clinical examination did not reveal abnormality. The orthopedic examination revealed a left patellar dislocation without pain or swelling. The other joints had normal range of motion. She did not have muscle atrophy. She could stand and walk on her own, but had some balance losses. The neurological examination highlighted a cerebellar-type ataxia with forelimb hypermetria, discreet hind limbs spasms and tremors only during the manipulation, especially on the lateral side of the thighs. She had bilateral balance losses, wide base stance and moderate proprioceptive deficits on the four legs. The spinal reflexes were normal as well as cranial nerves reflexes and responses. Her spinal column had no tenderness to palpation.

In the TCM examination, Nina had an abnormal gait, balance losses since she was three months old. However, she enjoyed exercise and her walks despite she was easily tired. She could not jump on the couch without assistance. A discreet head tilt was noted by her owners, only when she was eating and muscle tremors appeared, especially on the thighs and after exercise. No pain or no behavioral problem was reported. The symptoms worsened with activity or exercise and were better with rest. The ataxia was characterized by the owners as permanent. She did not often bark and her voice was pretty weak. She already had a lot of tartar on teeth. Nina slept well and often, and preferred soft bedding. She also preferred a warm, sunny place to lie down, but the warmer summer weather did not seem to make any difference in the ataxia or the mobility. The owners noted that Nina's appetite was still very good and her thirst was normal. Her stool and urine consistency and rate were normal as well. She was easily feared with unknown people or dogs. She had a normal overall body appearance and a quite good coat quality. Her nails were a little bit brittle.

Nina is a Fire constitution. Her tongue appearance was small, thin, pale and slightly dry. Her pulse diagnosis was wiry and fine, and it was equal between the right and left legs. Her pulse rate was normal. Her Association and Alarm Gall Bladder, Liver and Kidney points are tender. Gall Bladder and Liver Association points were very sensitive while Kidney Association points felt deficient.

A TCM diagnosis of Liver Blood Deficiency creating Internal Wind with a underlying Kidney Jing Deficiency was made. Indeed, involuntary movements are always due to Wind. In this case, we have Internal Wind signs characterized by the discreet muscle tremors, spasticity and head tilt. Internal Wind is always related to the Liver as the tremors are explained in Chinese medicine as 'shaking' of the sinews, which are controlled by the Liver.

Furthermore, in TCM, Kidney produces Marrow, fills up the brain and controls bones. It stores Essence and governs birth, growth, reproduction and development<sup>1,29</sup>. The Kidney-Essence nourishes the brain, bones and teeth and produces Marrow, which is the substance that forms the brain<sup>1</sup>. In this case, Nina is born with a weak constitution and have a poor pre-Heaven Qi formed at conception from the union of her parent's Kidney-Essences. Her brain is not adequately nourished by the Essence. The Kidneys also play a role in the formation of Blood and a deficiency of the Kidneys can lead to deficiency of Blood<sup>4</sup>. In this case, the Kidney Jing Deficiency leads to the Blood Deficiency.

#### The relationship between Liver and Kidneys<sup>2</sup> :

The relationship between Liver and Kidneys, of considerable clinical significance, is based on the mutual exchange between Blood and Essence. Liver-Blood nourishes and replenishes Kidney-Essence, and this in turn contributes to the production of Blood (because the Essence produces bone marrow, which makes Blood). The Kidneys also contribute to make Blood through the action of the Original Qi. Moreover, Kidney-Yin nourishes Liver-Yin (which includes Liver-Blood), in agreement with the Five-Element theory, which states that 'Water nourishes Wood'.

The concurrent Liver and Kidney Blood Deficiencies can give rise to Liver-Wind. This is due to the deficiency of Blood creating an empty space within the blood vessels, which is taken up by interior Wind<sup>5</sup>. This Internal Wind creates the symptoms like ataxia, discreet muscle tremors, head tilt, brittle nails, pale, thin and slightly dry tongue, wiry and fine pulse.

Note : With Wind deriving from Liver Blood Deficiency, the tremors are less marked than in Full Wind<sup>5</sup>. This explains Nina's discreet muscle tremors and intermittent head tilt.

### The relationship between Liver and Gall Bladder<sup>3</sup> :

The relationship between the Liver and Gall Bladder is close to both anatomical and physiological point of view. The Liver and Gall Bladder depend on each other to perform their respective function. This can explain the reactive Gall Bladder Association and Alarm points in this case.

Based on the history, after practicing the full examination and considering the genetic factor of the problem, the owners were informed how arduous the case was, due to the difficulty to influence the Pre-heaven Essence. Despite that difficulty, we decided to start acupuncture treatment. The treatment goals were : to bring a good quality of life, prevent and try to slow the evolution of the disease, improve the gait (more comfortable and fluid), decrease balance losses, alleviate muscle tremors and head tilt. Four weekly Acupuncture sessions were planned for a month.

The treatment principles were : to extinguish Wind when opening some Wind doors, to tonify the Liver and the Kidney, to nourish Blood, to tonify Qi and Essence

On the first and second acupuncture sessions, the treatment principles were more focused on symptoms due to Liver Blood Deficiency creating Wind. LI 4 + LIV 3 were used in combination called the 'Four Gates' to expel interior Wind and to calm the mind. LIV 3 is a major point. It can be used to nourish Liver-Blood. It also extinguishes interior Wind and it has a specific action in calming spasms, contractions and cramps of the muscles. Combined with LI 4, it has a much more profound effect on expelling Wind from the face, and is used for head tilt in this case<sup>14</sup>. GB 20 was used to extinguish interior Wind, to nourish marrow and to clear the brain<sup>13</sup>. GV 17 was also selected to extinguish interior Wind, to benefit the brain (this point stimulates the nourishment of the brain by Marrow) and to calm the mind<sup>6,18</sup>. KI 3 was needled because it is one of the main points to tonify the Kidneys<sup>11</sup>. The owners noted that on August 6<sup>th</sup>, Nina seemed worse with much difficulty walking and was very lethargic all that day, but on the next day she was improved. Her tremors had decreased significantly, only appeared after long walking. The physical exam still shown moderate ataxia but the pulses were improved in consistency while still wiry. Her tongue was less pale but still slightly dry. Her Gall Bladder, Liver and Kidney Association and Alarm points were still sensitive.

At the third acupuncture session, the improvement of the symptoms were less noticeable than expected. Nina's tongue was light pink and less dry and her pulse less wiry. Liver Association and Alarm points were still sensitive but not the Gall Bladder Shu and Mu points. Kidney Association and Alarm points felt less deficient. So, I decided to change the selected points to see if I could have more positive results. GV14 replaced GV 17. GV 14 was used to extinguish interior Wind, to clear the brain, to stimulate Marrow to reach the brain and to calm the spirit<sup>6,17</sup>.

I wanted to tonify more strongly the Kidneys because in this case, I supposed Kidney Jing Deficiency was the root of the disease. So, I selected the following points : CV 4 with Moxa roll because CV 4 is an extremely important point. It is one of the most powerful points to tonify Qi, Blood and Essence, and strengthen the body and mind. First of all, it can be used to tonify Blood and Yin in any pattern of deficiency of Blood or Yin, or both. It nourishes Yin, first, because the Directing Vessel controls all the Yin Channels, and secondly, because CV 4 is the meeting point of the Directing Vessel with the Liver, Spleen and Kidney Channels. Besides this, it tonifies the Kidneys and Original Qi and is a very powerful point to strengthen the general level of energy and the Kidneys. It is thus an important point to treat chronic diseases or patients with a poor constitution. CV 4 can tonify both Kidney Yang and Kidney Yin<sup>16</sup>. KI 6 was used to tonify Kidney Yin and so tonify the Kidneys to produce Blood and to calm the mind<sup>6,12</sup>. BL 23 was picked to tonify the Kidneys and to nourish the Kidney-Essence, to nourish Blood,

to strengthen the brain, bones and Marrow, and to benefit the mind<sup>4,10</sup>.

At the fourth acupuncture session, the owners reported an obvious greater stamina. Compared to the past, Nina did not need to be carried in the arms after a very long walk on the beach. They told me that they did never see her like this before. Her muscle tremors and head tilt were completely gone and her overall exercise tolerance was much better. She was still having balance losses and was still ataxic. Her pulse was more full and her tongue was pink. Only Liver Association and Alarm points were tender. The same acupuncture points than the previous session were needled and I added LIV8, ST 36 and SP 6 because this combination is excellent to nourish Blood. LIV 8 was needled to nourish Liver-Blood and to relax the sinews<sup>15</sup>. ST 36 was used because it is a major point to tonify Qi and Blood in Deficiency patterns. It is a good point for chronic disease. ST 36 tonifies also the Original Qi (Yuan Qi) residing in the Kidneys<sup>8</sup>. SP 6 was selected because SP 6 has a deep influence on Blood. It can nourish Blood and Yin, and it is very frequently used in both Blood and Yin Deficiency, often combined with ST 36<sup>9</sup>.

It was hopeful when the muscle tremors and head tilt stopped completely after 3 sessions. Probably Nina will need periodical acupuncture treatment for the rest of her life to keep a good quality of life. Without acupuncture treatment, we cannot predict the evolution of the symptoms. But, as no conventional treatment exists today for this disease, it was interesting to try acupuncture treatment. Thanks to the TCM, we can find and treat partially the symptoms. Regardless of the primary underlying cause, hereditary ataxia can be a complicated and difficult disease to treat. It was quite unfortunate that we did not get better results for the ataxia in this period of time. The recovery will take a longer time and we cannot assess the efficacy of the acupuncture in this case after only 4 acupuncture sessions. Obviously, the dog need more support to evolve and obtain more results. Acupuncture appeared to bring mild benefits. Food and Phytotherapy could be an option to be digged in this case. We have to keep in mind that we cannot replenish Prenatal Essence, but only support the Postnatal Essence<sup>33</sup>. At the end of the 4 acupuncture sessions, the quality of life was judged satisfying by the owners and they did not to invest more for now.

Scientifically, there are many ways in which acupuncture has been shown to influence the body. The effects of acupuncture cannot be explained by a single mechanism. Acupuncture represents a form of nerve stimulation. The needle insertion leads to micro-trauma of the tissues. The acupuncture mechanisms in regards to the nervous system can be subdivided in local (peripheral), segmental (spinal) and suprasedgmental (supraspinal) mechanisms<sup>34</sup>. In the segmental and suprasedgmental mechanisms acupuncture stimulates nerve endings which in turn alters segmental and suprasedgmental spinal pathways. This leads to changes within the brainstem and the cortical regions and eventually affects the entire neural axis. Acupuncture points stimulate the central nervous system to release biochemical into muscles, the spinal cord and the brain. These biochemical can affect, for example, the release of other biochemical, such as hormones, that influence the body's self regulating systems. Acupuncture also increases blood flow to organs. Furthermore, neurotrophic factors and cytokines are involved in the regulation of neuronal survival, axonal myelination, and synaptic plasticity in both central nervous system and peripheral nervous system. Certain researchers hypothesize that neurotrophins and cytokines are involved in the acupuncture mechanisms. The regulation of neurotrophins expression and activity is one of the possible neurophysiological mechanisms underlying acupuncture's effects on neuropathic pain, nerve injury, neurodegeneration, and even in the regulation of gonadal functions. All these effects, and probably many more, contributed to the reduction in clinical symptoms in this case.

## REFERENCES

1. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 153-163.
2. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 177-178.
3. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 203.
4. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 518-521.
5. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 528.
6. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 601.
7. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 909-910.
8. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 931.
9. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 944-945.
10. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 985-986.
11. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1007-1008.
12. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1009.
13. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1049-1050.
14. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1064.
15. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1067.
16. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1074.

17. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1095.
18. Maciocia, Giovanni. The Foundations of Chinese Medicine : A Comprehensive Text for Acupuncturists and Herbalists. 2<sup>nd</sup> ed. Edinburgh : Churchill Livingstone/Elsevier, 2005. 1096-1097.
19. Snow, Amy. Zidonis Nancy. Acu-Dog : A Guide to Canine Acupressure. 1<sup>st</sup> ed. Castle Pines, Colorado : Tallgrass Publishers, LLC, 2011. Chapter 7
20. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.6.
21. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.13.
22. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.19.
23. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.33.
24. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.42.
25. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.52.
26. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.60.
27. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.64.
28. Schafer, Richard A. Getting Started in Small Animal Acupuncture : Acupuncture Points and Meridians. IVAS Course Notes : Session 1 (2016) : 8.68.
29. Todd, Gregory. Acupuncture in Neurologic Disease. IVAS Course Notes : Session 3 (2016) : 22.1.
30. Todd, Gregory. Acupuncture in Neurologic Disease. IVAS Course Notes : Session 3 (2016) : 22.15-22.16.
31. Wessmann, A. Goedde, T. Fischer, A. Wohlsein, P. Hamann, H. Distl, O. Tipold, A. Hereditary Ataxia in the Jack Russel Terrier – Clinical and Genetic Investigations. J Vet Intern Med (2004) ; 18 : 515-521
32. Cauzinille, L. Boursier, J-F. Piazza S. Ataxie héréditaire du Jack Russel Terrier – A propos d'un cas. L'Essentiel (2013); 302 : 22-24
33. Delores T, Craig. Renal Disorders and Urinary Incontinence. IVAS Course Notes : Session 4 (2016) : 29.9.
34. Skoien, Jim. Neurophysical Acupuncture Mechanisms. IVAS Course Notes : Session 2 (2016) : 14.23-14.41