



Effect of canine-assisted interventions on progress in the treatment of children with expressive aphasia and physical disabilities: case study

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Abstract:

Alternative treatment methods are increasingly used in the rehabilitation of children with disabilities. One of such methods is canine-assisted therapy, which means therapeutic classes with the assistance of a dog. The combination of therapies with educational elements has been used in the treatment of many diseases and disabilities in children. The most frequent are Down syndrome, Asperger syndrome, Autism-spectrum disorder, and cerebral palsy. The aim of this case study was to evaluate the effects of canine-assisted interventions in the treatment of a child with expressive aphasia. The study examined a girl aged 4 years with diagnosed expressive aphasia. The patient was qualified for a 5-person group participated in dog-assisted classes. The classes were held once a week for a year. The child's progress was evaluated at the beginning of the program, and after 3, 6, 10 and 12 months. Evaluation was made on a scale of 1 to 3 points, with 1 meaning failure to complete the task, 2 - half-completion, and 3 - correct performance of the task. The following parameters were evaluated: the child's motivation to follow the instructions, reaction time between the instruction given by the instructor and the child's reaction, correctness of performing the exercise, the degree of satisfaction, and the child's statements (answers to the teacher's questions, child's comments). All the parameters studied were significantly improved after the period of 12 months. It was found that motivation and correctness of performing the exercise were improved the fastest. The slowest improvements were observed in communication and degree of satisfaction. Analysis of the entire program of classes revealed a substantial progress made by the child. All therapeutic goals were achieved and therefore the case deserves to be presented and analysed. Spending time with a dog significantly improved the attractiveness of the classes and motivation to work, which was reflected in the therapeutic effects in the case presented.

Keywords:

animal-assisted therapy, Down syndrome, cerebral palsy, Asperger syndrome, autism-spectrum disorder

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Introduction

Animal-assisted therapy belongs to natural forms of therapy in the presence of animals. This therapy is based on the use of beneficial effects of selected animals on human health and well-being. One of the types of animal-assisted interventions is canine-assisted therapy. Canine-assisted therapy is a form of support for the rehabilitation process in the presence of a dog [1-4]. With the benefits of this form of therapy, dog-assisted interventions are increasingly popular. The American Delta Society divided animal-assisted therapy into AAA (Animal Assisted Activity i.e. children playing with a dog, AAT (Animal Assisted Therapy - therapy with educational elements in the presence of a dog) and AAE - supporting the educational process of children [5].

Application of canine-assisted therapy with educational elements has been used in the treatment of many diseases and cases of disabilities in children. The most frequent are Down syndrome, Asperger syndrome, Autism-spectrum disorder, and cerebral palsy. The emotions that accompany the child during the classes help to develop specific ties and non-verbal communication with the dog. An increase in empathy and development of the emotional sphere of the child can be observed, which has a significant effect on the expression of feelings and may encourage the child to speak. This form of classes can be also useful in the rehabilitation of children with expressive aphasia. Children with expressive aphasia understand speech, but are unable to articulate sounds correctly.

In addition to the therapeutic effects that can be achieved using canine-assisted therapy, one of the main advantages of such interventions is the joy that a child experiences during classes. This significantly improves motivation to exercise [6,7].

The aim of this case study was to present the effect of canine-assisted interventions on progress in the treatment of children with expressive aphasia and physical disabilities.

Material and Methods

Material

The study material consisted of data derived from medical records, the decision on special educational needs issued by the psychological and pedagogical counselling centre and observation of a 3-year-old girl during canine-assisted interventions aimed to treat motor disability and expressive aphasia. The diagnosis enumerated the following problems: *speech expression disorders (expressive aphasia), specific developmental disorders of motor functions, average level of mental development, low level of fine and gross motor skills. Delayed speech development manifested at all levels of language* [8].

The examinations were performed in accordance with the principles of the Declaration of Helsinki and approved by the Bioethics Committee at the Regional Medical Chamber in Szczecin.

Methodology

The method used in the study was the individual case study, whereas research techniques included prospective observation and analysis of documents. The author's own research tool was used (observation sheet) to collect the data. The information was collected during canine-assisted classes conducted by an animal-assisted therapy instructor.

Procedures

Classes in the presence of the dog were conducted in the "Academy of Smile", school of nursing in Szczecin attended by the

examined child. During the classes, a proprietary program developed by Monika Niewiadomska, PhD, was used, developed to support therapy of children with intellectual disabilities. The program focused on the tasks in the field of education and emotional development: instilling right attitudes towards animals, building correct relationships between humans and dogs, learning to observe the rules and duties, developing self-care and care for others, developing the system of values, instilling the sense of duty and conscientiousness, fostering empathy and sensitivity, teaching the dog's body build, familiarizing with and meeting the dog's needs, learning to care for the dog, learning how to behave in case of contact with strange or aggressive dogs. The program also included elements related to the development and improvement of physical fitness:

1. Exercises to improve gross motor skills:
 - a. Learning and perfecting throwing and catching the ball with both hands, and with right or left hand,
 - b. Learning and perfecting throwing to the target,
 - c. Learning and perfecting kicking the ball with the right and left foot,
 - d. Learning how to jump, crawl, crab walk, and roll from back to belly.
2. Exercises to improve fine motor skills:
 - a. Differentiation and selecting objects,
 - b. Manipulating small objects,
 - c. Improvement of visual and motor coordination,
 - d. Developing balance.

This program was adapted to the child's needs and appropriate criteria were identified and evaluated. These were:

1. The child's motivation to follow instructions.

2. Reaction time between the teacher's instruction and the child's reaction.
3. Correct performance of the exercises.
4. Degree of satisfaction.
5. The child's statements: answers to the teacher's questions and the child's own comments.

The tasks to be performed by the child were simple physical exercises such as: throwing the ball with the right and left hand, kicking the ball with the right and left foot, combing the dog, feeding the dog, rolling from belly to back and from back to belly, guiding the dog between legs standing apart, building a tower from toy blocks, pointing out parts of the animal's body and naming them, distinguishing colours and shapes. Each exercise was not assessed separately. However, an overall assessment of coping with all the tasks was made.

Evaluation of the child's work was made at the beginning of the therapy, during the first classes and then after the period of 3, 6, 10 and 12 months of exercises. The child's progress was assessed according to the author's scale from 1 to 3 points, with 1 meaning that the task was not completed, 2 denoting half-completed tasks, and 3 meaning correctly executed tasks.

The classes were conducted in a small exercise room once a week. Duration of the classes was 30 minutes. Dogs participating in the classes were two female border collies, present during the classes alternately. The dogs were 6 and 8 years old. They were healthy and vaccinated. They were trained with positive methods. The animals were previously used for kynological agility sport and also worked with children with physical and intellectual disability as part of the dog therapy classes.

Results

The first assessment made through observation was performed after the first two

weeks of the classes, when the child familiarized with the dogs and accepted them (Fig. 1). The following scores were obtained:

1. The child's motivation to follow instructions: 3 points.
2. Reaction time between the teacher's instruction and the child's reaction: 30 seconds, 2 points.
3. Correct performance of the exercises: 2 points.
4. Degree of satisfaction, expressing the child's joy of doing exercise: 1 point.
5. The child's statements: answers to the teacher's questions and the child's own comments: 1 point.

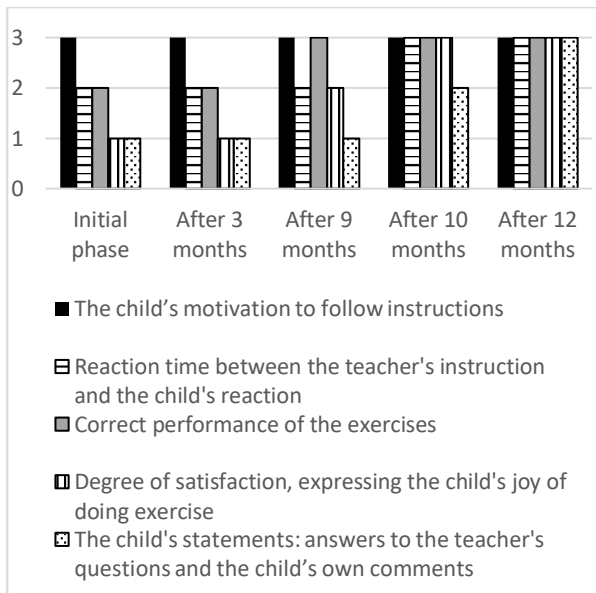


Figure 1. Assessment of progress in the work of the child during the program implementation.

From the beginning of the first classes, the child showed great motivation to work and willingness to perform the tasks. The child reacted positively to dogs, was obedient and focused on the assigned activities. The tasks were performed willingly, but mostly with mistakes. The reaction time between the therapist's instruction and the child's performance of the exercise was about 30

seconds and was due to the child's thinking and deliberating rather than from distractions. There were no smile or any other reactions that might have indicated the satisfaction of the child with performance of the exercise. At the beginning of the program, the girl did not speak at all.

The next assessment was made after 3 months of canine-assisted interventions (Fig.1). The following scores were obtained:

1. The child's motivation to follow instructions: 3 points.
2. Reaction time between the teacher's instruction and the child's reaction: 30 seconds, 2 points.
3. Correct performance of the exercises: 2 points.
4. Degree of satisfaction, expressing the child's joy of doing exercise: 1 point.
5. The child's statements: answers to the teacher's questions and the child's own comments: 1 point.

After three months of the classes, there were no changes in the child's behaviour. There was neither improvement nor deterioration in the reaction time and efficiency of performance of the assigned tasks.

The next evaluation of the girl's progress was made after 6 months of work (Fig. 1). The following scores were obtained:

1. The child's motivation to follow instructions: 3 points.
2. Reaction time between the teacher's instruction and the child's reaction: 30 seconds, 2 points.
3. Correct performance of the exercises: 3 points.
4. Degree of satisfaction, expressing the child's joy of doing exercise: 2 points.
5. The child's statements: answers to the teacher's questions and the child's own comments: 1 point.

Throughout the entire period of the program, the girl's motivation to perform exercises was maintained. Reaction time between the therapist's instruction and the child's reaction did not change. A progress in the efficiency of performance of exercises was observed. The child learned to perform almost all physical exercises, was able to indicate and recognize different parts of the dog's body, but was unable to name them. During the exercises, a smile started to appear on the girl's face, and nodding and willingness to talk were also observed.

Another evaluation was made after the 10th month of classes (Fig. 1). The following scores were obtained:

1. The child's motivation to follow instructions: 3 points.
2. Reaction time between the teacher's instruction and the child's reaction: 3 points.
3. Correct performance of the exercises: 3 points.
4. Degree of satisfaction, expressing the child's joy of doing exercise: 3 points.
5. The child's statements: answers to the teacher's questions and the child's own comments: 2 points.

Evaluation the child's progress after 10 months of therapy revealed that the child needed the most of the time to understand instruction. A substantial progress in this respect was found in the examined girl. The time needed to understand the instruction was not reducing gradually, but at some point the child started to follow the instructions smoothly, without thinking for a long time. The expression of the girl's speech was also significantly improved. Initially, when asked about things she new, such as the colour of the dog's fur or the girl whispered. With subsequent classes, she started to

produce single words louder and more confidently. A significant progress was also demonstrated in expressing her feelings during classes. The girl was clapping her hands and laughing out loud. Reactions of laughter began to appear at the sight of the dog performing simple tricks, such as fetching the ball, catching the ball, demolishing the tower made of toy blocks.

The results concerning the achievement of individual therapeutic effects can be considered as very good. Certainly, a very important factor was a high level of motivation of the child that was observed during classes.

The final stage of the analysis of progress was the evaluation made after 12 months of animal-assisted classes (Fig. 1). A huge progress in speech expression was found in the child.

1. The child's motivation to follow instructions: 3 points.
2. Reaction time between the teacher's instruction and the child's reaction: 3 points.
3. Correct performance of the exercises: 3 points.
4. Degree of satisfaction, expressing the child's joy of doing exercise: 3 points.
5. The child's statements: answers to the teacher's questions and the child's own comments: 3 points.

After completion of the one-year cycle of classes, a significant progress in speech development was observed in the child. In the last stage, the girl improved this ability significantly. In addition to answering the questions, she was able to suggest exercises. These were mostly one-word statements. It can be anticipated that if the classes with the presence of a dog were continued, the girl's speech would develop into simple sentences,

and the vocabulary of the child would become richer.

Discussion

With regular dog-assisted interventions, the progress was observed in all evaluated areas of the girl's functioning. According to the related literature, the achievement of similar therapeutic effects using other therapeutic interventions is possible only in few cases. This is likely to be caused by the presence of a dog during classes and the respective higher attractiveness of classes. Controlled playing with the dog stimulated great willingness to work in the child and improved conscientiousness in following instructions. Lack of motivation to perform activities by patients often leads to poor progress in therapies. Development of the ability to express emotions and to feel satisfaction and joy was a very important achievement. The willingness to share these extremely positive emotions with the people around was likely to be a factor that influenced the child's speech development. Saying first words was observed after 10 months of classes. Speech improvement was preceded by progress in expressing emotions. It should also be noted that child's speech did not appear gradually but it was a sudden change. After 10 months of gradually increasing intensity of expressing emotions, speech expression started to be more pronounced. Obviously, it should be taken into account that the girl also attended speech therapy, sensory therapy, and individual educational classes, because the therapy of children with expressive aphasia is complex and should never be considered from the perspective of one type of therapeutic interventions. Each method places emphasis on different areas of the child's brain and his or her abilities. Therefore, it is essential that all forms of therapy are taken into account to

develop a comprehensive rehabilitation program for the child. Of course, personal commitment and the level of therapists' empathy are of great importance. The authors did not analyse and compare what progress the child made in other therapies, and what mutual influence they had on each other. Progress in the case of autism is very individual, and the examined child had various forms of therapy implemented simultaneously and it cannot be unambiguously determined which of them was the most effective. The key factor conditioning the progress in any therapy is to encourage the child to cooperate. The value of dogotherapy is based on the fact that in some children (and so it was in the described case) the presence of a dog evokes great motivation for work and learning.

The use of canine-assisted therapy as a form of supporting treatment is becoming more popular, both in Poland and all over the world. More and more authors pay attention to the beneficial effects of canine-assisted therapy on children's rehabilitation and reduction of stress levels in children. A study of the effects of contact with dogs on human body conducted by Allen et al. [9] showed that animals reduce human reactivity to stress and the perception of a stressful situation. A study conducted by Dimitrijević in patients of a psychiatric ward demonstrated that the presence of animals has improved the overall well-being of patients [10]. Jonas also argued that therapeutic dogs are likely to contribute to improved therapeutic effects in many ways, primarily by reducing stress and anxiety and increasing motivation to exercise. However, this research addressed concerns that such psychological and physiological advantages may be inhibited after the completion of canine-assisted therapy [11]. Experimental studies conducted among university students showed that even a short 20-minute session

with a therapy dog can be an effective form of therapy improving moods and well-being and reducing anxiety [12]. Glinborg stressed such effects as the improvement of quality of life, and reduction of anxiety and depression. However, animal-assisted therapy should be selected individually, taking into account all adversities associated with its use [13]. The importance of animal-assisted interventions in the treatment of post-traumatic stress disorder (PTSD) has also been demonstrated. A significant improvement was observed in the health status of patients through the elimination of post-traumatic symptoms [14]. Positive mood modification was also observed in the girl described in the present study. Following the exercises with the dog, she began to smile, clap her hands, and express her satisfaction both from the exercises she performed correctly and those performed by the dog. The increase in complacency could have led to higher motivation to take up the assigned tasks and greater confidence in facing new challenges. Ultimately, all these factors had a positive effect on the child's speech development.

As a form of supportive treatment, canine-assisted therapy is relatively specific and its effects vary depending on the case, the child's disease, its personality and level of empathy. Taking into account the above factors, it is advisable to analyse the effects of

canine-assisted interventions in individual cases.

Most of the available publications have presented studies based mainly on personal experiences and observations, and subjective opinions of people conducting canine-assisted classes [1,2,4,7]. However, the values of interventions in the presence of a dog are becoming more and more noticeable. The World Health Organization officially recognised a positive impact of animal presence on human health, especially in the treatment of coronary heart disease, mental illness, ageing-associated disease, and pain relief [15]. Numerous studies have confirmed positive effects of therapies with the presence of animals [16]. They can be used in populations of different patients and are a tool that can restore psychological balance in human life. The data contained in the related literature indicate numerous positive values of AAT, including the improvement in health status, better effects of conventional therapies, elimination of stress, anxiety and pain. Therefore, in view of the well-known therapeutic benefits and the general acceptance of AAT among people of all ages, such interventions should be used as often as possible, thereby reducing costs of other treatment methods.

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