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Original article

A STUDY CONCERNING EVOLUTION AFTER VOJTA APPLIED TO INFANTS' MOVEMENT DISORDERS

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Abstract

Objective. The Vojta therapy was developed due to pediatrician neurologist professor Dr. Václav Vojta. During his whole career he had been studying infants' patterns of movement and he discovered 10 stimulation areas at the body level, for activating the central nervous system. While combining these areas, new postures and locomotion patterns for children suffering from cerebral paralysis and posture disorders were identified. The working positions studied by Dr. Václav Vojta were the supine position, the side lying and the prone position (Vojta, 2007, Tulburarile cerebrale de mișcare la vârsta sugarului – Diagnostic și terapie precoce, ediția a - 8-a, Editura Hippokrates).

Methods. The object of this study is represented by an infant diagnosed with developmental coordination disorder – prematurity, who went through the Vojta therapy. The testing method aimed identifying the locomotion potential of infant G.M., while performing the following tests: Moro reflex, Galant reflex, rooting reflex (of searching), head lifting reaction, palmar grasp reflex and plantar reflex.

Results. While doing this research, I tried to activate reflex locomotion after Vojta, using the third basic positions: supine position, prone position and side lying. The pattern of movement's activation is realised through the combination and variation of resistance and activation areas localised on the body, arms and legs, while producing small changes of the pressing direction and the articular angle at the starting point, the therapy being individually adapted to each and every patient, according to their medical file and the therapy's target.

Conclusions. The purpose is discovering the highest global pattern, not only in supine position, but also in prone position in order to identify the constant deviations of the patient. The constant deviations once established, one can discover the main problem and the functional and proper target of the patient. After setting these aspects, the therapy program can be started. After the therapy program is finalised, the patient will be checked again and compared from the point of view of the highest global pattern.

Key Words: reflex creeping, reflex crawling.

Introduction

Vojta discovered the basis of therapy - reflex locomotion (or reflex movement) in the development of a treatment concept for children with cerebral palsy. Based on precise stimuli and from well-defined positions (postures) of the body, involuntary and reciprocal reactions could be triggered in these children, on the trunk and extremities, movement patterns that could certainly be repeated and that had the characteristics of a locomotion (displacement) (Vaclav Vojta, Ontogeneza mecanismelor de îndreptare până la mersul bipedal independent, Societatea Internațională Vojta).

Vojta's idea that they are innate models of movement was confirmed by examinations of the healthy newborn. Reflex locomotion could also be triggered in these babies. Vojta concluded that cerebral palsy should be seen as functional blockages in the process of developing the movement. This finding provided the extent. Vojta has developed, with the so-called reflex movement, a method that makes it possible for basic methods of movement to be accessible again, at least in part, to people with lesions of the central nervous system and musculoskeletal system. For this, the therapist practices in patients, the supine position (on the back), ventral decubitus (on the abdomen) or lateral decubitus (on one side), a pressure with a precise direction, on clearly determined areas of the body. This stimulation leads to people of any age, "reflexively" to two complexes of movement, which contain all the components of human locomotion: "reflex crawling" and "reflex rolling" (Vaclav Vojta, Edith Schweizer, 2009, Die Entdeckung der idealen Motorik. Die Entwicklung der angeborenen Bewegungsmuster im ersten Lebensjahr: Kinesiologische und muskuläre Analyse).

Effects of activation: both movement complexes

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basis for a systematic therapy for babies, children and adults with cerebral palsy, as well as the basis for an early diagnosis of posture and movement disorders in the baby.

In Vojta therapy, the course of "normal" movements, such as gripping, standing, and walking, will not be primarily learned, practiced, and trained. Vojta therapy stimulates the brain to activate the "recorded movement pattern", "innate" and as a coordinated movement, to export it to the muscles of the trunk and limbs. In the first year of life, healthy children have at their disposal the complete set of verticality and human movement: from grasping, rolling and walking on all fours, to independent walking. In injuries of the central nervous system and disorders of posture and movement, regardless of the cause, these innate patterns of movement can be used spontaneously only to a limited

Treatment based on "reflex locomotion" contributes to:
- orienting the child's neuro-motor development in a direction closer to normal, by inducing a different central neurological activity, which provides the patient with new bodily experiences. Proprioception plays an important role here.
- modification of spinal automatisms in spinal cord injuries.
-breathing control in order to increase vital capacity.
- controlling neurovegetative reactions and promoting a harmonious growth of the musculoskeletal system.
- prevention of frequent orthopedic degradation in severe pathological situations.

Vojta has always considered the central nervous system as an open system, receptive to stimuli of any kind, stimuli that influence both its functioning and its anatomical maturation.

Each stage of a normal development is characterized by conduct that corresponds to a precise purpose (orientation, proximity, locomotion, etc.). Locomotor strategies are automatically adapted to the current postural context.

The originality of the Vojta method is the clear definition of these locomotor strategies, in other words, the attitudes, the supporting polygons, the movements that characterize the main stages of normal development are precisely defined.
In a prone position, the baby automatically releases the upper limbs and builds a triangular support polygon, with symmetrical support on the two elbows that allows the lifting of the scapular belt and the upper chest. The head rises freely in space outside this polygon.

This automatic postural mechanism that serves to enlarge the visual field, contributes to the orientation in space and represents a set of very precise muscular synergies of the spinal axis and the scapular girdle, ensuring the recovery, symmetry and establishment of these body regions, which will guarantee a coordinated rotation of the head. Artificial activation of these synergies is possible from birth in reflex locomotion.

Reflexology:

contain the basic components for each movement: automatic coordination of movement balance ("postural coordination"), verticality of the body against gravity and targeted movements of gripping and stepping of the limbs ("phase movement"). It is assumed that by repeatedly triggering these movements "reflexively", somehow one comes to a "free direction" or a new path inside the blocked functional nerve networks between the brain and the spinal cord (H Lagache, 1997, Le concept Vojta: - Kinesitherapie scientfique nr. 366 – S.P.E.K., Paris).

The Vojta method is for the doctor a valuable tool for clinical evaluation of the child's development from birth and a reliable diagnostic element; it is for the physiotherapist a method of high-performance global therapy that can be used from the first days of life for curative but also preventive purposes.

Baby born by caesarean section (mother with liver transplant, due to Wilson disease), after 30 weeks of pregnancy, weighing 1370 g, Apgar score 8/9.
- conscience is present, she notices and searches with her eyes the objects around her, she reacts to screening;
- she presents axial hypotonic, without any apparent alterations of the muscle tonus at the members level;
- primitive reflexes: Moro reflex – outlined, symmetric;
- Galant reflex– absent;
- head traction reaction more intense on the left side;
- palmar grasp reflex and plantar grasp reflex are present and symmetric; rooting reflex (of searching) – is present;
- supine position – preference for left side posture of the head with present head traction reaction, curvature of the body to the right, she brings her head to the median line for little time;
- during the traction she brings her head to the axe;
- prone position – she maintains the preference for the left side posture of the head, she releases her hands, she turns her head up to the median line;
- supported by her armpits – aptitude static reflex, automatic walking;
- palmar grasp reflex is present, she shows no active prehension.

Diagnosis: Developmental coordination disorder. Prematurity.
Clinical examination (first evaluation in photo no. 1)

Supine position:
- concave forehead;
- slight asymmetry at the face level;
- at the mouth level, the apparition of the superior lip hypotony (the mouth is opened all the time);
- at the cervical spine level, she presents a right side prominence that remains constant during the entire junction;
- she presents protracted shoulders (bended in front);
- the superior right member is abducted, slightly

A series of selected reflexes from the medical literature come to complete the examination scheme in order to evaluate immediately but also to clarify the prognosis.

The severity of "developmental coordination disorders" (DCD) is assessed by the number of abnormal postural reactions, exceeding the normal period of validity of reflexes, qualitatively abnormal responses.

The confrontation of these three types of data allows the classification of DCD in several categories:

- Benign central coordination disorders that do not require physical therapy but whose evolution will be closely monitored through further medical investigations;
- Moderate to severe central coordination disorders corresponding to a major risk of disabling disease (cerebral palsy or other conditions) which therefore justifies early therapy.

Anamnesis.

Case history of patient G.M., 7 months old. At the Socio-Medical Complex 'Maria Beatrice' from Alba Iulia, patient G.M., born on 22.01.2016, presented the following significant characteristics:

during the entire junction, and at the vertebral column level she presents a hyperlordosis, more pronounced in the inferior thoracic lumbar segment;
- she presents protracted shoulders (bended in front);
- the superior left member is abducted, flexed, and at the hand level the digits are in extension, the thumb being oriented to the exterior; she supports herself from the forearm to the hand base;
- the superior right member is abducted, in extension, and at the hand level the digits are abducted and slightly flexed, with the thumb being oriented to the interior. She supports herself on the hand base;
flexed, the digits are abducted, hyper-flexed, with the thumb being oriented to the interior and radial inclination – she manages to bring her hand above the median line;
- the superior left member is abducted, more in extension, the digits are abducted and slightly flexed, with the thumb being oriented to the exterior and radial inclination – she manages to bring her hand up to the median line;
- the abdomen is protruding;
- the waist presents a ventral flexion (anteversion);
- the inferior members are in extension, at the taloclural joint level the dorsal flexion is maintained and the digits are abducted and in flexion.

Conclusion: while analyzing the clinic records of infant G.M., I can underline the following aspect: the support from supine position is realized mostly on the left hemi-body (left scapula and gluteus).

Prone position:
- at the head level, she presents a plagiocephaly on the left side;
- at the cervical column level, she presents a convexity on the right side that remains constant
- the waist presents a ventral flexion (anteversion);
- the inferior members are abducted and in hyper-flexion, at the taloclural joint level the dorsal flexion is maintained and the digits are abducted and in flexion.

Conclusion: while analyzing the clinic records of infant G.M., I can underline the following aspect: the support from prone position is realised to the cranial, from the superior abdomen to the thorax and to the hand base of the superior members.

Photo no. 1
Infant G.M. before starting the Vojta therapy

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Methods

Following the medical records presented above, infant G.M., 7 months old (biological age) is, from supine position from the point of view of the locomotion age, 6 months and a half old because she manages to bring her right hand above the median line and to execute creeping only to the left.

From prone position she is, from point of view of locomotion age, 4 months and a half old, because she manages to sustain herself on the elbow, manifesting the will to catch with her other hand.

Therapeutic program: in order for the Vojta therapy to be successful, it has to be performed multiple times per day. A stimulation session cannot exceed 15-20 minutes.

One important role in Vojta therapy is played by the parents or the person that performs the therapy daily.

It is highly recommended to initiate the parents/ carers in the treatment technique immediately, in order for the therapy to be started at home, too.

The individual therapy program of infant G.M. consisted in reflex creeping and reflex crawling exercises, from supine position, side lying and prone position.

For these 3 basic positions – supine position, side lying and prone position – there are more than 30 alternatives and for activating the patterns of movement there are 10 areas, as described by Vojta, that are localized not only on the body, but also on the arms and legs.

Table no. 1
The individual therapy program of infant G.M.

Week no.	Supine position	Side lying	Prone position
Week no. 1	Reflex creeping	Reflex creeping	Reflex crawling
	The exercises were performed with the help of the therapist from 'Maria Beatrice' Specialized Center from Alba Iulia, once a day, for five days. As for the home program, one of the parents was initiated in order to practice one exercise with the infant 2-3 times per day.		
Week no. 2	The same therapy program was followed, in which both the therapist and the parent (monitored by the therapist), were involved.		
Week no. 3	During the third week, the patient followed the therapy program, supported by the therapist from 'Maria Beatrice' Specialized Center Alba Iulia, only twice per week, and in the rest of the time the exercises were performed at the patient's house. The exercise type was established by the therapist and it was performed with the initiated parent's support.		
Week no. 4	The exercises were performed with the support of the therapist from 'Maria Beatrice' Specialized Center Alba Iulia, twice per week, and during the whole period of time, there was another exercise newly included in the home program, therefore the initiated parent worked with the infant a program consisting in two exercises, 2/3 times per day.		
Weeks 5, 6, 7 and 8	The same therapy program as for week no. 4 was followed. The program from the specialized center with the therapist's support consisted in 3 types of exercises and the program from home, with the initiated parent's support consisted in two types of exercises.		

Results

During the clinical evaluation, performed after the 8 weeks of Vojta Therapy, the following improvements are to be noticed to infant G.M. (photo no. 2):

- at the cervical spine level, the right side convexity was diminished and as a result the infant now manages to perform the head segmental rotation movement also on the right side. Moreover, the infant can now execute creeping also to the right, which she could not perform at all at the beginning of the program, the creeping being executed only to the left;
- at the thoracic lumbar junction level the existing hyperlordosis was diminished, and therefore the support from both supine position and prone position changed, being executed much more correctly.
- after the 8 weeks of Vojta therapy, infant G.M. manages to initiate crawling.

Photo no. 2
Infant G.M. after 8 weeks of Vojta therapy

Discussion

These results are in accordance with the previous studies performed on patients with age between 3 weeks and 2 and a half years, at the Socio-Medical Complex 'Maria Beatrice' from Alba Iulia, occasions on which it has been proved that Vojta therapy early applied to infants suffering from developmental coordination disorder, has positive effects concerning recovery from abnormal postures, muscle tone and neurological and movement disorders.

Considering the fact that during this 8 weeks therapy program the evolution of the infant was a positive one and the infant could perform a first complete pattern of movement from reflex rolling, the therapy program does not end here.

The realisation of a reflex movement pattern with the aid of the reflex crawling is established as a future target.

In order to achieve this target, the alignment of the vertebral column in its axe is considered, as a way to improve the whole body's posture.

Acknowledgments

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References

Vojta V, 2007, Tulburarile cerebrale de mișcare la vârsta sugarului – Diagnostic și terapie precoce, ediția a - 8-a, Editura Hippokrates.

www.sr-vojta.ro

http://www.rl-corpus.cz/

Lagache H, 1997, Le concept Vojta: - Kinesitherapie scientfique nr. 366 – S.P.E.K., Paris.

Vojta V, 2009, Ontogeneza mecanismelor de îndreptare până la mersul bipedal independent, Societatea Internațională Vojta

Vojta V , Schweizer E, 2009, Die Entdeckung der idealen Motorik. Die Entwicklung der angeborenen Bewegungsmuster im ersten Lebensjahr: Kinesiologische und muskuläre Analyse.