

ADAPTING OF PHYSIOTHERAPEUTIC TECHNIQUES IN BLIND PATIENTS ADAPTAREA TEHNICILOR FIZIOTERAPEUTICE LA PACIENȚII NEVĂZĂTORI

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ABSTRACT | REZUMAT

Veterinary physiotherapy is a rapidly developing field, because of aspects such as increased owner awareness and demand. Diagnostic and therapeutic technological advancements have resulted in more complex and integrated management of companion animals, as well as general advances in animal longevity. Despite these visible advances, medicine in general faces many cases in which it needs adaptation to assure patients' treatment success. This paper aims to present the case of two blind dogs with spondylosis deformans that underwent physiotherapy and how the therapy was adapted.

Keywords: dog, blindness, spondylosis deformans, physiotherapy

Fizioterapia veterinară este un domeniu în plină dezvoltare, datorită unor aspecte precum creșterea gradului de conștientizare și a cererii proprietarilor. Progresele tehnologice în diagnostic și terapie au dus la un management mai complex și mai integrat al animalelor de companie, precum și la progrese în ceea ce privește longevitatea animalelor. În ciuda acestor progrese vizibile, medicina, în general, se confruntă cu multe cazuri în care trebuie să se adapteze pentru a asigura pacienților succesul tratamentului. Această lucrare își propune să prezinte cazul a doi câini orbi cu spondiloză deformantă care au fost supuși la fizioterapie și modul în care au fost adaptate metodele de terapie.

Cuvinte cheie: câine, orbire, spondiloză deformantă, fizioterapie

Physiotherapy is a field that encompasses all physical elements' effects on an organism, allowing for the construction of a treatment plan for both rehabilitation and prevention. This area of medicine tries to restore the animal's quality of life when it reaches a critical point. Physiotherapy is a collection of therapeutic strategies and techniques that aid in the recovery of the motility when it is impaired by locomotor, neurological, and orthopaedic problems. The benefits of physiotherapy and rehabilitation for small animals have become increasingly recognized in recent years, and while some practices have accepted and incorporated physiotherapy, the quality and quantity of physiotherapy available varies greatly. Physiotherapy is frequently misunderstood as a substitute for traditional veterinary care, when in fact it is best utilized in conjunction with it (2, 3). Simple physiotherapy procedures can be easily provided in-house by a non-specialist veterinarian and nurse, and having qualified veterinary physiotherapists on-site or available via referral adds to the practice's value. Physiotherapy can help to project a positive, caring image to the clients while also improving the outcomes of the animals after an injury or operation. The benefits of incorporating physiotherapy and rehabilitation into small animal practice have been

discussed in various articles, as well as the many approaches and abilities that a licensed physiotherapist can bring to the veterinary team. It explores the concerns of practitioners who are hesitant to include physiotherapy practices into their practices, as well as solutions for optimal integration and collaboration (2, 3)

In Romania, veterinary physiotherapy is still in its early stages of development, with the goal of preventing or even treating a wide range of neurological, orthopaedic, locomotor, joint, muscular, and hereditary disorders. The number of disorders that can be improved or treated with physiotherapy is large, demonstrating the relevance of including these treatments in the care plan (2).

MATERIALS AND METHODS

This article presents the case of two blind dogs needing physiotherapy procedures. The first one is a dog named Nero, 14 years, that has undergone surgery after being diagnosed with bilateral glaucoma (Fig. 1).

Because the procedure included the total removal of one of the eyes, immediately after recovering from anaesthesia, the dog refused moving at all.

One week later, the owners brought Nero into the clinic where it was diagnosed with spondylosis deformans, muscular atrophy, and shortening of the tendons, which meant that the case was in urgent need of physiotherapy.

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Fig. 1. Bilateral blindness in a dog, one week after the glaucoma surgery of one of the eyes

In this case, after being left without any sense of sight, the dog manifested fear of movement and it developed a "rabbit position" of the body (Fig. 2). This was visible not only when the dog was sitting, but also during its short-distance movement.



Fig. 2. The "rabbit position" adopted by the dog



Fig. 3. Glaucoma in an old dog (patient 2)

The second case is represented by a female dog that was found on the streets, without owner or any information regarding the medical history. Moreover, the dog was visibly affected by glaucoma (Fig. 3). Analy-

sing the dog's teeth, it was concluded that the dog is approximately 15 years old and the glaucoma was probably induced by the aging physiological process. In addition, spondylosis deformans was also observed. The target was to help the dog recover mobility only through physiotherapy, considering the fact that non-steroidal anti-inflammatory drugs (NSAIDs) are contraindicated in old patients (1).

Considering the fear both of the dogs manifested towards any form of movement, the classic physiotherapy treatment protocol required adaptation. From the main and most useful techniques, the following were removed: the elliptical machine (because the dog was too scared to use it), the balance ball and the obstacles (because of the blindness).

There have been few techniques that could be used and adapted in these cases:

a. Standing position and movement assessment by using trolleys (Fig. 4), straps and scarves;



Fig. 4. Wheeled device used for implementing the standing position

b. Electrostimulation was made with the Intellect Vet device, which is based on two individual electrotherapy channels. Electrodes were applied on the muscles of the affected forelimb, daily, starting with 15 minutes of treatment and increasing the duration of electrostimulation during the sessions, up to 40 minutes per session. The parameters were adapted as follows: for spasm reduction type of current: Premod, type of emission: continuous, low frequency: 1kHz, high frequency: 10 Hz, intensity: variable and for muscle strengthening current type: VMS, emission type: continuous, phase duration: 200µsec Ramp: 2 sec Fr: 50 pps intensity: variable.

c. Ultrasound therapy was made with the Intellect Vet device, using a probe with a frequency of 1 MHz and 3 MHz.

d. Massage.

RESULTS AND DISCUSSIONS

Both patients expressed locomotory problems and back pain consequently to spinal cord lesions, radiologically compatible with spondylosis deformans (6) (Fig. 5).



Fig. 5. Radiological aspect of spondylosis deformans in patient 2

a. Standing position and movement assessment by using trolleys, straps and scarves. Trolleys provide a sense of independence, minimizing the amount of assistance supplied by the therapist. The two types of trolleys (two or four wheels) are employed depending on the patient's condition: those with two wheels are used in cases with neuromotor dysfunction of the hind limbs, while those with four wheels are used in individuals with neuromotor disorders of all four limbs. At the same time, the straps are useful for patients who are unable to walk. The height of the animal will be taken into account while placing the straps in order to put the limbs in a natural posture to support body weight (either manually by the therapist or automatically, physiologically by the animal). The animal should not be kept hanging above the ground because it may disrupt local blood supply and press areas that come into direct touch with the trolley's support systems.

Long towels can be extremely helpful in assisting animals who require help in maintaining their standing position or moving. The main benefit of these tools is that they are inexpensive and accessible to anybody. Scarves can also be used as a backup device. Both choices are practical, accessible, and cost-effective. The towel will be wrapped around the posterior abdomen, directly in front of the hind limbs, to provide support for the back half of the body (Fig. 6 a, b). The ends of the towel will be stitched with nylon strips to ensure the ideal length for handling.

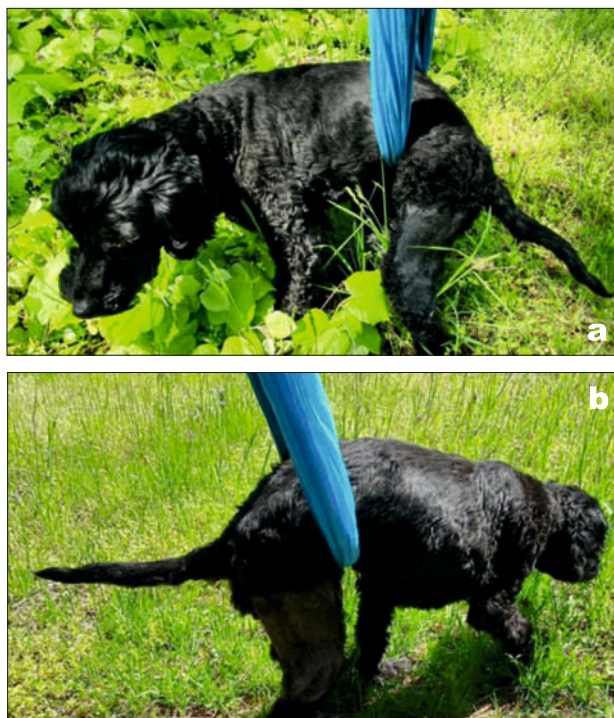


Fig. 6 a, b. Positioning the scarf in order to support the back half of the body during movement.

b. Electrostimulation. Patients who have lost voluntary muscle contractile capacity, due to various pathologies, accompanied by clinical manifestations such as paresis and paralysis, can benefit from neuromuscular electrostimulation, which uses a low-intensity current to stimulate alpha motoneurons, allowing muscle contractions. Neuromuscular electrostimulation is used in neurology to help restore muscle and endurance in flaccid paralysis caused by peripheral motoneuron illnesses, as well as to alleviate muscle spasms in spastic paralysis caused by central motoneuron injuries. Motor points are divided into two categories: muscle and nerve. Muscle corresponds to the projection area of the muscular region rich in motor plates, while nerve corresponds to the area where the nerve is placed superficially (5). In this case, electrostimulation, as a special physiotherapeutic method, played a key role in re-establishing the muscular mass, gradually encouraging the dog's movement.

c. Ultrasound therapy. Physical rehabilitation uses techniques including heat and electrostimulation, mobility, and therapeutic activities to help individuals regain their normal functions. Thermal agents are applied on the surface of the tissue to a depth of roughly 1 cm. Deep heat agents can raise tissue temperature to 3 cm or more in-depth. Ultrasound is categorized as a deep thermal agent. Therapeutic ultrasonography is considered to be an excellent technique to rehabilitate musculoskeletal problems such as joint contracture, muscle soreness and spasms, and wound healing (5).

In case of Nero, ultrasound therapy was used in order to re-establish tendons' ability to move, considering the fact that they had already suffered a shortening process after a long period of not moving.

d. Massage is one of the oldest forms of therapy, with Egyptians and Chinese practitioners using it "as an acceptable cure for full paralysis, chills, and fever." Massage and exercise were widely employed until the eighteenth century when electrotherapy took their place as a result of the invention of electricity. Before beginning physiotherapy exercises, the massage was used to relieve local pain and rest the animal. Balls and balance platforms were used to execute the exercises. In this case, the massage was used because the local pain is reduced and the animal relaxes. This technique not only relieves the patient's stress but also helps the practitioner to gain the animal's trust.

In both cases, physiotherapy was applied for a relatively long period of time. Also, both dogs required approximately 20 physiotherapeutic appointments. These were applied during a period of about one month.

After this treatment, both dogs were able to maintain a standing position and their mobility was re-established. Moreover, it was clear that the dogs have regained confidence and curiosity in exploring the environment. Still, the owners were recommended to apply some of the methods previously described constantly until their pet shows a full recovery.

Even if the owners respect their pets' medical appointments and visit the veterinarian constantly, it is important that they keep practicing the methods and exercises they see in the clinic. This way, the recovery process is guaranteed and kept at a fast pace.

In veterinary medicine, physiotherapists can treat a wide variety of animals, including horses, dogs or cats and various kinds of illnesses, including athletic injuries, neurological disorders, and orthopaedic issues, with a variety of manual and electrical treatment approaches.

CONCLUSIONS

The two old dogs with spondylosis deformans needed physiotherapy to improve their motility and quality of life. The therapeutic protocols were adapted to their blindness status because of bilateral glaucoma. Full recovery needed good cooperation of the owners and physiotherapy lasting one month.

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