

THE USE OF ACUPUNCTURE IN TREATMENT OF RADIAL NERVE PARALYSIS IN THE DOG - CASE REPORT

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ABSTRACT

A two year old Kelpie Cross was presented to the Pomona Veterinary Surgery within one hour of being hit by a car. After western medicine treatment for shock, pain and wounds, treatment for radial paralysis and persistent pain in the forelimbs was requested. Acupuncture treatments were given on days 3, 4, 5, 7, 10 and 14. At the time of the last treatment, the patient was using the limb normally.

HISTORY

Neighbours presenting the two year old patient reported that she had been hit by a car within the last hour and could use her hindlimbs but not her forelimbs. No urination nor defaecation had been seen. She was slightly brighter on presentation than immediately post trauma.

EXAMINATION

Western

The mucous membranes were pink and capillaries refilled within 1 second after pressure. Hypovolaemic shock was not severe. Lacerations were present over the right carpus and metacarpi and there was a small skin laceration over the left stifle on its lateral aspect. The dog was panting and yelping with pain when the forelimbs were handled. She was in too much pain to stand but observation of the hindlimbs revealed voluntary movement.

Chinese

The patient had loud and rapid respiration. Pain was present particularly in the forelimbs. Mouth and tongue were pink in colour. Yelping was present when the forelimbs were touched or moved. Lacerations were present as previously described.

Treatment was instituted and examination findings on the next morning are now described.

Western

The patient was able to stand well on three limbs and the right shoulder was dropped with the lower limb resting on the cranial aspect of the metacarpi and phalanges in the clinical presentation of radial nerve paralysis. This also indicated the absence of placing reflex in the right forelimb which had no fractures diagnosed on X-rays and palpation. Withdrawal reflex was absent in this limb but pain was present. The muscles of the proximal right forelimb were swollen. There was a skin wound across the cranial carpus which involved the soft tissue on the

antero-medial aspect of the carpus. There was no bone exposure. X-rays showed that there was no diaphragmatic hernia. The patient would not eat voluntarily but would eat food placed in her mouth and would drink water. Five hours later, the right front foot was placed occasionally with laxity of metacarpo-pharyngeal and carpal joints. There had been no urination nor defaecation.

Chinese

Appetite was poor. Pain was present and was better at rest. The mouth and lips remained pink in colour. Gait and wounds were as described for western findings.

WESTERN MEDICAL DIAGNOSIS

Radial nerve paralysis of the right forelimb and soft tissue trauma to the right carpus.

TRADITIONAL CHINESE MEDICAL DIAGNOSIS

Obstruction to the flow of Qi and Blood involving the TH, LI, SI, PC channels and blood vessels of the right forelimb and due to the external factor of trauma.[1]

TREATMENT AND RESULTS

Western Treatment and Results

Initial treatment on presentation was Buprenorphine at 0.02mg/kg each eight hours, Amoxicillin/Clavulanic Acid at 1ml/20kg, to be continued daily, Hartmans solution at 200mls/hour, warmth and rest. Shock responded quickly to the above treatment and pain was markedly less within four hours.

Treatment the next morning included general anaesthetic with isoflurane /oxygen for x-rays and suturing of wounds. Pain relief was continued with meloxicam at 0.2mg/10kg in the afternoon and at 0.1mg/kg daily thereafter for 10 days.

The right carpus with its sutured wounds was dressed with replicare and a support bandage.

Pain was still present in the forelimbs with movement but generalized pain was much lessened.

Chinese Treatment and Results

The principle of treatment is to Promote Circulation of Qi and Blood in the affected meridians and restore function in the right forelimb.

Three days after presentation, treatment with acupuncture commenced.

Acupuncture points selected were local points distal and proximal to the injury and appropriate BL and GV points.[1] The anatomical positions and natures of these points are described in Table 1 with the relevant indications for each point. [2,3]

Seirin BEC needles No.5 (0.25x30mm) were used for dry needling, De Qi was obtained and a tonifying method of treatment was used for twenty to thirty minutes.[4]

With electroacupuncture, the same needles were used with electrodes attached to the electroconductive handles. Electroacupuncture was administered to the affected forelimb using a Meyer model-501 unit with a battery operated alternating current source. Continuous stimulation was applied through acupuncture needles at the selected points and frequency was increased slowly until a muscle twitch was observed at approximately fifty Hz.[5]

Day 3 Treatment

Treatment was dry needling of the following points:

- GV 14
- LI 4,10,11
- SI 3
- HT 7

The clinical result was that the patient commenced eating voluntarily and commenced urination. She was placing the right forefoot often although the distal joints showed denervation in their movement.

Day 4 Treatment

Dry needling of GV 14, LI 10, LI 11, PC3, TH 10
HT 1 was connected to TH 5 and LI 4 to LU 9 for electroacupuncture.

On this day, the patient's use of the limb and placement of the right foot was better and she was much brighter.

Day 7

The owner was pleased with the marked improvement of the patient. The wounds were healing. The right forefoot was placed much more consistently and the carpus was more stable.

Treatment

Electroacupuncture of LI 4 to LI 11 and HT 7 to HT 1
Dry needling of TH 5, TH 10, PC 3, HT 7, GV 14

Day 10

Clinically, the patient was placing the affected foot well. The wounds were healed.

Treatment

Electroacupuncture of LI 4 and LI 11; LI 15 and PC 3
Dry needling of BL 11, SI 11, TH 10 and Baxie 2/3

Day 14

Repeat treatment of Day 10. At this last treatment, the patient was placing the right forefoot well and using the right forelimb normally without laxity of the joints. This was the final treatment of this course.

The owner was very happy with the analgesia provided and the improvement in the use of the affected forelimb.

TABLE 1

POINT	LOCATION	INDICATION	NATURE
GV 14	On the midline, between the dorsal processes of the last cervical and the first thoracic vertebrae.	Local point	Influential point of Yang energy, point of the Sea of Qi. Meeting point of all the Yang meridians.
LI 4	Between the first and second metacarpal bones approximately in the middle of the second metacarpal bone on the radial side.	Activates the meridian and alleviates pain. Promotes the circulation of Qi and Blood and relieves pain and is therefore useful for painful conditions of the forelimb, paralysis and atrophy.	Yuan point Master point of face and mouth
LI 10	2 cun distal to LI 11, between the muscle extensor radialis and the common digital extensor.	Tonifies Qi and Blood Activates the meridian and relieves pain. Major point for any muscular problem of the forelimb	
LI 11	At the end of the lateral cubital crease, halfway between the biceps tendon and the lateral epicondyle of the humerus with the elbow flexed.	Regulates Qi and Blood. Activates the meridian and alleviates pain. Pain and paralysis of the forearm and shoulder.	Tonification Point He Sea and Earth Point
SI 3	Proximal to the metacarpal - phalangeal joint on the lateral side of metacarpal 5.	Alleviates pain along the channel. Local point Tonification point	Wood point Master point of the Governing Vessel Tonification point of Small Intestine
HT 7	On the transverse crease of the carpal joint, in the depression lateral to the tendon of the flexor carpi ulnaris muscle.	Local point	Yuan, Stream, Shu and Earth point God point
PC 3	In the cubital crease, on the medial side of the biceps tendon.	Moves blood and dispels stasis. Paralysis of the foreleg.	Sea point Water point
TH 5	2 cun above the carpus, on the cranial aspect of the interosseous space between the radius and ulna.	Removes obstructions from the meridian.	Master Point of Yang Wei Mai Major balancing point of the Yin and the Yang of the body
TH 10	1 cun proximal to the olecranon lateral to the triceps tendon.	Dispel stagnation Regulates nutritive and	Sea, Earth and Sedation point

		defensive Qi Relaxes tendons	
HT 1	In the depression in the axilla	Activates the meridian and benefits the limb. Paralysis of the front limb and avulsion of the brachial plexus.	
LU 9	On the medial end of the transverse crease of the carpus, on the medial side of the radial artery.	Pain affecting the foreleg along the course of the channel.	Yuan point, Earth point, Tonification point. Influential point of the Blood Vessels
LI 15	Cranial and distal to the acromium on the anterior margin of the distal muscle deltoideus.	Promotes circulation of Qi. Local point for any shoulder condition.	
BL 11	1.5 cun lateral to the caudal border of the spinous process of the first thoracic vertebra	Tonifies the Blood Local point	Sea of Blood point Influential point of bone Meeting point with Small Intestine, Triple Heater, Gall Bladder and Governor Vessels.
SI 11	In the depression at the caudal border of the scapular cartilage, at the junction of the dorsal and middle third of the scapula, on the caudal border of the deltoid muscle.	Local Point.	Metal point
Baxie 2/3	Metacarpo-phalangeal junction of digits 2 and 3.	Moves Blood	Non-meridian point

DISCUSSION

A Western medical diagnosis of radial nerve paralysis was based on the history of trauma and the clinical data. Full neurological examination was not performed but the foot was unable to be placed with the lower limb's cranial aspect resting on the ground which is a typical presentation of radial nerve paralysis. The radial nerve innervates the extensors of the elbow, carpus and digits which provide support to the forelimb. When the radial nerve is injured, paralysis and atrophy of the extensor muscles occur. Muscular atrophy commonly occurs five to seven days after injury.

It would be expected that sensation was absent on the cranial surface of the antebrachium and paw except for the fifth digit. Inability to extend the carpus and the elbow is observed in low and high radial paralysis, respectively. In low radial paralysis, the animal may learn to flip the foot forward in gaiting.[9] Pain in the area precluded much handling but the presence of pain is a good prognostic indicator for full recovery.[6] Treatment involves using anti-inflammatories to minimize inflammation of the nerve initially, rest over an indeterminate but usually lengthy period of time and protection of the anterior surfaces distal to the carpus

from abrasion and injury. Physiotherapy may be used to maintain muscle tone.

In traditional Chinese medicine, traumatic peripheral neuropathies are regarded as being due to an obstruction or stagnation of both Qi and Blood. Acupuncture points were selected from the meridians of the forelimb in the vicinity of the radial nerve and particularly at the carpus with its soft tissue damage for the effect of opening the Yang meridians and allowing the Qi and Blood to circulate.

Schoen recommends selection of points cranial and caudal to the nerve damage and related GV and BL points. Electroacupuncture in continuous stimulation mode is the treatment of choice and a regime of one to two treatments per week and a minimum of eight treatments is recommended.[1]

Electroacupuncture was first used in China in the 1930s and is used in the same manner as manual acupuncture. Its physiological effects include analgesia and propagation of sensation along the channel. Results are increased electrical conductivity and excitability of nerves and or muscle cells. In the treatment of nerve damage, electroacupuncture promotes regeneration of fibres if cell bodies are still vital and facilitates muscle contractions in denervated muscles.[8]

The pain present in this patient indicated that the nerve was still vital and therefore that Electroacupuncture should be an effective treatment. This patient responded well to four treatments of manual and electroacupuncture given over ten days and a final treatment fourteen days after commencement of therapy. Recovery is expected from nerve damage where pain is present[6] from a western medical perspective. However, the use of acupuncture in this case appears to have hastened the healing and to have been an effective addition to the provision of analgesia.

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