

USE OF CANISTHERAPY IN THE REHABILITATION OF A CHILD WITH CEREBRAL PALSY

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Abstract:

Background: Cerebral palsy is a complex of various symptoms and diseases that cause disorders in the brain. It is a lifetime disease that affects not only patients but also their family members and the wider environment.

Objective: The main objective of our study is to focus on canistherapy, to determine the effect of intervention on the patient from the positional side of canistherapy, to master facilitation and inhibition techniques and to relieve the signs of the development of brain paresis.

Method, sample, and results: Our contribution consists of a theoretical background and a case study from the practice. There we introduce objectives, procedure, and techniques in our therapy with the selected methodology. Due to the age of the patient (5 years), we gave priority to rehabilitation exercises in the form of a game to motivate him and invite him to co-operate. The results are summarised in the form of a discussion, recommendations for practice and a general summary of the process.

Conclusion: We found that the selected method positively affected the patient's health condition, both physically and mentally. An individual approach and adaptation of the exercise to the patient was also proved important.

1 Introduction

Cerebral palsy is not a disease as such, but it is a collection of various symptoms and diseases that cause disorders in the brain. This disease is for life and affects not only patients, but also their family members and the wider environment. Cerebral Palsy (CP) is the most common neurological disorder in children, a permanent disorder that affects movement and posture, limiting activity and is often accompanied by disturbances of perception, cognition,

communication, and behaviour. Although it is a life-long disability, there are many interventions that can help reduce its impact on the body and the child's quality of life.

Canistherapy has been considered since ancient times a supportive form of rehabilitation for its impact on the human psyche. The direct, therapeutic effect of a dog on the patient has not been proved. There have been major changes in this field recent-

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ly, as evidenced by various studies. Interventions with animal assistance are now natural and they become the part of comprehensive therapeutic care for various clients in various types of health, social and educational facilities. The curative effect of canis-therapy comprises four basic mechanisms: psychological, emotional, playing, and physical stimulation, according to Ballarini [1]. All the mechanisms together demonstrate the psychosomatic effects of the human-animal bond and the interaction during AAT and animal-assisted activities [2, 3].

The relationship between a dog and a child result in an increase in neurochemicals, which initiates a decrease in blood pressure and induces relaxation. This relationship may be beneficial for ameliorating agitated behaviour and psychological symptoms of chronic diseases that involve physical and mental disabilities. Kongable *et al.* observed that a therapy dog increased patients' social behaviours, including smiling, laughing, looking, touching, and verbalizing [4].

One of the methods used is positioning – a physiotherapeutic method based on direct physical contact of a man and a dog. One or more dogs are lying in close contact with man, during which heat is transferred, breathing is stimulated and physical relief as well as psychical relief set in. Other described methods are group interaction with clients with certain handicap type. Canisotherapy has a positive impact on the psychic, social, and physical side of a patient. Important effects include stimulation or motivation, delightful emotional experience such as joy, relaxation, distraction from problems or pain, communication facilitation, mental and social support, blood pressure drop, mood improvement and others [5].

Patient contact and communication with dogs (giving them treats and walking them) help to stimulate and activate patients with various diseases and impairments. Direct contact with a dog provides relaxation and a feeling of peace. It also evokes the feeling of sharing and offers the opportunity to change from difficult to light conversation topics [6].

The process of interventions in the programme with the assistance of dogs considers the assessment of the particularities of a patient and the formulated objectives of physiotherapy. It is needed to decide

what methods and forms of intervention with dogs will be used. The individual steps of planning and implementation of interventions are focused on the intervention plan and individual interventions. [7]. After the intervention, it is necessary to create space for rest and regeneration of the dog [8]. It is necessary to make a recording of each intervention which is the part of comprehensive documentation within the profession [9]. Ending the programme with the assistance of dogs reflects the fulfilment of the formulated objectives. The part of the ending is also a farewell to the patient and the dog. In the completion process, the achieved results and benefits for patients, staff, human-animal team, and organisation are summarized, analysed, and interpreted. The effectiveness of this cooperation with recommendations for the future is also assessed there [10].

When examining the effects of a dog on a patient, we shall focus on physical and chemical phenomena [11]. Chemical factors include the impact of oxytocin on a patient. How does oxytocin work in clinical practice? Since 2008, Japanese scientists have been studying the effects on humans and the connection with this hormone. It is called the hormone of trust, it plays an important role in motherhood, it creates the so-called attachment links between the child and the mother. It occurs in all mammals and is a regulator of social behaviour, regulates anxiety, reduces the level of stress (which is measured mainly through the level of cortisol). It affects the production of the other hormone vasopressin and they both work to create closeness with a new person or animal, reduce fear and anxiety, phobias, and relationship development. It has been found that the amount of oxytocin in humans increases by up to 300 % after contact with a dog for 30 minutes. Of course, the value of the dog also increased after contact with a person who showed interest in the dog by about 130 % [12]. It was found out that the dog and the patient can establish a personal, intimate, empathic relationship in a short time. Thanks to this relationship both participants in canisotherapy, a patient and a dog, are happy. If especially a child patient, is exposed to stress, increased social tension, anxiety from the unknown, or, conversely, the fear of repeated manipulation, it is very important in therapy [13].

- Risks in canisotherapy are ignorance and unprofessional approach which brings damage.

- Wrong estimation of situation can bring attack and defence.
- High pressure causes stress and burnout.
- Underestimation of capacities can cause the damage [14].

The main objective of our study is to focus on the issue of canistherapy. To determine the intervention on the patient from the positional effect of canistherapy, to master facilitation and inhibition techniques and to relieve the signs of the development of brain paresis.

2 Case study

The practical part consists of a case study, objective, procedure, and techniques of therapy with the selected methodology.

Name: K.M.

Age: 5 – year old

Weight: 13 kg

Diagnosis: DMO quadruspastic mixed, hypertonic-dystonic form, predominance of l.sin.

Spontaneous motorism disharmonically III. trimenone

Check: Neurological examination November 2019

The boy attends kindergarten with his mother for the second year, for three hours a day, knows the basic colours, likes to catch markers and to open, they have a special eye communicator to which he responds well, shakes his head with disapproval, tries to nod with his right hand, agrees more. They train NDT Bobath with a certified physiotherapist once a week + they train according to instructions from Adeli centre in the home environment and canistherapy in Žilina.

Orthopaedic examination: X-ray position of coxofemors of the joints in standard 10/2017.

Rehabilitation aids: Torso orthosis (non-prosthetically individually made torso and head orthosis - Podotech), Hylton compression orthosis for torso, chair, have borrowed verticalization stand + DAFO orthoses + shoes + stroller MEWA + Kid-Walk walker.

Neurological examination: EEG specific without current discharge activity, EEG does not detect correlate, recommended rehabilitation treatment, vita-

min therapy, Tebokan. In terms of epileptic seizures, the patient is compensated.

Objective finding: Makes eye contact, strabismus, salivary gland, watches the toy intermittently, checks the head in space, opens the hands better in bed, thumb relaxed, upper limb semi-injection position, palmar bilateral grips, upper limb mobility symmetrical. Tone higher more to the left, mobility lower limb symmetrically. In the extension posture hypertonus of the limbs highlighted acrally more to the left, mobility symmetrical, easy shortening of adductors, shortening of left lower-limb to 1.5 cm, shortened flexors of knees more to the left, in supine position pulls upper limb from below with help and after facilitation for a short time, after adjustment to the support on the elbow, it keeps the th-L kyphotization partially correct when the passive sitting is in the fist. The foot goes into equinovarusity, the axial organ without obvious asymmetry in the frontal plane, a stepped mechanism with assistance is present. The patient does not sit or walk alone.

Conclusion: Cerebral palsy mixed form quadruhypertonic sy with prevalence on the left, axial hypotension, psychomotor retardation.

2.1 Objective of therapy

- Affect the position and posture of the whole body.
- Improve stability.
- The release of spasticity upper and lower limbs.
- Increase in muscle strength of individual muscle groups.
- A separate seat with support on the upper limb.
- Strengthen the torso.
- Long-term rehabilitation plan.
- Game with a dog aimed at crawling – subsequent crawling, the possibility of your own movement in the home environment.

2.2 Examples of exercises

We usually start the exercise with neurogenesis – a stimulating massage of the patient's lower and upper limbs. The dog is face to face to produce oxytocin, it should be at a safe distance, so as a child can have intense eye contact with a dog and touch it.

Then we continue with a sitting position with spinal support, where a patient feeds the dog with a spoon. The objective is to train endurance while sitting and at the same time to train independence in eating. Connecting the eye, picking the granules from the bowl with a spoon and offering food to the dog, that eats the food carefully from the spoon. The exercise has a very positive effect on the child's independence in activities of daily life, it also works with the management of salivation in the child and constant caution about pulling the lower jawbone and inserting the tongue into the mouth, training of fine motor skills and sensorics.

Another exercise was aimed at imposed load on the patient body's boundaries. The dog is placed in a correct lie down positioned above the sacral spine and about 1/3 of the dynamic weight which acts vibrations on patient's body (deep stimulus). The child feels the vibration of the dog's body, the warmth of the dog (approximately 39 degrees), it also indirectly acts on the abdominal press and peristalsis. The length of the exercise is about 5 minutes and the dog weight approximately 31kg.

Further we continued by stimulating the respiratory muscles and deep postural muscles using the DNS method. The resistance of the first dog lying on the abdomen served as the stimulation of breathing and the positioning of the second dog under the patient's knees served as a vibrating pad to elevate the lower limb. By pulling the dog on the abdomen, we improve peristalsis and engagement of the abdominal press.

Basic positioning of the dog during exercise: Lying position (next to the patient laterally, below the knees), sitting position (opposite the patient, on the cylinder, fit ball), lying down (on the patient's back, on the patient's legs and abdomen).

Basic intervention of the dog for the needs of a patient: Basal stimulation (positioning rollers and pillows), somatic stimulation (body perception), occupational therapy (training of service activities, eating, swallowing, salivation), handling (influencing muscle tension, supporting the right patterns).

2.3 Intervention evaluation and documentation processing

Date: February 28, 2020

Location: PHYSIO CANIS, Žilina, Dolné Rudiny

Duration: 3 hours.

Exercises: 6.

Patient identification: R.K., 5 years, diagnosis: DMO quadrupastic form.

Dog identification: Swiss White Shepherds (2 females, 1 male), black French Bulldog (female)

Brief description of the intervention:

- The therapy took place in a pre-prepared, clean gym equipped with all the necessary aids for the patient and the dogs (mats, exercise balls, rollers, balance platforms, pulley cage, bowls for the dogs).
- At the start of therapy, the patient was restless with neurogenesis, was crying, did not cooperate.
- The presence of dogs per patient was reassuring, motivating and educational, thus improving cooperation with the patient (according to the patient's age, therapy adapted to his interests).
- Rapid adaptation to the dog-patient-therapist-other relationship.
- Total of three dogs alternated during the dynamic exercise, dog breed: White Swiss Shepherd.
- Alternation of Swiss dogs during the therapy according to necessary stimulus during exercise, play, positioning, education, gross and fine motor skills, targeted active involvement of muscle groups.
- During positioning we used the presence of another breed: French Bulldog.
- The rotation of the dogs during one exercise was approximately 15 minutes.
- The behaviour of the animals was adequate to the patient's condition, tolerated and met all the requirements necessary for therapy.
- The dogs showed no signs of stress.

Ending of intervention – Fulfilment of objectives:

- Improving the functioning of the nervous system.
- Effect on the improvement of sensorimotor skills (by perceiving the hair's perception of a higher temperature of the dog compared to humans).

- Stimulation and induction of proper breathing.
- Increase the patient's motivation for the exercise itself.
- The licking method affected the spastic holding of the limbs.

Goodbye to the patient.

3 Results and discussion

Children are not born with a diagnosis of Cerebral palsy (CP), but the clinical manifestations are gradually developing, and early diagnostics and treatment is important. Early treatment significantly changes the extent of movement disorders. In older age, the treatment with facilitation and inhibition techniques is only secondary one. The patient's condition does not improve overall, but regular exercise can prevent the condition from getting worse. The patient R.K. diagnosed with quadrapastic form of Cerebral Palsy was co-operating appropriately for his age (5 years). The patient attends a school facility, mentally understands everything. His behaviour was adequately adapted to rehabilitation process, and he was active in all parts of the rehabilitation programme. Due to short time donation, we completed one therapy, and the patient will continue attend the centre in addition to other rehabilitation facilities.

The main objective was to relax the flexion position of upper limb and spastic muscle groups. Adjustment of primitive reflexes and improvement of body coordination led to an overall improvement. The influence of dogs on the patient was positively transferred to his health condition. Three dogs were present with the patient based on the rehabilitation objective and the fatigue of dogs. The dogs were specifically trained for positioning, education, and motivation, that is why we could adapt the abilities of the dogs to the rehabilitation process. During the therapy, the breed of a white Swiss Shepherd dog was used. Toward the end of therapy, we another dog of a different breed was present, a French Bulldog that was used to position the DNS (dynamic neuromuscular stabilization). The presence of another dog aroused even greater interest and motivation in the patient. The therapy took place without significant problems and in the form of a game. We used all available tools, pulley system, light therapy, and music therapy. The therapy was led by a chief physiotherapist and a lead canistherapist. The exer-

cise took place without the presence of a parent. The type and structure of the exercises were chosen according to the patient's needs, in a motivating, fun and playful way.

The reason for choosing the methodology was the general interest in the method and finding out how the assistance of a dog affected the patient with a serious diagnosis. As the method is complementary, the overall impact on improving the patient's health can be assessed overall after completing additional procedures and rehabilitation techniques. We do not anticipate further deterioration of the condition, with regular exercise. With a diagnosed disease, rehabilitation is not enough. It is necessary to work with other professionals, such as neurologists, surgeons, psychiatrists, special educators, occupational therapists, special educators.

3.1 Recommendations

Based on the analysis and findings, we recommend the following suggestions for rehabilitation with a focus on the following:

- Pay attention to children diagnosed with DMO, take care of their needs.
- Provide relatives with sufficient knowledge of the child's diagnosis and current state of health.
- Inform parents about canistherapy as a support therapy.
- Make available professional journals and books on canistherapy and its positive impact on a patient with severe disabilities.
- Educate and inform more about CANIS centres and the care they provide.

4 Conclusions

We found that the selected method positively affects the patient's health condition, both physically and mentally. Exercises improved the condition for a short time. Regular exercise is therefore very important to activate, also the parts of the body that would not be engaged spontaneously. Regular exercise and rehabilitation stay at CANIS centre, is also important in maintaining self-service and activities of daily life (ADL).

An individual approach and adaptation of the exercise to the patient has also been proved important.

References

- [1] BALLARINI G. Pet therapy Animals in human therapy. *Acta BioMedica*. 2003.; vol. 74 (2), p. 97-100.
- [2] CEVIZCI S., ERGINÖZ E., BALTAŞ Z. A new assisted therapy concept for improving of mental health - Animal assisted therapy. *Nobel Med*. 2009, vol. 5 (1), p. 4-9.
- [3] CEVIZCI S., ERGINÖZ E., BALTAŞ Z. Animal assisted therapy for improving human health. *TAF Prev. Med. Bull*- 2009, vol. 8 (3), p. 263–272.
- [4] KONGABLE L. G., BUCKWALTER K. C., STOLLEY J. M. The effects of pet therapy on the social behavior of institutionalized Alzheimer's clients. *Arch. Psychiatr. Nurs*. 1989, vol. 3 (14), p. 191–198.
- [5] KALINOVÁ V. Canistherapy as Supporting Rehabilitation Method in Czech Republic. *J Public Health Manag Pract*. 2006, vol. 7 (2), p. 261-271.
- [6] TSAI Ch. Ch., THOMAS S. A. The Effect of Animal-Assisted Therapy on Stress Responses in Hospitalized Children. *Anthrozoos*. 2010, vol. 23 (3), p. 245-258.
- [7] CHANDLER C. K. *Animal-Assisted Therapy in Counseling*. Second Edition. London: Routledge Taylor & Francis Group, 2012, ISBN 978-0-415-88833-2.
- [8] MUSIL L. „Ráda bych Vám pomohla, ale ...” *Dilemata práce s klientmi v organizacích*. Brno: Marek Zeman. 2004, ISBN 80-903070-1-9.
- [9] GUGGENBUHL-CRAIG A. *Nebezpečí moci v pomáhajících profesích*. Praha: Portál, 2007, ISBN 978-80-7367-302-4.
- [10] KOPŘIVA K. *Lidský vztah jako součást profese*, Praha: Portál, 2008, ISBN 80-736718-1-6.
- [11] STANČÍKOVÁ M., ŠABATOVÁ J. *Canisterapie v teorii a praxi*, Vyškov: PIAFA, 2012, ISBN 978-80-87731-00-0.
- [12] ŠOLTÉSOVÁ D., BOSÁ D. RUSNÁKOVÁ A. „Canisterapia“ na Slovensku – aktuálny stav optikou zmeny. Prešov: Vydavateľstvo PU, 2016, ISBN 978-80-555-1733-9.
- [13] SÁZELOVÁ S. *Symbolismus u mobilních společností Sibiře: Lidé a zvířata v etnologické analogii a archeologickém kontextu*. Nepublikovaná dizertační práce. Brno: Masarykova univerzita, 2012.
- [14] KOTTFEROVÁ J. a kol. *Veterinárna etológia*. Košice: Univerzita veterinárskeho lekárstva, Vienala s.r.o., 2008, ISBN 978-80-8077-101-0.