

## Retrospective Study

# The Clinical Effectiveness and Application of Veterinary Acupuncture

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### ABSTRACT

The effectiveness of acupuncture therapy for a variety of clinical problems in veterinary medicine was evaluated in 86 animals (62 dogs, 9 cats, 11 horses, 3 cows and 1 sheep). Diseases were separated by systems and included: 37 musculoskeletal, 25 neurological, 4 internal medicine, 2 reproductive disorders, 6 emergency respiratory arrest cases and 12 cases of intra-operative analgesia. Following the prescribed number and frequency of acupuncture treatments, complete recovery was recorded in 20/37 musculoskeletal disorders, 11/25 neurological disorders, 3/4 internal medicine disorders, 2/2 reproductive disorders, and 4/6 cases of respiratory arrest. Good improvement without full recovery was reported in another 7 musculoskeletal disorders, 3 neurological disorders, and 1 internal medicine disorder. Acupuncture anesthesia resulted in excellent analgesia in 1 dog and 1 sheep and good analgesia in 4 dogs, 1 cat, and 2 cows. The recommended number of treatments was not completed in 4 musculoskeletal cases and its use for anesthesia was not continued in 3 cases. There was no improvement in 3 musculoskeletal cases and 6 neurological cases and 2 respiratory arrest cases did not respond to treatment. The remaining cases had a minimal response to treatment. Acupuncture can be effective for many different clinical problems in veterinary medicine.

**Key words:** acupuncture, electroacupuncture, moxibustion , veterinary, dog, cat, horse, cattle.

Stimulation of acupuncture points associated with the peripheral nervous system produces analgesia, anesthesia, and other physiological effects through central nervous system, neurohumoral, neuromuscular and musculoskeletal mechanisms.<sup>1</sup> Many clinicians support the notion that the meridian system and acupuncture points in humans can be applied to animals, others suggest that anatomical differences preclude simple transposition.<sup>1</sup> The Chinese names for acupuncture points carry anatomical, physiological, therapeutic or symbolic meanings. Today, however, there is no

standard for naming points in veterinary acupuncture.<sup>2-10</sup> In classical Chinese veterinary acupuncture books, 740 points are described. Of these, 173 are in horses, 103 are in ruminants, 84 are in pigs, 77 are in camels, 75 are in sheep and goats, 76 are in dogs, 51 are in rabbits, 34 are in chickens and 35 are in ducks.<sup>6,11,12</sup>

Indications for acupuncture in horses are often divided into 6 main systems.<sup>2, 13-17</sup>

1. Musculoskeletal: Pain in the thoracic, lumbar and sacral areas, shoulder lameness, elbow and carpal lameness, laminitis, navicular disease, hoof abscess, tendonitis and paralytic myoglobinuria.
2. Neurological: Peripheral nerve paralysis including radial and facial paralysis and cervical ataxia (Wobblers Syndrome).
3. Gastrointestinal: Colic and cribbing.
4. Respiratory: Bronchospasm, hemorrhage, epistaxis, rhinitis and sinusitis.
5. Reproductive problems: Anestrus, ovarian

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cysts, infertility despite multiple inseminations, and sperm abnormalities in males.

6. Other clinical uses: Uneasiness, anxiety, fear, nervousness and skin problems.

Positive results have been demonstrated in acupuncture studies of horses with paralytic myoglobinuria, laminitis, air-swallowing, radial paralysis, bronchitis, chronic respiratory diseases, anorexia, epistaxis, anestrus, ovarian cysts, repeated insemination, dermatitis, corneal ulcers, navicular disease, tetanus, and cribbing.<sup>2-4, 8, 12-45</sup>

Reported indications for acupuncture in ruminants include: pneumonia, pulmonary emphysema, cardiac and respiratory disorders, indigestion, motility disorders of the rumen, colic, hepatitis, ketonuria, functional ovarian disorders, infertility, retained placenta, testicular disorders, nephritis, renal disease, mastitis, paralysis of the hind legs, convulsions and embryo transfer.<sup>2-4, 8, 10, 12-22, 46-50</sup> Successful results have been reported using acupuncture for treating infertility cases in ruminants and improving low ejaculation density and motile spermatozoa numbers in bulls.<sup>2, 3</sup>

Altman applied acupuncture to 216 small animal cases and listed indications such as intervertebral disc herniation, hip dysplasia, degenerative myelopathy, dermatological disorders, nerve trauma, osteochondrosis dissecans, pain syndromes, chronic arthritis, chronic respiratory system problems, traumatic peripheral nerve injuries, lick granulomas, chronic gastrointestinal problems and emergency cases.<sup>51</sup> Good results with acupuncture have been reported in cats and dogs with hygroma, luxated patellas, systemic lupus erythematosus, leukorrhea, rectal prolapse, coccidiomycosis, behavioral disorders, urinary incontinence, keratoconjunctivitis sicca, megaesophagus, paresis and paraplegia, quadriplegia, cervical pain, epilepsy and skin problems.<sup>2-4, 8, 12-22, 52-72</sup> In classical Chinese acupuncture books it is also stated that some clinicians have successfully applied acupuncture to birds.<sup>4, 8, 12, 73, 74</sup>

In the West, the first recorded use of acupuncture analgesia was in a human tonsillectomy. Acupuncture analgesia was first used in veterinary medicine in 1975 for a cesarean section on a cow. It has since been reported to have been used in castration and cesarean sections in cats.<sup>75, 76</sup> Acupuncture analgesia has not been

widely used in veterinary surgery due to its disadvantages and difficulties but some authors indicate in the future it could be used as a surgical anesthetic in combination with decreased doses of local and general anesthetics.<sup>1, 3, 4, 8, 12, 77-82</sup>

### Case Selection and Procedures

The following is a review of the presentation, treatment and subsequent outcome of 86 clinical cases brought to the Surgery Department Clinic of the Istanbul University Veterinary College. Of the 86 cases, 62 were dogs, 9 were cats, 11 were horses, 3 were cattle and 1 was a sheep. All were of different ages and either gender. All cases were first examined clinically and in many cases radiological and laboratory evaluations were also done. Subsequently, a record was kept to follow the acupuncture treatment for each case throughout the treatment and the final results recorded.

POINTER PAL<sup>a</sup> acupuncture point detectors were used for finding acupuncture points. Electronic acupuncture stimulators (ACUSET SMS-205<sup>b</sup> and WQ-6F<sup>c</sup>), were used for electroacupuncture applications. Needles from classical Chinese veterinary acupuncture sets and single use human acupuncture needles were used. All these needles were stainless steel products. Needles were chosen according to the type and anatomical site of the points and the size and species of the animal. After determining the location of the acupuncture point, the region was cleaned with cotton soaked in alcohol, the needle was placed in to the appropriate depth and the skin reaction was observed. Stimulation was carried out for 5-10 minutes by twisting the needles by hand, moving them upwards and downwards and by flicking them. The same stimulation was repeated after an interval of 5-10 minutes. After this, the needles were left in place for 10 minutes. The treatment lasted for 20-30 minutes and at the end of this period the needles were removed by pressing around them. This treatment was continued once or twice a week.

In scalp acupuncture, after wiping the acupuncture points chosen on the scalp with cotton and alcohol, stainless steel acupuncture needles with a diameter of 0.32 mm and 13mm long were inserted. Stimulation was done by twisting the needles by hand or by slightly moving them

upwards and downwards and they were left in place for 15 minutes. This was done once a day for five days.

In paralysis cases, electric currents of 20-30 Hz were applied for 30-35 minutes for at least 3 days a week or every day. The current was increased until local muscle contractions were observed. For intraoperative electroacupuncture analgesia, both current and frequency were increased to a peak according to the animal's pain threshold and reactions for the 20-25 minute induction period. During the treatment when symptoms such as hot ears, dry nose, increased pulse, anxiety and fear, and sweating in horses were observed, the treatment was stopped and needle acupuncture alone was continued. At the end of the treatment time, the electrostimulation was discontinued, and the needles were removed.

For laser acupuncture applications a Helium-Neon (He-Ne) gas laser with a constant frequency of 12 milliwatt and an infrared laser machine with a variable frequency of 50 milliwatt was used. The hair was shaved off the point region and a chlorhexidine antiseptic solution was used to scrub the area. Infrared laser was applied vertically to each point for 2 minutes. To increase its effect, the frequency was raised to 12.04 Hz. He-Ne laser was applied to each point for 5-10 minutes from a distance of 30 mm.

## Results

Of the cases included in this study, 37 were disorders of the musculoskeletal system, 25 were neurological system disorders, 4 were internal disorders and 2 were reproductive disorders. Diagnosis, treatment methods, treatment period, amount of treatment and need for further treatments are listed in Tables 1- 3. Tables 4 and 5 contain descriptions of 6 emergency cases and 12 intraoperative analgesia cases. Overall following the prescribed number and frequency of acupuncture treatments, complete recovery was recorded in 20/37 musculoskeletal disorders, 11/25 neurological disorders, 3/4 internal medicine disorders, 2/2 reproductive disorders, and 4/6 cases of respiratory arrest. Good improvement without full recovery was reported in another 7 musculoskeletal disorders, 3 neurological disorders, and 1 internal medicine disorder. Acupuncture anesthesia resulted in excellent analgesia in 1 dog

and 1 sheep and good analgesia in 4 dogs, 1 cat, and 2 cows. The recommended number of treatments was not completed in 4 musculoskeletal cases and its use for anesthesia was not continued in 3 cases. There was no improvement in 3 musculoskeletal cases and 6 neurological cases and 2 respiratory arrest cases did not respond to treatment. The remaining cases had a minimal response to treatment.

Out of 15 cases of hip dysplasia, electroacupuncture was used in 13 and gold implantation was used in 2 cases. Of 13 cases treated with electroacupuncture, complete resolution of clinical signs occurred in 8 cases, good improvement in 3 cases and fair improvement in one case. One other case did not continue the treatment. Of the outcomes of 2 cases in which implants were applied to the acupuncture points, one had resolution of the clinical signs and the other had mild improvement.

In dogs with osteoarthritis of the hip joint, 1 case had resolution of clinical signs, 1 had good improvement, 1 had some improvement, 2 did not improve and 1 did not continue the treatment. Complete recovery occurred after acupuncture in a horse with osteoarthritis of hip joint and the horse returned to racing. Significant improvement was seen in 2 horses with flexor tendonitis. After treatment these horses won their races. A case of sore shins, another with shoulder lameness, and 2 horses with back soreness has resolution of clinical signs following acupuncture. Significant improvement occurred in another horse with back soreness.

Six cases of intervertebral disc herniation were presented: 3 cats and 3 dogs. While 1 case treated with electroacupuncture did not respond, 3 out of 4 cases treated with needle acupuncture had resolution of clinical signs and one improved significantly. One case in which both needle acupuncture and laser acupuncture were combined also improved. The 4 cases with suspected degenerative myelopathy had different degrees of weakness in the hind limbs and incontinence. With electroacupuncture we had mild improvement in 2 cases and no improvement in another case. Two cases were euthanized according to the client's wishes. In one case, which was treated with classical needle acupuncture, symptoms of quadriplegia resolved after 2 sessions of treatment and the animal started walking. One animal with

**Table 1:** Musculoskeletal system cases

| No | Species, Breed, Age, Sex           | Diagnosis                             | Treatment Method           | Treatment Period and Frequency     | Additional Treatment | Result                     |
|----|------------------------------------|---------------------------------------|----------------------------|------------------------------------|----------------------|----------------------------|
| 1  | 3 year old F Thoroughbred          | Flexor tendonitis                     | He-Ne Laser acupuncture    | One session a day for 10 days      | Resting              | +++                        |
| 2  | 4 year old F Thoroughbred          | Flexor tendonitis                     | Infrared laser acupuncture | One session a day for 10 days      | Resting              | +++                        |
| 3  | 4 year old F Thoroughbred          | Sore shins                            | He-Ne Laser acupuncture    | One session a day for 10 days      | -                    | +++                        |
| 4  | 2 year old M Arab Horse            | Left shoulder lameness                | Electroacupuncture         | A total of 5 sessions twice a week | Resting              | +++                        |
| 5  | 1.5. year old F Kangal             | Tendon contracture and muscle atrophy | Electroacupuncture         | A total of 6 sessions once a week  | -                    | ++                         |
| 6  | 3 year old F Pointer               | Inflammation of the knee joint        | Electroacupuncture         | A total of 9 sessions              | Resting              | +++                        |
| 7  | 1.5 year old F mixed Breed Dog     | Inflammation of the knee joint        | Electroacupuncture         | Once a week. 2 irregular sessions  | Resting              | Did not continue treatment |
| 8  | 6 month old M Boxer                | Inflammation of the knee joint        | Electroacupuncture         | A total of 3 sessions              | Resting              | +++                        |
| 9  | 1 year old M mixed Breed Dog       | Myositis                              | Electroacupuncture         | Once every 3 day                   | Resting              | +++                        |
| 10 | 4 year old F Arab Horse            | Osteoarthritis of hip joint           | Electroacupuncture         | A total of 5 sessions              | Resting              | +++                        |
| 11 | 3 year old M Thoroughbred          | Pain in lumbar and sacral areas       | Electroacupuncture         | Twice a week                       | Resting              | ++                         |
| 12 | 5 year old M Arab Horse            | Pain in lumbar and sacral areas       | Electroacupuncture         | A total of 6 sessions once a week  | Resting              | +++                        |
| 13 | 4 year old F. Thoroughbred         | Pain in lumbar and sacral areas       | Electroacupuncture         | A total of 5 sessions              | Resting              | +++                        |
| 14 | 2 year old M. mixed Breed Dog      | Tendon contracture                    | Electroacupuncture         | A total of 5 sessions              | -                    | ++                         |
| 15 | 1 year old M. Kangal               | Hip Dysplasia                         | Electroacupuncture         | A total of 8 sessions twice a week | -                    | +++                        |
| 16 | 11 month old M. Labrador           | Hip Dysplasia                         | Electroacupuncture         | A total of 4 sessions once a week  | He-Ne Laser          | ++                         |
| 17 | 4.5 year old M. Sheepdog           | Hip Dysplasia                         | Electroacupuncture         | A total of 4 sessions once a week  | -                    | +++                        |
| 18 | 4.5 year old M. mixed Breed Kangal | Hip Dysplasia                         | Electroacupuncture         | A total of 4 sessions once a week  | -                    | +++                        |
| 19 | 1 year old M. German Shepherd Dog  | Hip Dysplasia                         | Electroacupuncture         | A total of 3 sessions once a week  | He-Ne Laser          | ++                         |

|    |                                    |                             |                                    |                                    |   |                            |
|----|------------------------------------|-----------------------------|------------------------------------|------------------------------------|---|----------------------------|
| 20 | 6 month old M. Kangal              | Hip Dysplasia               | Electroacupuncture                 | A total of 13 sessions once a week | - | +++                        |
| 21 | 10 month old F. Mixed Breed Kangal | Hip Dysplasia               | Electroacupuncture                 | A total of 6 sessions once a week  | - | +++                        |
| 22 | 10 month old M. Newfoundland       | Hip Dysplasia               | Electroacupuncture                 | A total of 8 sessions              | - | +++                        |
| 23 | 1 year old M. Saint Bernard        | Hip Dysplasia               | Electroacupuncture                 | Once a week                        | - | Did not continue treatment |
| 24 | 2 year old M. Mixed Breed Dog      | Hip Dysplasia               | Electroacupuncture                 | 4 irregular sessions               | - | +                          |
| 25 | 10 month old M. Kangal             | Hip Dysplasia               | Gold implantation                  | -                                  | - | +++                        |
| 26 | 1 year old M. German Shepherd Dog  | Hip Dysplasia               | Gold implantation                  | -                                  | - | ++                         |
| 27 | 1 year old M. Mixed Breed Dog      | Hip Dysplasia               | Electroacupuncture                 | 3 irregular sessions               | - | +                          |
| 28 | 7 year old M. Collie               | Osteoarthritis of hip joint | Electroacupuncture                 | A total of 10 sessions once a week | - | -                          |
| 29 | 6 year old M. Mixed Breed Dog      | Osteoarthritis of hip joint | Electroacupuncture                 | A total of 4 sessions once a week  | - | -                          |
| 30 | 7 month old F. Terrier             | Aseptic necrosis            | Laser acupuncture and implantation | A total of 4 sessions once a week  | - | -                          |
| 31 | 5 year old F. Poodle               | Osteoarthritis of hip joint | Laser acupuncture                  | A total of 4 sessions once a week  | - | +                          |
| 32 | 6 month old Pekinese Dog           | Aseptic necrosis            | Needle acupuncture                 | A total of 5 sessions once a week  | - | Did not continue treatment |
| 33 | 10 year old F. Mixed Breed Dog     | Osteoarthritis of hip joint | Needle acupuncture                 | A total of 2 sessions once a week  | - | Did not continue treatment |
| 34 | 7 year old M. Mixed Breed Dog      | Osteoarthritis of hip joint | Needle acupuncture                 | A total of 10 sessions once a week | - | +++                        |
| 35 | 4.5 year old M. Terrier            | Osteoarthritis of hip joint | Electroacupuncture                 | A total of 8 sessions              | - | ++                         |
| 36 | 10 month old F. Newfoundland       | Hip Dysplasia               | Electroacupuncture                 | Once a week A total of 3 sessions  | - | +++                        |
| 37 | 1 year old M. Chow-chow            | Hip Dysplasia               | Electroacupuncture                 | A total of 8 sessions              | - | +++                        |

(+++) **very good result:** complete resolution of clinical signs, (++) **good result:** clinical improvement but rarely some symptoms were seen due to other factors ( cold, rain, work, trauma,etc..) , (+) **incomplete result:** no symptoms according to animal's owner but no clinical improvement according to us, (-) **negative result:** no clinical improvement

**Table 2:** Cases in which acupuncture was used for neurological problems

| No  | Species, Breed, Age, Sex           | Complaint                                    | Diagnosis                         | Treatment Method                  | Result          |
|-----|------------------------------------|--|-----------------------------------|-----------------------------------|-----------------|
| 1   | 9 Month old M. Collie              | Inability to use leg                         | Paralysis of N. Radialis          | EA**                              | -<br>Amputation |
| 2   | 14 Year old F. Mixed Breed Cat     | Swaying gait and urinary incontinence        | Intervertebral disc herniation    | Needle acupuncture                | ++              |
| 3   | 4 Month old. F. Mixed Breed Cat    | Sudden inability to use back legs            | Intervertebral disc herniation    | EA                                | -               |
| 4   | 13 year old M. Collie              | Inability to use back legs                   | Suspected degenerative myelopathy | EA                                | -<br>Euthanasia |
| 5   | 2 Year old F. Mixed Breed Dog      | Traffic accident                             | Hemiplegia                        | Scalp acupuncture                 | +++             |
| 6   | 13 Year old M. German Shepherd Dog | Lameness in back legs for a year             | Spondylosis deformans             | EA                                | +               |
| 7   | 5 year old M. Arab Horse           | Facial paralysis                             | Paralysis of N. Facialis          | EA                                | +++             |
| 8   | 7 Year old F. Poodle               | Inability to use all 4 legs for 3 days       | Intervertebral disk herniation    | Needle acupuncture                | +++             |
| 9   | 3 Year old F. Mixed Breed Dog      | Inability to use back legs                   | Paraplegia unknown cause          | EA                                | +++             |
| 10  | 4 Month old F. Mixed Breed Dog     | Traffic accident                             | Paralysis of N. Radialis          | EA and Aquapuncture               | +               |
| 11* | 1 Month old M. Mixed Breed Dog     | Squashed in a door                           | Paralysis of N. Radialis          | EA                                | -               |
| 12  | 13 Year old F. Mixed Breed Dog     | Dragging left back leg                       | Paralysis of N. Ischiadicus       | EA and Laser acupuncture          | ++              |
| 13  | 1.5 Year old F. Setter             | Traffic accident                             | Paralysis of N. Ischiadicus       | EA and Aquapuncture               | +++             |
| 14  | 1 Year old F. Doberman             | Traffic accident                             | Paralysis of N. Radialis          | EA                                | -               |
| 15  | 5 Year old F. Pekinese             | Inability to use back legs                   | Intervertebral disc herniation    | Needle acupuncture                | +++             |
| 16  | 1 month old foal                   | Swinging gait and falling                    | Wobbler Syndrome                  | Laser acupuncture                 | -               |
| 17  | 1.5 Year old F. Mixed Breed Cat    | Fallen from a high place                     | Brain Contusion                   | Needle acupuncture                | +++             |
| 18  | 8 Year old M. Belgian Sheepdog     | Inability to use left leg and suddenly falls | Susupect degenerative myelopathy  | EA and Aquapuncture               | +<br>Euthanasia |
| 19  | 1 Year old F. Mixed Breed Cat      | Swinging gait                                | Intervertebral disc herniation    | Acupuncture and Laser acupuncture | ++              |
| 20  | 1 Year old M. Mixed Breed Dog      | Suddenly falls while walking                 | Motor disorder of unknown cause   | EA                                | +               |
| 21  | 1.5 Year old M. Mixed Breed Cat    | Inability to use back leg                    | Paralysis of N. Ischiadicus       | EA                                | +++             |

|    |                                |                             |                                |                    |     |
|----|--------------------------------|-----------------------------|--------------------------------|--------------------|-----|
| 22 | 2 Year old F Mixed Breed Dog   | Inability to use back leg   | Paralysis of N. Ischiadicus    | EA                 | -   |
| 23 | 5 Year old F. Dachshund        | Inability to use back leg   | Intervertebral disc herniation | Needle acupuncture | +++ |
| 24 | 2 Year old F. Mixed Breed Cat  | Inability to use bladder    | Bladder spasm                  | EA                 | +++ |
| 25 | 5 Year old M. Belgian Sheepdog | Inability to use all 4 legs | Spondylitis                    | Needle acupuncture | +++ |

\* Died during treatment due to distemper.

\*\* Electroacupuncture

(+++) **very good result:** no symptom and full clinical improvement, (++) **good result:** clinical improvement but rarely some symptoms were seen due to some factors( cold, rain, work, trauma,etc..) , (+)**incomplete result:** no symptoms according to animal's owner but no clinical improvement according to us, (-) **negative result:** no clinical improvement

**Table 3:** Cases with internal medicine and reproductive disorders

| No | Species, Breed, Age, Sex           | Diagnosis      | Symptoms and Duration                                  | Method Used  | Treatment Period and Frequency             | Result | Relapse |
|----|------------------------------------|----------------|--|--|--|--------|---------|
| 1  | 1 year old M. Boxer                | Colitis        | Bloody diarrhea for 8-9 months                         | Aquapuncture<br>Laseracupuncture<br>Needle acupuncture | A total of 20 sessions once every two days | ++     | +       |
| 2  | 3 year old, F., Kangal Sheepdog    | Megaoesophagus | Vomiting for 4 months                                  | Electroacupuncture                                     | Only one session                           | +++    | +       |
| 3  | 8 month old, M., Mixed Breed, Dog  | Enteritis      | Diarrhea for 2 days                                    | Needle acupuncture<br>Aquapuncture                     | 2 treatments once every 2 days             | +++    | -       |
| 4  | 4,5 year old, M., Kangal Sheepdog  | Infertility    | Mating with the same female for 2 years but no puppies | Needle acupuncture                                     | A total of 4 sessions twice a week         | +++    | -       |
| 5  | 1.5 year old, M., Mixed Breed, Cat | Libido         | very high sexual activity for 1 month                  | Laseracupuncture                                       | A total of 4 sessions twice a week         | +++    | +       |
| 6  | 7 year old, M., Mixed Horse        | Pain           | Pain continuing for 1 hour                             | Hemoacupuncture  | only one session                           | +++    | -       |

(+++) **very good result:** complete clinical improvement, (++) **good result:** clinical improvement but rarely some symptoms were seen due to other factors ( cold, rain, work, trauma,etc..) , (+) **incomplete result:** no symptoms according to animal's owner but no clinical improvement according to us, (-) **negative result:** no clinical improvement

**Table 4:** Cases in which acupuncture was used for an emergency problem.

| No | Species,Breed, Age , Sex        | Emergency Problem  | Method Used               | Result |
|----|---------------------------------|--------------------|---------------------------|--------|
| 1  | 1.5 Year old M. Mixed Breed Dog | Respiratory arrest | GV-26 needle acupuncture  | +++    |
| 2  | 2 Year old M. Mixed Breed Cat   | Respiratory arrest | GV -26 needle acupuncture | +++    |
| 3  | 1.5 Year old M. Collie          | Respiratory arrest | GV -26 needle acupuncture | +++    |
| 4  | 3 Year old F. Mixed Breed Dog   | Respiratory arrest | GV -26 needle acupuncture | -      |
| 5  | 1 Year old F. Poodle            | Respiratory arrest | VG-26 needle acupuncture  | -      |
| 6  | 1.5 Year old F. Mixed Breed Dog | Respiratory arrest | VG-26 needle acupuncture  | +++    |

(+++) **very good result:** improvement, (-) **negative result:** no improvement

**Table 5.** Cases in which acupuncture anesthesia was applied for surgical procedures.

| No**<br>* | Species, Breed, Age, Sex        | Operation                      | Method and Time     | Time of Operation | Analgesia degree |         |           |        | Result           |
|-----------|---------------------------------|--------------------------------|---------------------|-------------------|------------------|---------|-----------|--------|------------------|
|           |                                 |                                |                     |                   | Skin-            | Muscle- | Traction- | Suture |                  |
| 1         | 10 Year old M. Poodle           | Perineal hernia                | E.A.* 15 min        | 1 hour            | +                | ++      | --        | ++     | ++               |
| 2         | 5 Year old M. Poodle            | Removal of hyperplastic tissue | E.A 15-20 min.      | 20 min.           | ++               | Ab-sent | Ab-sent   | +++    | +++              |
| 3         | 1.5 Year old F. Mixed Breed Dog | Inguinal hernia                | E.A 20 min + 15 min | 1 hour            | -                | Ab-sent | Ab-sent   | Absent | Did not continue |
| 4         | 1 Year old M. Mixed Breed Dog   | Tail Amputation                | E.A 25 min.         | 15 min.           | ++               | Ab-sent | Ab-sent   | ++     | ++               |
| 5         | 3 Year old F. Sheep             | Evisceration                   | E.A 20 min.         | 1.5 hour          | ++               | +++     | ++        | +++    | +++              |
| 6         | 2 Month old M. Calf             | Umbilical Hernia               | E.A 20 min.         | 1.5 hour          | +++              | +       | +         | +++    | ++               |
| 7         | 5 Year old F. Holstein Cow      | Rumenotomy                     | E.A 20 min.         | 2 hour            | ++               | +++     | ++        | ++     | ++               |
| 8         | 1.5 Year old M. Mixed Breed Dog | Removal of the Steinmann pin   | E.A 15 min.         | 15 min.           | -                | Ab-sent | Ab-sent   | Absent | Did not continue |
| 9         | 5 Year old M. Mixed Breed Dog   | Tumor removal                  | E.A 20 min.         | 30 min.           | ++               | +       | --        | ++     | ++               |
| 10        | 3 Year old F. Mixed Breed Dog   | Wound revision                 | E.A 15 min.         | 20 min            | ++               | Ab-sent | Ab-sent   | ++     | ++               |
| 11**      | Calf                            | Atresia recti                  | E.A 15 min.         | 5 min             | +++              | +++     |           |        | Did not continue |
| 12        | 1.5 Year old F. Mixed Breed Cat | Prolapsed rectum               | E.A. 15 min.        | 10 min            | Ab-sent          | Ab-sent | ++        | +++    | ++               |

\* Electroacupuncture

\*\* Calf was sent to slaughterhouse due to negative prognosis.

\*\*\* Not use any premedication

(+++) **excellent analgesia,** (++)  **good analgesia,** (+)  **not complete analgesia but operation can be continue,** (-)  **incomplete analgesia**

hemiplegia was in advanced pregnancy. She recovered completely after the scalp acupuncture treatment and gave a normal birth. In a case paralyzed after being hit by a car, we applied a total of 20 acupuncture treatments twice a week for 10 weeks.

In respiratory arrest during anesthesia, we applied classical needle acupuncture to GV-26 in 5 dogs and 1 cat. Out of a total of 6 cases respiration returned approximately 1 minute after acupuncture in 4 cases and there was no response in 2 cases.

Electroacupuncture was applied to 12 cases intraoperatively for analgesia. The minimum induction period was 15 minutes and the maximum was 25 minutes. Excellent analgesia was obtained in 3 cases and good analgesia in 6 cases. Alternative anesthesia methods were used in 3 cases, because acupuncture analgesia was inadequate. For acupuncture analgesia to be successful, factors such as silence of the personnel in the operating theater, gentle and quick movements from the surgeon and minimum traction were important. Especially during organ traction, complete analgesia was unobtainable. In some cases, especially in large animals, moderate analgesia was obtained in the skin and the operation was performed. In 86 cases, the maximum treatment was 20 times and the minimum was once. The longest treatment lasted for 13 weeks and is listed as case No. 20 in Table 1. The total number of treatments given to 86 cases was 404.

## DISCUSSION

The aim of this study was to further examine the clinical applications and effectiveness of acupuncture and add the results of more cases to the literature. All cases in which acupuncture was used were included. Difficulties were encountered choosing cases, because animal owners were not familiar with acupuncture or had misconceptions about acupuncture treatment. Owner compliance for regular acupuncture treatment was sometimes difficult to attain, and so some cases had very irregular treatment periods and some owners discontinued treatments. Most of the cases chosen for this study were those in which no response was seen with conventional treatments. Thus our database consists mostly of chronic cases and those that were difficult to manage.

Although *Pin-Yin* nomenclature is usually

adequate in large animals, we observed that the acupuncture points in the *Pin-Yin* system were not appropriate for cats and dogs. Although there are 76 points for dogs in the *Pin-Yin* system, while searching points using the acupuncture detector, we found many points following the human meridian system which have also been defined by many researchers.<sup>1, 2, 4, 6, 5, 7, 9, 10 11, 12</sup>

While electroacupuncture has been frequently documented, classical needle acupuncture, laser acupuncture, aquapuncture and implantation techniques can also be used in veterinary medicine.<sup>1-4, 8, 13-22, 38, 78</sup> It might be practical to use an implantation acupuncture technique on patients that are unable to continue classical acupuncture treatments. Like other clinicians, we too have seen that implantation has been successful in hip dysplasia.<sup>67, 69</sup> However, in a case of severe aseptic necrosis, use of the leg did not occur following gold implantation and excision arthroplasty was performed. This situation was probably due to the fact that muscle atrophy was severe and the progress of this atrophy could not be stopped by gold implantation. Even if the pain in the hip joint disappears, the muscle group may not be able to carry the weight due to the atrophy.

Laser acupuncture has been used in veterinary acupuncture more.<sup>27, 32, 83-85</sup> Laser acupuncture was also used in this case series, especially in cases such as tendonitis, hip dysplasia, myoatrophy, paralysis and in aggressive animals that would not allow needle acupuncture. Because of wavelength and power, infrared lasers need less treatment time than Helium-Neon lasers, and it would be preferable to use them in veterinary acupuncture.<sup>4, 83</sup>

Aquapuncture with vitamin B12 injectable solution was also used. This facilitated treatment of small animal cases when the pet owner did not have enough time, the animal was aggressive and difficult to restraint or the acupuncture point chosen for treatment was dangerous for needle application.

As other clinicians have discussed and also observed in this study, electroacupuncture is more beneficial and much faster in producing results than needle acupuncture.<sup>4, 12</sup> Electroacupuncture was used in many cases, especially for its rapid onset of pain relief and its ability to stimulate peripheral nerves easily. Electroacupuncture was not used in anxious and frightened animals or pregnant animals

as application in these cases is contraindicated.<sup>1,2,4,8,12</sup> Hemoacupuncture as described in classical books was difficult to perform in horses with pain as it was hard to restrain the animals. It is necessary to restrain an animal in pain during acupuncture. Kenny, et al, have stated that they have tried the same treatment with aquapuncture but were unsuccessful.<sup>44</sup> The successful results obtained following electroacupuncture in 3 race horses with lumbar and sacral pain had pain relapse for a year follow-up period.<sup>25,27,32,45</sup> *A-Shi* points should be treated. These are points that are sensitive when compression is applied by finger, are not normally present in the back region, but develop in cases where there is pain. As reported by other authors, relapse was seen within a month following electroacupuncture in race horses with shoulder lameness.<sup>2,8,32</sup> The relapse resolved after 2 further treatments and was not observed for another year. It is thought that the relapse may be because the animal will prematurely bear weight on the pain free limb. Like Cain, we applied laser acupuncture to 2 racehorses with flexor tendonitis and both of them came first in their respective races after acupuncture treatment.<sup>2</sup> No differences in outcome were observed between the Helium-Neon and infrared lasers.

Two cases of aseptic necrosis of the femoral head did not improve. The main reason for this was that although the implants stopped the pain in the case where implantation was used, muscle atrophy had progressed and the animal could not use its leg. Owner compliance and lack of return for subsequent treatments occurred in one case. Electroacupuncture was applied to 2 cases with inflammation of the knee joint with similar results as previously reported.<sup>1,4,8,12,14,16</sup> Although there was no radiological difference before and after the treatment, both cases started using their legs again because the pain had stopped. Care must be taken to minimize trauma while applying needles to acupuncture points around the knee joint.

In cases of tendon contracture, acupuncture relieved muscle spasm and increased microcirculation. Because of these characteristics acupuncture might be used alternatively or in addition to physiotherapy programs. The leg was used in 1-1.5 months in cases of tendon contracture. In one case with no skeletal lesions that had been treated unsuccessfully with anti-inflammatory

drugs for almost a month, that the pain ceased and the animal began using the leg after a 3-week course of acupuncture. The relief of pain is associated with both a local effect and the release of endogenous endorphins.<sup>68,86-89</sup> Contrary to some researchers and classical acupuncture books, no positive results were obtained with acupuncture in cases of radial nerve paralysis.<sup>3,4,8,12,72,90</sup> One explanation may be that patients did not receive regular treatments or nerve damage was complete.

Like other reports, good results were obtained in cases of intervertebral disc herniation.<sup>1,8,51,61</sup> Acupuncture was not helpful in cases of suspected degenerative myelopathy. We used scalp acupuncture in a hemiplegia case. We applied the treatment by choosing the coinciding points on the cranium to the motor areas of the brain as defined in veterinary literature.<sup>91,92</sup> Due to pregnancy, we used needles only in this case, as some clinicians have suggested that acupuncture is contraindicated in pregnant animals.<sup>4,8,12,86</sup> As a result of needles being applied to acupuncture points on the head and these needles being twisted, muscle relaxation in the paralyzed limb and trembling in the neck muscles were observed.

Respiration returned in 4/6 cases in which needle acupuncture was applied to the GV-26 point in cases of respiratory arrest.<sup>93,95</sup> GV-26 has a sympathomimetic effect on cardiac, circulatory and respiratory systems.<sup>94,95</sup> Acupuncture in conjunction with conventional resuscitation treatments is usually recommended, but acupuncture alone may be used when no medical facilities are present.

In this study and in others, the success of acupuncture for intraoperative analgesia is greatly affected by the temperament of the animal.<sup>4,12,77,79</sup> Good results were not obtained in nervous or frightened animals. No cases in this study were sedated so acupuncture analgesia alone could be evaluated. However, for routine use, sedation is recommended along with acupuncture. As in other reports, the best analgesic results were found in ruminants.<sup>4,8,12</sup> The author agrees that the surgeon should work quickly but gently, the personnel in the operating theater should not make any noise and organ traction should be kept at a minimum.<sup>1,4,8,12,75-77,78,80-82</sup> Noise negatively influenced analgesia. No recovery injuries occurred after acupuncture analgesia intraoperatively. In conclusion,

acupuncture was effective for many different clinical problems in veterinary medicine and can be useful alone or in conjunction with other conventional treatments.

<sup>a</sup> Zhongyan Taihe Medicine Co. LTD, Beijing, China.

<sup>b</sup> Saglam Electronic, İstanbul, Turkey.

<sup>c</sup> Donghua Electronic Instrument Factory, Beijing, China

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#### TCVM NOTES

##### What's the meaning of "detoxifying" in TCVM?

In TCVM, detoxifying is called "*Jie Du*". *Jie* means "anti" and *Du* refers to poison or toxin. The term "detoxifying" or "*Jie Du*" is often combined with "clearing Heat (*Qing Re*)". Extreme Heat (*Re Ji*) and Heat Toxin (*Re Du*) are similar TCVM terminologies. Both of them are Excess Heat. Extreme Heat is 100% pure excessive heat (red tongue, fast/strong pulse, yellow coating, high fever etc.) and Heat Toxin refers to the infectious or epidemic Excess Heat, such as flu, or other viral infections. Because of their difference, two separate herbal categories are designed for these conditions:

1) The herbs to clear Heat and drain Fire (*Qing Re Xie Huo*) are used for Extreme Heat. Individual herbs include Gypsum *Shi Gao* and Anemarrhena *Zhi Mu* to clear Heat and drain Fire.

2) The herbs to clear Heat and detoxify (*Qing Re Jie Du*) are used for Heat Toxin (infectious Excess Heat). Individual herbs include Lonicera *Jin Yin Hua* and Forsythia *Lian Qiao*. Herbal formulas include *Yin Qiao San*. Their actions are to clear Heat and Detoxify.

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