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Introduction to Integrative Veterinary Medicine

Mushtaq A. Memon

Introduction

Integrative veterinary medicine (IVM) is defined as combination of complementary therapies with conventional care, which is guided by the best evidence available. With the increasing interest in complementary therapies by human has prompted inquiries and use of these therapies in animals. IVM is preferable term than alternative or holistic medicine. The growing preference for this terminology is exemplified by the renaming the NIH National Center for Complementary and Alternative Medicine's to the National Center for Complementary and Integrative Health. Even though many of the complementary therapies have a long history, such as acupuncture but they have become popular recently in industrialized countries. IVM includes various complementary therapies. Some of the commonly used therapies are acupuncture, rehabilitation, manual and massage therapies, herbal, and integrative nutrition. Veterinary practitioners are frequently asked questions by animal owners about complementary therapies, but the prevalence of integrative medical interventions in veterinary medicine has not been established.

Background

A survey of owners of veterinary oncology patients found that in addition to conventional treatments, the owners often used the therapies regarded as alternative or complementary without the knowledge or supervision of a veterinarian [1]. A survey of one veterinary college's graduates reported that more than two-thirds of these veterinarians encountered clinical situations involving these therapies at least monthly and over 25% experienced them on a weekly or daily basis [2]. Recent publications have emphasized the need for training in this area in veterinary colleges [3]. A survey of the 49 AVMA-accredited colleges revealed that 30.2% offer a formal course in IVM, 33 (76.7%) offered some level of IVM instruction in the curriculum, and 32 (74.4%) provided clinical services in IVM [4]. The most common IVM topics covered in the curriculum were rehabilitation, and acupuncture (Figure 1.1). A retrospective analysis [5] from an IVM service revealed that of out of 5,195 patient treatment sessions, 274 patients receiving multiple modalities were most frequently for neurological and orthopedic disease (50.7% versus 49.6% of all presenting complaints, respectively). Older neutered or spayed dogs (mean age = 9 years) and Dachshunds were treated more often than expected based upon general population statistics. Acupuncture, laser therapy, electroacupuncture, and hydrotherapy (Figure 1.2), were frequently administered (>50% patients). In addition to domestic animals, acupuncture is utilized to treat various disorders in zoo and exotic animals [6].

What is in the name: Integrative medicine is defined as combination of complementary and alternative therapies with conventional care, which is guided by the best evidence available [7]. In human medical practice, complementary or alternative are broadly defined which may include acupuncture, nutrition, rehabilitation, laser therapy, hyperbaric oxygen, and other intervention not typically considered mainstream medical practice. However, the term alternative medicine gives impression that certain therapies are a replacement or a mutually exclusive option to conventional care. The critics of complementary medicine term assume that the therapies can and should only be used in tandem, when in some cases a modality may be preferred or exclusive treatment available. Finally, holistic medicine suggests that conventional veterinary practice does not consider the impacts of treatment on the whole animal, an obviously flawed assumption. The growing preference for this terminology is exemplified by the renaming the NIH National Center for Complementary and Alternative Medicine's (NCCAM) to the National Center for Complementary and Integrative Health (NCCIH https://www.nccih.nih.gov).

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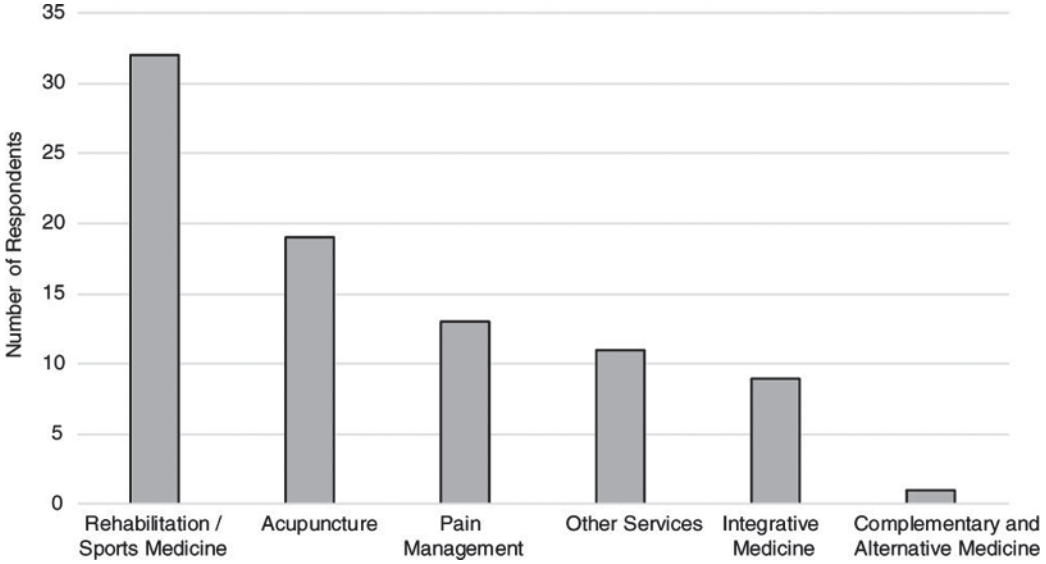

Figure 1.1 Clinical services providing Integrative Veterinary medicine modalities within AVMA-accredited colleges. Memon, Shmalberg and Xie, 2020/University of Toronto Press.

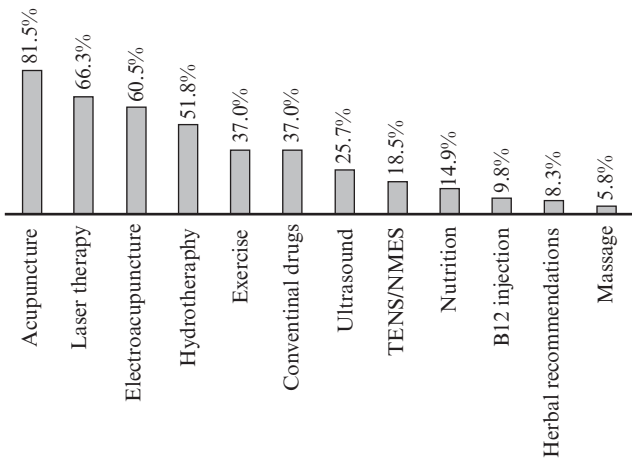

Figure 1.2 The percentage of patients receiving each integrative therapeutic modality at the study site's integrative medicine service. Shmalberg and Memon, 2015 / Hindawi / Licensed under CC BY 4.0.

Veterinary Acupuncture

Veterinary acupuncture, or needle stimulation of various points on the body, generally relies upon an understanding of neuroanatomic and musculoskeletal structures. The proposed physiological effects and possible mechanism of acupuncture are direct neural stimulation, cannabinoid receptor activation, modulation of substance P, release of endogenous opioids, selective activation of nerve fibers, and effect of acetylcholine [8–10]. For additional information on acupuncture, please see Chapters 4, 5, and 6.

Physical Rehabilitation

Physical rehabilitation and sports medicine of horses and dogs has received considerable attention in last about 20 years due to increased participation of these animals in competitive events. This has increased demand for veterinary care for animals injured in an event. The newly approved American College of Veterinary Sports Medicine and Rehabilitation (ACVSMR) has increased academic credibility of this specialty. Some of the commonly utilized rehabilitation modalities include under water treadmill therapy, photobiomodulation or laser therapy, and therapeutic ultrasound. Detailed information on various rehabilitation modalities and their use is discussed in Chapter 13–16 of this book.

Manual Therapies

Manual therapy is broadly defined to include veterinary manipulative therapy, massage, osteopathy, and related techniques. Chapters 7 covers the basic concepts of veterinary manipulative therapy as it related to neurology, biomechanics, and available evidence. Detailed information on massage therapy and myofascial principles are discussed in Chapter 8.

Integrative Nutrition

Nutritional assessment and intervention usually occur in combination with other integrative modalities, such as physical rehabilitation and sports medicine. Animals presented for

physical rehabilitation are frequently overweight or obese. Novel trends in nutrition and integrative nutrition in select conditions, such as obesity, performance, and physical rehabilitation are discussed in Chapters 11 and 12.

Herbal Therapies

Botanical and herbal therapies have been utilized for thousands of years. The origins and major systems of herbal therapy with selected evidence-based interventions are described in Chapter 9. Herbal medicine regulation, adverse events and herb-drug interaction, which always is a concern using herbs with Western therapies are discussed in Chapter 10. The clinical application of herbal therapies is discussed with clinical case examples in Chapter 24.

Integrative Therapies – Case Studies

Acute Quadriplegia in Alpaca

A 5-year-old pregnant Huacaya alpaca presented for acute onset of severe weakness and inability to rise (Downer Syndrome). She was found acutely down in the pasture, laterally recumbent and unable to initiate movements (Figure 1.3). Diagnostic tests were performed but no definitive diagnosis was established. Her condition was stabilized using conventional emergency medical procedures. Once stabilized, two weeks after initial presentation, a Traditional Chinese Veterinary Medicine (TCVM) examination was performed. A Global Qi Deficiency pattern was diagnosed based on the presence of quadriparesis and lethargy. There was Heat in the Upper Burner (Shang Jiao) as evidenced by a red tongue and red oral mucous membranes. False Heat was suspected due to the severe Qi Deficiency causing Yin Deficiency. These deficiencies were most likely a result of her pregnancy, which may have exacerbated a previous underlying Kidney Qi and Yin Deficiency. Quadriparesis may be associated with Deficient Kidney/Spleen Qi causing weakness of the limbs. Seven acupuncture treatments (dry needles, electro-acupuncture, aqua acupuncture) (Figure 1.4) were administered for three months (weekly then every two weeks). Daily physical rehabilitation, including hydrotherapy (Figure 1.5) and walking (Figure 1.6) were provided. By combining acupuncture and physical rehabilitation with conventional treatments and supportive care, the alpaca began walking on her own in approximately 50 days after onset (Figure 1.7) and recovered within three months with a viable fetus. She delivered a normal cria (Figure 1.8) [11].

Figure 1.4 Dry needle acupuncture was performed in alpaca with quadriplegia of unknown etiology.

Figure 1.3 A 5-year-old recumbent pregnant alpaca with acute quadriplegia.

Figure 1.5 Hydrotherapy in a pool was performed in alpaca with quadriplegia of unknown etiology.

Figure 1.6 Walking with support as a part of rehabilitation was provided to alpaca presented with quadriplegia of unknown etiology.

Figure 1.8 A 5-year-old recumbent pregnant alpaca with acute quadriplegia of unknown etiology was treated for six weeks with integrative therapy, including acupuncture. Alpaca delivered a normal cria and shown with the mother 20 days after birth.

Figure 1.7 By combining acupuncture and physical rehabilitation with conventional treatments and supportive care, the alpaca with quadriplegia began walking on her own in approximately 50 days after onset.

Immune Mediated Hemolytic Anemia (IMHA) in a Dog

A one-year-old spayed female rat terrier dog with IMHA was referred. The referring veterinarian reported that the dog did not respond to treatment with prednisone, azathioprine, and cyclosporine at immunosuppressive doses. She was non-regenerative and had been anorexic and vomiting/regurgitating for about a week. She was transfusion dependent and had been receiving blood roughly every 36 hours.

IMHA causes severe anemia in dogs and is associated with high morbidity and mortality, and mortality as high as 50% of the affected dogs [12]. Treatment relies on non-specific immune suppression by glucocorticoids to control autoimmune responses targeting red blood cells [13]. Little consensus exists on either the specific drug or combination of drugs to use or their dosages in individual patients [14].

Integrative veterinary medical (IVM) approach was considered in the dog. Traditional Chinese Veterinary Medicine (TCVM) examination of the patient revealed the following. Her nose was cool and dry, the right ear was warmer than the left, warm at Bui-hui and lumbosacral area, the pulse was thready, fast, and superficial. She was depressed (Figure 1.9) but the owner explained her personality which was compatible to Wood. Her sclera of the eyes and mucous membrane of the gums were yellow (Figure 1.10). Her tongue was dry with yellow coating and thicker at the base. Upon diagnostic scan, she was ++ sensitive at BL-22 and BL-23. TCVM pattern diagnosis was Spleen Qi and Blood Qi deficiency with excess heat. A veterinary internist and TCVM practitioner at the hospital worked together and implemented the IVM approach. The conventional therapy included Prednisone 5mg tables (1 tablet by mouth every 12 hours), Cyclosporine 25mg tablets (1 capsule by mouth every 12 hours), Leflunomide 10mg tablets (1 tablet by mouth every 12 hours), Azathioprine 6.5 mg capsules (2 capsules by mouth every 24 hours), Omeprazole 10mg capsules (1 capsule by mouth every 24 hours), and Aspirin 4mg capsules (1 capsule by mouth every 24 hours). TCVM

Figure 1.9 One-year-old spayed female rat terrier dog presented depressed with immune mediated hemolytic anemi.

Figure 1.10 One-year-old spayed female rat terrier dog presented with immune mediated hemolytic anemia. Note her yellow sclera of the eye and mucous membranes.

Figure 1.11 Dry needle acupuncture of 1-year-old spayed female rat terrier dog with immune mediated hemolytic anemia.

Figure 1.12 Gui Pi Tang was given by mouth twice a day to a 1-year-old spayed female rat terrier dog with immune mediated hemolytic anemia.

treatment included dry needle acupuncture (Figure 1.11) at acupoints BL-18, 20, 21, 22; GV-14, 20; SP-6, 10; ST-36; LI-20; and Gui Pi Tang (Figure 1.12) by mouth every 12 hours.

The patient was examined a day after the acupuncture treatment, and improvement was noticed. The yellowness of the tongue and mucous membranes was decreased (Figure 1.13), the pulse was less thready and fast, ears felt normal, her nose was moist, but she was still sensitive (++) at BL-22, 23. Her PCV (packed cell volume) had improved, therefore less blood transfusion was needed. Acupuncture was repeated and she was discharged from the hospital. After three days, the dog was re-examined; further improvement in the color of her sclera and mucous membrane was noticed. For about three months, the dog was maintained at conventional therapy of only two medications (Azathioprine 6.5 mg and Aspirin 4 mg per day); and Gui Pi Tang two capsules twice a day. Upon re-examination after about three months of the treatment (Figure 1.14), she showed her Wood personality and didn't allow inserting needles for acupuncture [15].

Chronic Diarrhea in a Cat

A three-and-a-half-year-old spayed female cat (Figure 1.15.) was presented with chronic diarrhea started about four months prior to presentation. Various diagnostic tests (fecal flotation test, CBC, Urine analysis, abdominal ultrasonography) were conducted and the cat was treated with various anthelmintics, including metronidazole, and fenbendazole but no improvement in diarrhea was noticed.

TCVM diagnosis and treatment: The cat was a difficult patient to perform complete TCVM diagnosis. In TCVM,

Figure 1.13 The yellowness of the tongue and mucous membranes was decreased after one day of dry needle acupuncture of 1-year-old spayed female rat terrier dog with immune mediated hemolytic anemia.

Figure 1.14 About three months after integrative veterinary therapy of a 1-year-old spayed female rat terrier dog with immune mediated hemolytic anemia.

diarrhea is considered stomach cold or cold-damp pattern [16]. It can be caused by stressful environmental changes, sudden change in diet, or unknown etiology. Treatment strategies include warm the middle-*jiao* and eliminate cold; excrete damp and stop diarrhea. The recommended acupuncture points are GV-1, *Bai-hui*, GV-4, ST-36, GB-34, SP-6, SP-9, BL-20, and BL-21. GV-1 is a local point to stop diarrhea, balance water (body fluids), and regulate middle-*jiao*. *Bai-hui* and GV-4 are common points to warm *Yang* to dispel cold-damp. ST-36 and GB-34 are the earth points to strengthen the spleen and stomach. SP-6 and SP-9 strengthen the spleen and eliminate damp. BL-20 and BL-21 are the back-associate points to strengthen the spleen and stomach [16].

As mentioned, the cat was a difficult patient to perform dry needle acupuncture on selected acupoints, therefore a few

Figure 1.15 A 3.5-year-old spayed female presented with chronic diarrhea recovered with acupuncture therapy.

needles were inserted at GV-1, GV-20, BL-20, BL-21. After one week, aqua acupuncture with diluted B12 was injected at GV-1, 20; BL-20, 21; ST-25, and CV-12. The owner reported decrease in diarrhea. After another week the aqua acupuncture was repeated. The owner was pleasantly surprised to notice that the diarrhea had stopped, and the cat defecated solid stools. The owner couldn't believe her own eyes and got so excited and took a picture of the solid feces and shared with us and with her friends and relatives through social media!

Conclusion

Integrative veterinary medicine is defined as combination of complementary therapies with conventional care, which is guided by the best evidence available. With the increasing interest in complementary therapies by human has prompted inquiries and use of these therapies in animals. IVM is preferable term than alternative or holistic medicine. The growing preference for this terminology is exemplified by the renaming the NIH National Center for Complementary and Alternative Medicine's to the National Center for Complementary and Integrative Health. Some of the commonly used therapies include acupuncture, rehabilitation, manual and massage therapies, herbal and integrative nutrition.

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