An integrative therapy for paraplegia dog with ehrlichiosisþ

Frizky Amelia1,5,*, Danny Umbu T.H.2, Erly R. Adistyã2, Rr. Soesatyoratih2,3, Leni Maylina4, Nindy A. Utami1, Tatang Cahyono5, Deni Noviana2,3

1Animal Biomedical Science, Graduate School of IPB University, Bogor
2Veterinary Teaching Hospital, Faculty of Veterinary Medicine, IPB University, Bogor
3Division of Surgery and Radiology, Faculty of Veterinary Medicine, IPB University, Bogor
4Division of Internal Medicine, Faculty of Veterinary Medicine, IPB University, Bogor
5Indonesian Association of Traditional Chinese Veterinary Medicine (IATCVM), Jakarta

ABSTRACT: An eight-months-old male Golden Retriever was referred to Veterinary Teaching Hospital of IPB University with clinical signs of non-ambulatory paraplegia, tail paralysis, urinary and faecal incontinence, pale mucosa, and loss of sensory and motoric responses on both pelvic limbs. The hematology examination showed thrombocytopenia (125x10³/µL), monocytopenia (0.09x10³/µL), and no significant decrease of hematocrit (36.88%). Rapid diagnostic test and blood smears were positive for Ehrlichia canis infection. Abdominal sonogram showed splenomegaly and hepatomegaly with hepatic vessels dilatation. An integrative therapy was done using medications (vitamin B-complex, cyproheptadine, methylprednisolone, doxycycline, and Fundamin E®), herbal (Gui Pi Tang® and Pu Fang EjiAo Jiang®), acupuncture, micro-radar, and Tuina massage. The dog was able to walk and run after 10th session of the intensivetreatment then discharged from the hospital after two months. One week after, the dog started dragging his toe. A customized shoe then made to prevent further injury to the affected limb. The acupuncture was continued once a week for the following two months. The dog is still able to walk and run at his last visit 5 months later. This shows that an integrative therapy can give a good performance in recovering ambulation of paraplegia dog with ehrlichiosis.

Keywords: acupuncture, conventional medicine, eastern medicine, ehrlichiosis, paraplegia.

INTRODUCTION

History and anamnese: An eight-months-old male Golden Retriever, weighing 25kg, presented for pelvic limbs and tail paralysis. The owner reported that the dog suddenly cannot walk after playing with his fellow dogs at home and suspected lumbar trauma. The dog has not received any treatment for 2 weeks.

Clinical findings: The physical examination showed a general weakness, pale mucous, stiffness at both thoracic limbs, pelvic limbs and tail paralysis without signs of pain at the palpation along the vertebrae (Figure 1a). The heart rate was 122 beats per minute, respiration rate of 44 times per minute, and body temperature of 39°C. Several wounds found on his rear due to dragged pelvic limbs. Severe skin irritation on his abdominal and inguinal area was marked due to urinary and faecal incontinence. Neurological examination disclosed an alert mental status and non-ambulatory paraplegia with mild muscle atrophy at both pelvic limbs. Proprioceptive deficits were detected at all four limbs, but more severe in pelvic limbs. Patellar, withdrawal, and anal reflexes were decreased.

MATERIAL AND METHODS

Diagnostic tests: No abnormalities found in the radiograph and blood chemistry examinations. The hematology examination showed thrombocytopenia (125x10³/µL), monocytopenia (0.09x10³/µL), and no significant decrease of hematocrit (36.88%). The blood smears and rapid tests were positive for Ehrlichia canis infection. Hepatomegaly and splenomegaly were significantly observed in dog’s sonogram (Figure S1).

Differential diagnosis and prognosis: The diagnosis based on conventional medicinewas non-ambulatory paraplegia and ehrlichiosis. In Traditional Chinese Veterinary Medicine (TCVM), this condition called local Qi and Blood stagnation at lumbar area leading to KID yin deficiency with blood deficiency. The prognosis was good due to young age and positive response towards the integrative therapy.
Treatments: The dog was hospitalized and received vitamin B-complex (Neurobion® 200mg/kg once per day PO) and cyproheptadine (Pronicyn® 2mg/kg twice per day PO) for a week. Then the medication changed into methylprednisolone (2mg/kg twice per day PO), multivitamin (Fundamin E® one tablet daily), doxycycline (5mg/kg twice per day PO), and herbal Fu Fang Ejiao Jiang® (20mL per day PO) for 2 weeks. Gui Pi Tang® one tablet per day PO then used to replace Fu Fang Ejiao Jiang® for the following one month. Acupuncture, micro-radar, and Tuina massage were delivered together, three times per week, for the first two months. Then it decreased into once per week for another two months after he discharged from the hospital. There were 40 acupoints chosen for this case, but one session of acupuncture only used up to 15-20 acupoints based on the patient’s condition at that very moment of therapy (See Table S2.1 and Table S2.2 for the list of acupoints and herbal functions).

■ RESULTS AND DISCUSSION

Results: The recovery process of integrative therapy can be seen in Figure 1. (b-f). The dog finally can stand, walk, and run on his own on 10th session and was discharged after 2 months (16 sessions of therapy). Then he came back one week later dragging his right pelvic limb. The skin around the paw was injured due to the friction against the ground. A customized shoe then designed for his right pelvic limb. The dog started wearing the customized shoe in January 2019 and showed a good recovery.

Figure 1 The recovery process of the dog: (a) first visit in July 2018, (b) after 10th acupuncture session, (c) dragging toe, (d) the customized shoe, (e) patient wore the customized shoe to prevent him from dragging the toe, (f) last visit in April 2019.

Discussion: Paraplegia can be defined as a complete loss of voluntary motor function in the pelvic limbs (Kornegay 1991). The differential diagnosis of paraplegia are acute intervertebral disk herniation, spinal trauma, and fibrocartilaginous embolic myelopathy (Casimiro da Costa 2009). The differential diagnosis can be confirmed by using myelography, computed tomography (CT), or magnetic resonance imaging (MRI) (Jeffery et al. 2016). In this case, the dog’s condition was getting worse due to E. canis infection. Ehrlichiosis is one of the most important tick-borne zoonoses that affect dogs (Freire et al. 2009). Some neurological signs associated with ehrlichiosis are ataxia, seizures, paraparesis or tetraparesis with upper or lower motor-neuron deficits, stupor, vestibular disease, and back or neck pain (Freire et al. 2009). We used the acupuncture as the main therapy for the dog. Acupuncture has the ability to reduce the pain due to its analgesic and anti-inflammatory effects and has been clinically proved to help recover ambulation in paralysis animals (Xie & Wedemeyer 2012). Meanwhile, the customized shoe was made to correct and conditioning the ‘dragging toe’ limb into a normal posture and gait as well as protect the nail and skin from the damage of being dragged along the ground.

■ CONCLUSION

The combination of western (conventional) and eastern (Chinese) medicine, can be used to give greater results in a shorter amount of time in treating paraplegia dog with ehrlichiosis.

■ ASSOCIATED CONTENT

Supporting Information
†The sonogram, list of acupoints and herbal functions were submitted in PDF form as supporting information.

■ AUTHOR INFORMATION

Corresponding Author
*FA: frizkyamelia@hotmail.com
Graduate School of IPB University
Jl. Raya Dramaga, Kampus IPB Dramaga, Bogor Jawa Barat – Indonesia 16680

■ ACKNOWLEDGMENT

The authors would like to thank Dr. Warangkhana Phanwanich and her team at the iVET Hospital and PETANEER – Thailand for their insight and help during the customized shoe’s making process and its evaluation.

■ REFERENCES

Casimiro da Costa R. 2009. Acute paraplegia-diagnosis and treatment. World Small Animal Veterinary Association (WSAVA) World Congress Proceedings 2009. https://www.vin.com/doc/?id=4252715.

Freire MN, Azevedo TS, Cunha MO, Guerra EFC, Rocha AAF, Moura SB, Peneluc T, Cerqueira RB. 2009. Canine ehrlichiosis: Clinical, hematological and serological investigation of 100 dogs. World Small Animal Veterinary Association (WSAVA) World Congress Proceedings 2009. https://www.vin.com/apputil/content/ default-tadv1.asp?id=4252820&pid=11290.

Jeffery ND, Barker AK, Hu HZ, Alcott CJ, Kraus KH, Scanlin EM, Granger N, Levine JM. 2016. Factors associated with recovery from paraplegia in dogs with loss of pain perception in the pelvic limbs following intervertebral disk herniation. Journal of the American Veterinary Medical Association. 248(4):386-394.

Kornegay JN. 1991. Paraparesis (paraplegia), tetraparesis (tetraplegia), urinary/fecal incontinence. Spinal cord diseases. Problems in veterinary medicine. 3(3):363-377.

Xie H, Wedemeyer L. 2012. The validity of acupuncture in veterinary medicine. American Journal of Traditional Chinese Veterinary Medicine. 7(1): 35-43.
SUPPORTING INFORMATION

An integrative therapy for paraplegia dog with ehrlichiosis

Frizky Amelia\textsuperscript{1,5,\#}, Danny Umbu TH\textsuperscript{2}, Erly R. Adistya\textsuperscript{2}, RR Soesatyoratih\textsuperscript{2,3}, Leni Maylina\textsuperscript{4}, Nindya D. Utami\textsuperscript{1}, Tatang Cahyono\textsuperscript{5}, Deni Noviana\textsuperscript{2,3}

\textsuperscript{1}Animal Biomedical Science, Graduate School of IPB University, Bogor
\textsuperscript{2}Veterinary Teaching Hospital, Faculty of Veterinary Medicine, IPB University, Bogor
\textsuperscript{3}Division of Surgery and Radiology, Faculty of Veterinary Medicine, IPB University, Bogor
\textsuperscript{4}Division of Internal Medicine, Faculty of Veterinary Medicine, IPB University, Bogor
\textsuperscript{5}Indonesian Association of Traditional Chinese Veterinary Medicine (IATCVM), Jakarta

\# Electronic Supplementary Information (ESI) available.
See DOI: http://dx.doi.org/10.29244/avl.3.4.65-66
S 1. Sonogram of the dog

Figure S1 showed the sonogram of the patient. Hepatomegaly and splenomegaly were significantly observed as a consequence and also an indicator of blood parasite infection. Vessel dilatation can also be seen in both liver and spleen.

Figure S1. The sonogram of the dog: (a) hepatomegaly with hepatic vessels dilatation, and (b,c,d) splenomegaly.
S2. List of acupoints and its function

Table S2.1 showed the acupoints chosen and used in this case. There were 40 acupoints chosen, but in one session of therapy we only used about 15 to 20 acupoints, based on the patient’s condition at that very moment. The clinical indication and function of each acupoints can also be seen in Table S2.1.

Table S2.1. List of acupoints and its function

| No | Acupoint   | Clinical Indication(s) or Function(s)                                                                 |
|----|------------|-------------------------------------------------------------------------------------------------------|
| 1  | Bai-hui    | Diarrhea, constipation, IVDD, paresis/paralysis of pelvic limb                                        |
| 2  | Hua-tuo-jia-ji | IVDD, relieve back pain                                                                                |
| 3  | LIV-3       | Yuan point, remove Qi stagnation and pain, paralysis of pelvic limbs                                   |
| 4  | LIV-8       | Genital pruritis, urinary incontinence                                                                 |
| 5  | BL-11       | Influential point for bone, IVDD, relieve back pain                                                    |
| 6  | BL-17       | Back shu point for diaphragm, influential point for blood, blood/Yin deficiency                       |
| 7  | BL-18       | Back shu point for liver, hepatic disease, relieve back pain                                           |
| 8  | BL-20       | Back shu point for spleen, support blood regulation, relieve back pain                                 |
| 9  | BL-23       | Back shu point for kidney, support bone recovery, KID Yin /Qi deficiency, urinary incontinence       |
| 10 | BL-24       | Qi deficiency, relieve abdominal and back pain                                                        |
| 11 | BL-25       | Back shu point for large intestine, support bowel movement, relieve back pain                          |
| 12 | BL-26       | Source Qi associate, urinary incontinence, relieve back pain                                           |
| 13 | BL-28       | Back shu point for bladder, urinary incontinence, relieve lumbo-sacral pain                           |
| 14 | BL-36       | Relieve back pain, paralysis of pelvic limb                                                           |
| 15 | BL-39       | Urinary dribbling, relieve back pain and muscle spasms of pelvic limbs                                |
| 16 | BL-40       | Master point for caudal back/hip, hip and back problem, relieve lumbar pain                           |
| 17 | BL-54       | Master point for pelvic limbs, paresis/paralysis of pelvic limbs, hip problem, perianal problem, relieve lumbar pain |
| 18 | BL-60       | Relieve back pain, cervical stiffness                                                                 |
| 19 | ST-25       | Constipation, diarrhea, relieve abdominal pain                                                        |
| 20 | ST-35a      | Pelvic limb weakness                                                                                    |
| 21 | ST-35b      | Pelvic limb weakness                                                                                    |
| 22 | ST-36       | Master point for GI tract and abdomen, Improve Wei-Qi (general tonic)                                 |
| 23 | ST-41       | Paresis/paralysis of pelvic limbs                                                                     |
| 24 | SP-3        | Constipation, diarrhea, relieve abdominal pain                                                        |
| 25 | SP-4        | Luo connecting point to stomach, confluent point to Chong channel                                     |
| 26 | SP-6        | Master point for caudal abdomen and urogenital system, Yin/blood deficiency                            |
| 27 | SP-9        | Yin deficiency, skin itching                                                                           |
| 28 | SP-10       | Blood deficiency, blood stagnation, skin itching, paresis or paralysis of pelvic limbs                |
| 29 | GB-29       | Hip joint problem, paralysis of pelvic limb                                                           |
| 30 | GB-30       | Hip joint problem, paralysis of pelvic limb                                                           |
| 31 | GB-31       | Skin itching, paralysis of pelvic limb, rear foot problem                                              |
| 32 | GB-34       | Influential point for tendon ligament                                                                  |
| 33 | GB-39       | Influential point for marrow/CNS, cervical stiffness, paresis/paralysis of pelvic limbs, anal problem |
| 34 | LI-10       | Immune regulation, general tonic, skin itching , thoracic and pelvic limb weakness                     |
| No | Herbal               | Clinical Indication (s) or Function (s)               |
|----|----------------------|-----------------------------------------------------|
| 1  | *Fu Fang Ejiao Jiang* | Thrombocytopenia, blood deficiency                  |
| 2  | *Gui Pi Tang*        | Thrombocytopenia, blood/Qi deficiency, support spleen function |

Tabel S2.2 listed the herbal chosen and used in this case. We only used two herbals, the *Fu Fang Ejiao Jiang* and *Gui Pi Tang*. Both herbals works to increasing the blood performance and also supporting the liver and spleen functions.