Reproductive applications for alternative/complementary care in veterinary medicine; acupuncture, chiropractic, manual therapy; treatment, and diagnosis; a neuroanatomical review

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In this presentation, the author will discuss the anatomy and neurophysiology of manual therapy and acupuncture as it relates not only to pain modulation but also to reproductive performance. The mechanisms of action are multifactorial and interactive. This discussion will explain not only why the author chooses to do acupuncture and manual therapy for the client, but also how these therapies may affect the animal through neurological modulation. The history of acupuncture and its introduction into the western world will be briefly reviewed. Also reviewed will be the nervous system and how it can be manipulated through acupuncture, acupressure, aquapuncture, electrical stimulation, and moxa. Pain modulation and control of pain through acupuncture and trigger point therapy and its relationship to reproductive success will be discussed. The audience will learn specific points to address common problems seen in small animal medicine as well as large animals including equine, bovine and camels and how acupuncture can be used as a complementary alternative modality. Some time will be spent on myofascial work and trigger point therapy and how it may mask or manifest itself in lameness, musculoskeletal pain, and reproductive failure. Participants will be given point combinations that involve both TCM and neuroanatomical acupuncture dealing with pain, musculoskeletal disease, and reproductive emergencies as well as reproductive failure. The mechanism by which these complementary modalities have the potential to inhibit pain and how they can be used in different situations will be discussed, as well as discuss when they may not be appropriate first line treatments. Also discussed will be how these modalities can address reproductive issues, loss of performance, musculoskeletal pain and stiffness, as well as some of the metabolic situations where acupuncture and manual therapy may be indicated as complementary care in dealing with post-operative ileus, laminitis in large animal medicine, and pain as well as endocrine diseases such as Cushing’s and renal disease in small animal medicine. The focus will be on the practical use of complementary medicine in a private practice setting. Cases will be discussed including the treatment that was used as well as the outcome. The uses of acupuncture will be presented and the success seen in each case; what are the most common situations it is used for and how cases are approached for best results. The pros and cons of acupuncture and manual therapy will be presented as well as the possible side effects. Contraindications to acupuncture and manual therapy and potential complications of each will be discussed. Other topics will include acupuncture and manual therapy for the cancer patient after chemotherapy and their uses in the pregnant animal and acupuncture for endocrine disorders. Participants will have the opportunity to see materials available for their use as well as electrical stimulation and its use. The types of acupuncture points and selection of points will be outlined according to clinical signs the clinician is presented with including the type of points and how they are used as well as the anatomical location of each.

This presentation will be a basic introduction to acupuncture and manual therapy, designed to give the clinician an understanding of the mechanics involved in stimulation of the nervous system through neuro-modulation. Scientific articles will be available or cited for future use. The presentation is not designed to go into great depth or certify the participant as an acupuncturist or manual therapist but to present the basic foundation of acupuncture and alternative therapies allowing practitioners to better communicate with their clients.

Acupuncture has been evolving over the last 3000 years. This type of complementary care is being utilized more every day by equine practitioners, small animal surgeons and internists, and those involved solely in pain control. The demand from clients for the use and utilizations of alternative medical therapies continues to rise. Acupuncture specifically is used in numerous situations. Its popularity continues to rise which is visible in the numerous lecture topics at many veterinary conferences. Acupuncture is the art of inserting a needle into specific regions of the body that are identified as acupuncture points that are anatomically identifiable. Acupuncture points, due to their increased vascular supply, presence of numerous mast cells, neuro-bundles and decreased electrical resistance stimulate the central nervous system (CNS) in numerous interacting mechanisms. Stimulation of these points then modulates the CNS through local effects, spinal stimulation as well as central and hormonal effects.

Manual therapy is a term that is used to include chiropractic, osteopathy, massage and physical therapy. It is a means of manipulating and stimulating receptors in the body. Most joint injuries are secondary to a failure of the soft tissue of the supporting structures. These supporting structures are most commonly the muscles surrounding a joint. For optimum muscle health the muscle must have motion through active neuro stimulation, glucose and oxygen. Manual therapy is a means of maintaining good joint and muscle health through stimulation of the mechanoreceptors as well as muscle spindle cells. Efficiency of a joint is dependent on the efficiency of the muscles that support it. The health/efficiency of the muscle is dependent on the frequency of firing of the motor neuron.
supply to that muscle. The frequency of firing of the motor neurons is dependent on the summation of neural influences in a multi-modal system. This summation of neural influences is then dependent on the spinal cord reflexes, brain, and integration of sensory input from the environment. Receptors that both acupuncture and manual therapy target are nociceptors (A-delta, C-Fibers). A-delta fibers are very small, slow, slightly myelinated nerves that carry sharp pain. A-delta fibers are responsible for the “de qi”, a term used in Chinese medicine that means muscle, myofascial contraction or fasciculation upon stimulation via a needle or manipulation. Mechanoreceptors are those receptors that transduce somatic sensation of touch, tactile, joint position and vibratory sensation to the CNS. These sensations are carried to the dorsal horn of the spinal column through large diameter myelinated fibers 1A and 1B very fast fibers, thus the gate theory of pain control. The gate theory states that by eliciting stimulation of very fast myelinated 1A and 1B neurons as well as the alpha motor neuron that their arrival at the spinal segment prior to the slower harder to stimulate nociceptors, A delta and C-fibers, may dampen perception of pain. In summary, it is the summation of all excitatory and inhibitory influences on the motor neuron that will determine its frequency of firing and thus its strength.

Acupuncture and manual therapy are complementary modalities to maintain health and better the quality of life when western medicine falls short. These types of therapies can help relieve pain, restore loss of performance including reproductive performance, or any other medical situation which does not respond to a western approach. After a western medical diagnosis is made, or attempts have been made to diagnose a problem, these methods can be used to amplify or assist in what is being done medically. In manual therapy the goal is to stimulate receptors to regain motion in an affected area thus returning it to a balanced state. Kevin Hausessler, DC, DVM states, “The goal of chiropractics or manual therapy is to optimize health through the body’s inherent healing ability, to offer homeostasis as affected by and integrated through the nervous system.” Dominque Giniaux states that osteopathy is not a set of manipulations, it is a particular approach to the equilibrium of a living organism and its pathology, and Andrew Still, MD, one of the first MD’s to begin osteopathic medicine based his therapies on “structure governs function”. It is important in all therapeutic techniques regardless of which modality is being utilized to return the animal to its most balanced state allowing healing of all structures through the CNS, to balance the yin and yang.

Response to acupuncture and manual therapy can vary between each case and is reliant on individual differences. Often the outcome is dependent on the severity of the pathology as well as the chronicity. Most commonly the response is seen; if the musculoskeletal system is involved, that the following day is slightly more painful or stiff. It often takes the CNS over 24 hours to adjust to the manipulations or needling. This delayed response is common and is followed by steady improvement over time. It is not advised to do manual therapy daily or in most cases weekly. Often rest and patience between treatments is required to allow the body to heal once it has been treated. Treatment may be no more than relieving a trigger point or regaining motion in a joint that has been restricted for a long period of time. Even what may seem like very little takes a complicated neuronal afferentation to achieve wellness. In acupuncture the most common means of treatment involves two to three treatments over the first two weeks then as needed monthly to once every six weeks. These examples of course are dealing with the situation in which there is pain often secondary to lack of normal motion of a joint, which may result in not only joint pain but muscle pain as well. Each animal is different as is each situation they may be presenting for.

Immediate results are more commonly seen when treating post-operative ileus or gastrointestinal problems that are secondary to other metabolic conditions being treated with conventional therapies. A good prognosis is most often the case if the animal makes a significant change in a musculoskeletal disorder within a week to month. If an endocrinology or organ dysfunction is being treated it may take months to return the body to normal. Not unlike western medicine, these modalities have their limits and should be used remembering this. These therapies cannot heal a fracture but they can help in controlling pain associated with the fracture or help in revascularization to the traumatic area. These modalities must be explained to the clients in terms they can understand and used with this in mind.

Acupuncture and manual therapy can be used for many situations in a private practice. Some of the most common utilizations of these modalities include: Musculoskeletal issues, subluxation (for the most part good success): degenerative joint disease, intervertebral disk disease (no chiropractic technique at site of lesion), nerve injury/paralysis, back pain, muscle pain, trigger point therapy, lameness, laminitis, and tendon injuries. Gastrointestinal: (variable results, most good depending on etiology) diarrhea, ileus, non-surgical colic, chronic colic and inflammatory bowel. One of the most upcoming uses of complementary therapies are their use in reproductive performance.

Other areas include but are not limited to skin disease, atopy or allergies, hives, wound healing, indurated wounds, reproductive issues including irregular heat cycles, uterine fluid retention, ovulation, cystic corpora lutea, poor libido, poor semen quality, urinary disease, renal disease and some respiratory issues.
In summary, this discussion will include the effects of acupuncture and manual therapy as well as how to implement these modalities into a practice. It is just as important to know when to choose one of these modalities as it is to know how to use it. Patients and clients should be selected with care. Always have a good western medical work up and use these to amplify or add to your treatment plan. Practitioners will learn the art of palpation again and observe how this can lead them to regions on the animal that are not functioning normally thus causing pain, disease, or metabolic issues. The basic reasoning behind these modalities of treatment are to stimulate the CNS through neurological receptors and help the body return to a balanced state. This can be done through acupuncture points and needles or through manual therapy, osteopathy, and chiropractic techniques that will be described later. Clients will benefit from the availability of these as a part of a treatment plan. Alternative treatment options can be offered to clients, all of which if done correctly and used correctly have minimal side effects and can be used simultaneously with most western medical therapies as well as drugs. Remember veterinarians that utilize these techniques are virtually stimulators of receptors that allow the body’s own abilities to heal through the CNS.

Neurological Model for Pain through Manual Therapy (modified from DeStefano, 2002)

Decreased or aberrant----------Subluxation, Fixation---Joint instability
Joint motion
↓
80% of the sensory input to--------Decreased Sensory Input
the CNS is from
mechanoreceptors

Decreased Central Integrated state
of CNS
↓
Decreased inhibition of
Intermedial Cell Column

Decreased frequency of
firing of ventral horn
↓
Increased output of
of Intermedial Cell
Column

Muscle paresis
↓
Increased blood
pressure

Instability of joint
↓
increase sweating
hypoaxia
↓

Irritation/Inflammation
↓
PAIN-------→Loss of Reproductive Performance

Suggested reading

