THE IMPORTANCE OF EARLY INSTITUTED PHYSIOTHERAPY IN THE PRETERM CHILD – CASE STUDY

ABSTRACT

Our study covers four clinical cases of preterm children (twin pregnancy) who have been treated only by Vojta therapy.
This study aimed to investigate the improvement of the motor function and to maintain the normal physiologic aspects of the spine.

Keywords: Preterm children, Vojta Therapy, Evaluation (Assessment), Functional rehabilitation.

A preterm child is any child whose weight, at birth, is equal to or less than 2500 g, while, according to other opinions, it is the newborn with the gestational age under 37 weeks old. (6)

Taking into consideration both the weight at birth and the gestational age, the preterm infants are (6):

— true preterm: infants whose weight at birth is in agreement with their gestational age (less than 2500g, gestational age under 37 weeks);

— dismature or with intrauterine growth restriction, having a weight at birth under 2500g which is not in agreement with the gestational age;

— premature, having a weight at birth higher than 2500 g, but with the gestational age under 37 weeks old (infants whose mothers suffer from diabetes).

According to their weight at birth, the premature infants may be divided into: (6)

— I degree premature, with weight 2000-2500 g;
— II degree premature with weight 1500-2000 g;
— III degree premature with weight 1000-1500 g;
— IV degree premature with weight under 1000 g.

The premature newborn infant raises a series of problems in connection to its difficulty in adapting to the extra uterine life secondary to the immaturity of different organs. The premature babies have predominantly respiratory clinical manifestations but the lesion substrate is preponderantly cerebral.

THE PREMATURE NEWBORN (3)

At birth, the premature infant's state of health depends on numerous factors such as:

— the gestational age at the moment of birth,
— the weight at birth,
— mother's diseases or treatments she received during pregnancy which might have affected the foetus,
— the newborn infant's congenital deficiencies.

DISORDERS OF THE NEWBORN INFANT (6)

Many newborn infants are energetic and surprise everybody with their spectacular rehabilitation. Still, they are vulnerable to infections and to different complications connected to the incomplete development of certain organs. A continuous progress in the evolution of the infant might be possible for some days, followed by periods of relapse.

Any infant born before the term (before 37 gestation weeks) may have an increased risk of developing ulterior medical complications:

— the infants born at 32 weeks or more have the lest probable risk of developing complications;
— any subtracted week increases the complication risk dramatically;
— the newborn at 22 – 26 weeks have a minimum development and a very high risk of mortality or of severe deficiencies. It might be probable that parents should face difficult medical decisions in favour of life or death.

SEVERE DEVELOPMENT RETARDATION AND IMPAIRMENT (1, 6)

The majority of premature infants do not suffer severe retardation in their development or have any impairment. Generally, the younger a newborn, with a higher degree of prematurity or disease, the higher the risk for him to have a delay in development or impairments. If the infant had III- IV degree of prematurity (i.e. was born before 26 gestation weeks), or it was very small (weighing less than 800g) he has a very high risk of developing severe problems. Among these problems, the most frequent are:

— mental retardation 14%
— brain haemorrhage 8-12%
— blindness 8%
— deafness 3%.

The newborn weighing 1500 – 2500g might have differences of the intelligence quotient as compared to an infant born on term, but they are small. The newborn infants who weigh over 2500g have a very small risk to develop a delay in their development. Those children who display signs of development retardation are likely to improve their state in a welcoming family background and through attentive care.

Early stimulation of the newborn – a necessity (2)

The newborn infant who is kept in an incubator might be considered a child with risk concerning biological and psychological development; it must benefit from an early intervention on the part of parents and kinesiotherapist. Lately, in the west of Europe, parents themselves are encouraged to take care of their infant for a few hours a day. The infant is laid on his mother's or father's chest, as soon as the state of the child allows it. Thus, the infant perceives normal, human tactile stimuli. The vestibular and proprioceptive systems benefit from these stimulations, the child being likely to recognise his mother's heartbeats (De Groot).

Numerous premature infants raise various problems for the young parents: posture regulation anomalies, anomalies of the wake – sleep rhythm, a lot of crying. Certainly, any intervention should be individualised, adapted to the specific needs of each child (Berard).

In the intrauterine period, the foetus moves in the amniotic liquid, its tactile system being precociously stimulated by contacts with the uterus walls. Towards the end of gestation, the surrounding space becomes smaller, the tactile perceptions are different and the proprioceptive stimuli are numerous. The child reacts to auditive stimuli like mother's cardiac noises, mother's voice, and bowels noises. Anyway, in the uterus, the stimulation system allows the foetus to benefit from tactile-kinaesthetic experiences adapted to the maturity of its nervous system at that particular time (Gosselin).

After birth, the premature infant is assisted in the incubator, eventually under intensive care and this means pain, intensive light and noise. Concerning pain, its perception has been found out using EKG modified for a premature infant smaller than 30 weeks; thus, an accelerated heart rhythm, increased blood pressure, and palm sweating were signs infant pain (Escobark).

After the period of intensive care, it is necessary to encourage the parents' relationship with their child, advising them in matters of child posture during feeding, of bathing and of placing it in a crib, on a soft mattress, possibly on a sheepskin, which is recommended for a better tactile integration. Sometimes it is advisable to place the infant in a hammock when hypotonia is present and prolonged or when in extension appears (De Groot).

Once the premature infant arrives at home, the parents need to be supported further with advice concerning the diet, positioning, stimulation, especially if the infant displays an exaggerated extension of the cervical area, retracted shoulders with hypertonia tendency.

During this period, the intervention of a kinesiotherapist specialised in the treatment of newborn infants is imperiously necessary. This person should be well trained, with and up to date knowledge in child neuro-motor development and the neurologic methods of rehabilitation.

Of course, ideally, the therapy sessions would take place at the child's home (something that in our country is not stipulated by the law), but, anyway, the physical treatment is imperiously necessary. In our country, there is also an insufficient number of specially trained personnel in child kinetic therapy. Unfortunately, the medical universities offer neither serious practice in this field, nor a theoretical basis. Nevertheless, the responsibility is huge since an abusive or wrong intervention might have disastrous consequences on the ulterior development of the child.

The early diagnosis (Prof. Dr. Václav Vojta) has 3 components (11,12):

A. Analysis of spontaneous motor function (postural ontogenesis) (11, 12)

— we mean the infant's postural ontogenesis which depends on:

— each individual's development,
— genetic determination,
— has a specific sequence,
— is obtained without a special training,
— is obtained automatically.

B. Automatic postural reactivity (posture reactions) (1, 12)

1. Traction Response

— **execution:** The infant is in dorsal decubitus; the therapist takes him by the wrist (above the backhand) and draws him slowly until the trunk reaches a 45° position.

— **assessment of:** Position of head and inferior limbs (at hip and knee level).

— **normal reactions: - In newborn infants (n.i.)** the head lags behind (falls back), the inferior limbs (IL)

are flexed and abducted, heels inert on the ground;

— **After 3 months,** the head is in line with the spine, IL adjust in active flexion;

— **3rd trimester** head in anterior flexion, IL flexed, plantar grasping reflex;

— since **3rd trimester on** IL start to extend, in slight abduction and exterior rotation, feet in pronation and dorsal flexion **(Figure 1 – Traction response in a premature newborn, chronologic age – 3 months; corrected age – 2 months)**

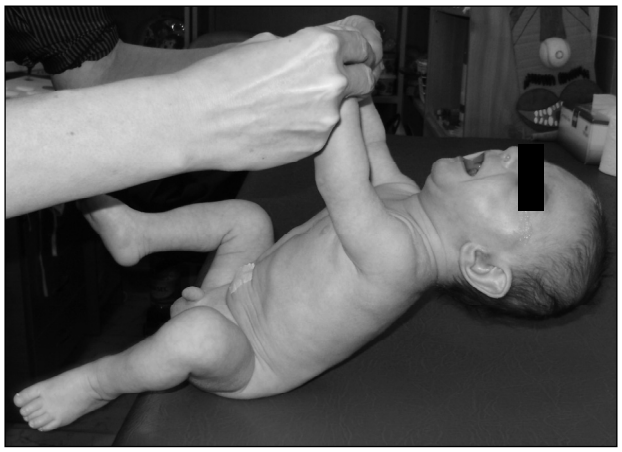

Fig. 1. Traction response in a premature newborn

— chronologic age – 3 months
— corrected age – 2 months

2. Landau Reaction

— **execution**: The infant is held prone under the stomach upon the flattened hand of the examiner, strictly in the horizontal plane.

— **assessment of:** Position of head, trunk and limbs

— **normal reactions: In the first 6 weeks** attempts to raise the head, the trunk hangs on the palm, IL hang inertly.

— **At 3 months,** the head is in line with the spine, IL in semiflexion;

— **At 6 months,** the thoracic lumbar and lombo sacral extension increases, the back is straight, the tights are at 90° with respect to the abdomen, the shins at 90° with respect to the tights, superior limbs (SL) begin to extend.

— **3rd & 4th trimesters** head in line with the spine, SL oriented as for the parachute reflex, tights at 90°, knees extended, IL have a tendency to support the body when placed on a firm surface, SM with the elbow in semiflexion. **(fig. 2.** Landau Reaction in a premature newborn – chronologic age – 3 months; corrected age – 2 months).

Fig. 2. Landau Reaction in a premature newborn

— chronologic age – 3 months
— corrected age – 2 months

3. Axillary (Vertical) Suspension Reaction

— **execution:** The infant is held at trunk level, with his back to the examiner.

— **assessment of:** Position of IL

— **normal reactions: In n.i.** there is a slight flexion of IL

— **1st trimester** – active IL flexion of

— **3rd trimester** – starts IL extension

— **4th trimester** – IL extension- positive support reaction **(Figure 3 – Axillary (Vertical) Suspension Reaction in a premature newborn, chronologic age – 3 months; corrected age – 2 months)**

Fig. 3. Axillary (Vertical) Suspension Reaction in a premature newborn

— chronologic age – 3 months
— corrected age – 2 months

4. Vojta Rolling Over (Turning) Reflex

— **execution:** The infant is held at thoracic level, his back to the examiner, then he is suddenly oriented in a horizontal position to the right side, is kept on a flat surface in ventral decubitus for 2-3 seconds, then he is lifted and positioned on the left side.

— **assessment of:** Position SL situated cranially; position of IL situated cranially; position of the trunk

— **normal reactions: In n.i.** Moro reflex takes place, IL in triple flexion.

— **After 4 months,** More reflex disappears

— **in the 2nd trimester,** there is an active flexion of the IL

— **3rd & 4th trimesters** cranial IL is abducted, cranial SL is extended. **(Figure 4 – Vojta Rolling Over (Turning) Reflex in a premature newborn, chronologic age – 3 months; corrected age – 2 months)**

Fig. 4. Vojta Lateral Rolling Over (Turning) Reflex

— chronologic age – 3 months
— corrected age – 2 months

5. Collis Horizontal Reaction

— **execution:** The infant is placed on a flat surface in lateral decubitus, his back to the examiner who takes the infant's cranial arm and tight, while the other arm, hand and inferior limb are free

— **assessment of:** Position of free arm, hand inferior limb

— **normal reactions:** - **In n.i.** SL adjusts as in Moro reflex, with the hand opened; initially, IL extends, then it flexes.

— **Until he end of 1st trimester,** it is the typical flexion phase.

— **Since 4th month,** the hand is in pronated position.

— **At 6 months,** the hand tends to find support on the flat surface, IL in flexed.

— **Since 9th month on** – Plantar support on the flat surface

(Figure 5 – Collis Horizontal Reaction in a premature newborn, chronologic age – 3 months; corrected age – 2 months)

Fig. 5. Collis Horizontal Reaction in a premature newborn

— chronologic age – 3 months
— corrected age – 2 months

6. Collis Vertical Reaction

— execution: The infant is in dorsal decubitus. The examiner takes one of the infant's tights and suspends him in a vertical position.

— assessment of: Position of free IL

— normal reactions: 0-6 months: after a short extension, IL comes to a triple flexion.

— Starting with the 7th month, the knee will extend more and more while the tight will remain at 90° with respect to the abdomen. **(Figure 6 – Collis Vertical Reaction in a premature newborn, chronologic age – 3 months; corrected age – 2 months).**

Fig. 6. Collis Vertical Reaction in a premature newborn

— chronologic age – 3 months
— corrected age – 2 months

7. Peiper-Ispert Reaction

— **execution:** The examiner fastens her hands around the infant's upper tights. The child is then lifted quickly but smoothly until the head lies vertically down.

— **assessment of:** Position of shoulders, arms and hands

— **normal reactions: - In n.i., for a short period**, there is a tendency to extend the neck and the Moro reflex.

— **6 weeks - 3 months,** abduction of SL and extension of cervical spine and dorsal sup.

— **3 – 7 months,** the whole spine extends, SL take the position of the parachute (startle) reflex

— **4th trimester** – the reaction is no longer convincing, because the child grasps the examiner with his hands **(Figure 7 – Peiper-Ispert Reaction in a premature newborn, chronologic age – 3 months; corrected age – 2 months).**

Fig. 7. Peiper-Ispert Reaction in a premature newborn

— chronologic age – 3 months
— corrected age – 2 months

ASSESSMENT OF POSTURE REACTIONS (11, 12)

1 – 3 abnormal posture reactions **= Slight central coordination disorder (CCD) – control after 6 weeks**

4 – 5 abnormal posture reactions **= Slight central coordination disorder (CCD) – control after 4 weeks, then the therapy starts**

6 – 7 abnormal posture reactions **= Medium central coordination disorder (CCD) – immediate therapy**

7 abnormal posture reactions with severe disorders of muscle tone **= Severe central coordination disorder (severe CCD) – immediate therapy**

The central coordination disorder (CCD) describes a momentary state if the coordinating capacity.

C. The dynamics of primitive reflexes (11, 12)

One may speak of cerebral palsy only **after 7 months** on,

— If 6 of the posture reactions are abnormal, there is no longer CCD, but a diagnostic may be established since we enter the sphere of **neurologic pathology**.

— starting with **the 2nd trimester,** if the extension reaction + calcaneal reflex + tonic reflexes (Supra-pubian, Crossed Extension) persist = **spasticity,**

— if Plantar Grasp, Galant's Reflex, Stepping Reflex, Asymmetrical tonic neck reflex (ATNR), persist = **diskinezia (Table 1).**

CASE STUDY

CASE 1 – I.D.

Birth information – Date of birth – 27.07.2009
— Pregnancy period – 30 weeks
— Labour interval – 10 hours (firstly born)
— Weight at birth – 1600g
— Type of birth – natural
— APGAR score – 3, then 5
— Observations – 1 month in incubator

DIAGNOSIS - Central coordination disorder (twin pregnancy, prematurity)

A. Neurologic examination at the age of 3 months old – chronologic age, Corrected age – 2 weeks

— FA = 4/3
— head bent to the right side
— PC – 35,5 cm.
— redressing reaction is absent
— Bone-Tendon Reflexes are lively with some clonuses on Achilles' Reflex
— Posture reactions with a neonatal aspect,
— ATNR,
— Moro,
— Grasping ++,
— Sub-axillary suspension reaction is absent,
— the infant remains slightly crouched without an anti-gravitation reaction,
— Grenier reaction absent,

— the infant keeps his fists clenched, the thumb is palmar adducted,
— when oriented in lateral decubitus, infant displays the extension of the cervical spine
— in lateral suspension he does not abduct the tights,
— at traction, the head is blatant,
— the stepping reflex is absent, astasia
— Galant reaction is only incipient.

The infant starts Vojta therapy – 4 sessions a day.

B. Neurologic examination at the age of 4 1/2 months old – chronologic age, Corrected age – 2 months

— PC – 38,5 cm.
— FA = 3/3
— Bone-Tendon Reflexes are lively
— redressing reaction is absent,
— at traction, the head is no longer blatant, but lags behind,
— in ventral decubitus, the head is in Gesell I-II zone,
— does not keep the doll's posture,
— Moro + (slightly asymmetrical, the right IL remains half flexed at moment 1),
— Grasping + palmar and plantar
— Sub-axillary suspension reaction is possible, astasia
— opens the fists better,
— follows moving objects,
— smiles.

The infant continues Vojta therapy – 4 sessions a day.

Table 1. The dynamics of primitive reflexes

Reflexes, automated reactions	Waiting time Neonatal intensity	Pathology
Babkin	0 – 4 weeks	Persistent after 6 weeks
Rooting Reflex	0 – 3 months	Persistent after 6 months
Sucking Reflex	0 – 3 months	Persistent after 6 months
Optico-facial Reflex	After 3 months – persists all life long	If it is missing after 4th month
Acoustic-facial Reflex	Since day 10 – persists all life long	If it is missing after 4th month
Glabela	Since birth – persists all life long	Missing la birth
"Doll's Eyes" Reflex	0 – 4 weeks	After 6 weeks
Palmar Grasp Reflex	Until the development of the grasp and support function	Absent in the diskinetic development– asymmetry If propping on the hand does not appear – 2nd trimester +++ in 3rd trimester = spasticity
Plantar Grasp Reflex	Until the development of the support function	Absent at birth If absence persists after 2nd &3rd = diskinezia
Palm Root Reaction	–	Since birth
Automated walking (Stepping Reflex)	0 – 4 weeks	After 3 months
Reaction of arms extension (Arm Recoil)	–	Since birth
Reaction of extension of IL (Positive support reaction)	0 – 4 weeks	after 3 months
Calcaneal Reflex (Achilles or ankle-jerk reflex)	0 – 4 weeks	after 3 months
Suprapubian Reflex	0 – 4 weeks	after 3 - 5 months
Crossed Extension Reflex	0 – 6 weeks	after 3 - 5 months
Lift Reaction	0 – 4 months	+++ in 2nd trimester
Galant's Reflex	0 – 4 weeks	After 3 months – possible diskinezia Absent at birth
Moro's Reflex	3 – 4 months	After 4 months Absent at birth

C. Neurologic examination at the age of 7 months old – chronologic age

Corrected age – 4 1/2 months

- PC – 40 cm.
- FA = 2/3
- Bone-Tendon Reflexes lively
- redressing reaction is absent,
- at traction, the head is in line with the trunk's axis,
- in ventral decubitus, the head is in Gesell II-III zone,
- doll's posture is present, with fingers still half flexed,
- only rarely throws himself in opisthotonus,
- Vojta reaction – starts to abduct the tight,
- Collis horizontal reaction – corresponding to 1st trimester
- in all manipulations, there is a slight contracture in flexion of the left SL (in Moro Reflex, he extends only the right SL),
- keeps himself up in sub-axillary suspension,
- in crouched position, supports his weight,
- no anti-gravitation reaction,
- stretches hands for toys, catches and transfers them,
- fixes with the sight
- follows moving objects,
- smiles socially,
- motor age – 4 months.

The infant continues Vojta therapy – 4 sessions a day.

Fig. 8. Vojta simulation in a premature child

– Phase II reflex roll over – chronologic age – 7 months

Corrected age - 4 ½ months

Fig. 9. Vojta simulation in a premature child

– Phase I reflex roll over – chronologic age – 7 months, **Corrected age - 4 ½ months**

Fig. 10. Analysis of a premature child

- After therapy – dorsal decubitus position
- chronologic age – 7 months, **Corrected age – 4 ½ months**

D. Neurologic examination at the age of 9 months old – chronologic age

Corrected age – 6 1/2 months

- PC – 43 cm.
- FA = 2/3
- Head control – Gesell III
- in doll's posture does not extend the elbows, yet,
- he is propping on palm roots,
- in Vojta reaction –abducts the tight,
- Collis horizontal reaction – corresponding to the respective age,
- in sub-axillary suspension – physiologic astasia,
- in crouched position, still no anti-gravitation reaction,
- slight tricipital hypertonia, a little more pronounced on the right side,

— reaches for toys, catches them,
— psychic development: very good,
— if positioned, sits down in imperfect balance,
— rolls over,
— brings feet to his mouth,
— sketches the parachute,
— begins to articulate monosyllables,
— motor age – 7 months.

The infant continues Vojta therapy – 4 sessions a day.

Fig. 11. Vojta simulation in a premature child

— chronologic age – 9 months
— **Corrected age - 6 ½ months**

Fig. 12. Vojta simulation in a premature child

Phase III reflex roll over – chronologic age – 9 months, Corrected age - 6 ½ months

Fig. 13. Vojta simulation in a premature child

— First position – chronologic age – 9 months
— **Corrected age – 6 ½ months**

CASE 2 – I.R.

Birth information – Date of birth – 27.07.2009
— Pregnancy period – 30 weeks
— Labour interval – 10 hours (secondly born)
— Weight at birth – 900 g
— Aspect – Cranian
— Type of birth – natural
— APGAR score – 1, then 3
— Observations – 1 month in incubator

DIAGNOSIS – Central coordination disorder (twin pregnancy, prematurity)

A. Neurologic examination at the age of 3 months old – chronologic age, Corrected age – 2 weeks
— PC =35,5 cm.
— FA = 4/3
— deshicence of stright muscles of the abdomen,
— lively child, follows objects with the eyes, fixes, sketches smile,
— head-neck bent to the left side,
— left dorso-lombar scoliotic curvature,
— axial hypotonia,
— Galant reaction is slightly sketched,
— redressing reaction is absent
— stepping reflex absent,
— ATNR,
— Grasping +,
— Grenier reaction absent,
— at traction, the head is in lags behind,
— in lateral suspension, does not abduct the tight,
— in ventral decubitus, head in Gesell zone I,
— in sub-axillary suspension does not keep up,
— posture reactions with a neonatal aspect,
— spontaneous motility within loose normal limits.

The infant starts Vojta therapy – 4 sessions a day.

B. Neurologic examination at the age of 4 1/2 months old – chronologic age, Corrected age – 2 months
— PC – 37,7 cm.
— FA = 2/3
— Moro + (sometimes the right SL is lazier),
— ATNR did not disappear,

— Grasping + palmar and plantar,
— fists are generally closed, but open spontaneously,
— Grenier reaction absent,
— in Collis horizontal reaction – SL adducted and flexed,
— in ventral decubitus, the head is in Gesell I zone, if the SL are by the sides of the trunk, he has difficulty in taking out the right one,
— keeps himself up in subaxillar suspension, IL does not prop on the flat plane- astasia,
— the extension of the cervical-dorsal spinal cord is slightly exaggerated,
— follows moving objects, smiles.

The infant continues Vojta therapy – 4 sessions a day.

C. Neurologic examination at the age of 7 months old – chronologic age, Corrected age – 4 1/2 months

— PC – 40 cm.
— FA = 2/3
— Bone-Tendon Reflexes lively
— reminiscences of Moro,
— palmar and plantar grasping,
— an accentuated paravertebral extensor tonus is still maintained with slight hypertonia of the limbs – flexion model
— redressing reaction is absent,
— at traction, the head is along the trunk's axis,
— in ventral decubitus, the head is in Gesell II-III zone, with prop on the forearms, fists closed,
— in ventral decubitus, with SL by the sides of the trunk, manages to draw the SL forward,
— Collis horizontal reaction – does not take hands to the table/flat surface,
— Peiper reaction corresponding to 1st trimester,
— in crouched position, supports his weight,
— no anti-gravitation reaction,
— right SL has more imperfect reactions,
— reaches after toys, catches and transfers them,
— there is visible motor progress,
— motor age –3- 4 months.

The infant continues Vojta therapy – 4 sessions a day.

Fig. 14. Vojta simulation in a premature child

— Phase III reflex roll over - chronologic age - 7 months, corrected age - 4 ½ months

Fig. 15. Vojta simulation in a premature child

— The abyss - chronologic age - 7 months
— Corrected age - 4 ½ months

Fig. 16. Analysis of a premature child

After therapy- dorsal decubitus position
— chronologic age - 7 months
— corrected age - 4 ½ months

D. Neurologic examination at the age of 9 months old – chronologic age, Corrected age – 6 1/2 months

- PC – 43 cm.
- FA = 2/3
- head control in ventral decubitus – Gesell III-IV
- extends the elbows in doll's posture,
- rolls over,
- if positioned, sits down in good balance,
- tries to crawl,
- sketches the parachute,
- redressing reaction+,
- Vojta, Collis Horizontal, Peiper reactions - corresponding to the corrected age,
- in sub-axillary suspension – rests on the entire sole,
- in crouched position, supports his weight,
- no anti-gravitation reaction,
- reaches for toys, catches and transfers them,
- catches his feet and brings them to mouth,
- lively baby, smiles all the time,
- motor age – 7 months.

The infant continues Vojta therapy – 4 sessions a day.

Fig. 17. Vojta simulation in a premature child

- Phase I reflex roll over – chronologic age - 9 months
- corrected age - 6 ½ months

Fig. 18. Vojta simulation in a premature child

- Phase I reflex roll over – chronologic age – 9 months
- corrected age - 6 ½ months

Fig. 19. Vojta simulation in a premature child

- Reflex crawling – chronologic age – 9 months
- corrected age – 6 ½ months

CASE 3 – M. M.

Birth information

- Date of birth – 15.11.2009 (firstly born)
- Pregnancy period – 29 weeks and 4 days
- Weight at birth – 1650g
- Aspect – Cranian
- Type of birth – Caesarean
- APGAR score– 4 at 1 minute
- 6 at 5 minutes
- 6 at 10 minutes

At release from hospital

- PC = 29,5 cm
- PT = 25 cm
- T = 43cm
- Weight = 1850g
- PC = 32 cm
- PT = 27 cm
- T = 46 cm

Diagnosis at release from hospital – Severe perinatal asphyxia

- group and RH incompatibility
- haemorrhagic syndrome of the newborn infant,
- intraventricular haemorrhage
- nosocomial infection with Klebsiella

A. Neurologic examination at the age of 4 months old – chronologic age, Corrected age – 2 months

Diagnosis – Slight central coordination disorder (twin pregnancy, prematurity)

- lively child, follows objects with the eyes, smiles,
- optico-facial + acoustic-facial reflex +
- Bone-Tendon Reflexes are lively
- Babinsky +
- Moro+
- Galant absent
- ATNR +
- Landau – extension persists after the flexion of the head
- Grasping+
- redressing reaction is absent
- automated digitigrade stepping+ (a characteristic of premature babies),
- posture reactions corresponding to 1st month,
- in horizontal suspension, does not abduct the tight,
- keeps up in sub-axillary suspension,
- in crouched position, supports his weight,
- has positive support reaction,
- Grenier reaction absent,
- at traction, the head lags behind,
- in ventral decubitus, head raises by cervical paravertebral hypertonia,
- maintains position of ventral decubitus with SL generally "in chandelier" position, fists are closed, the thumbs are palmar adducted,
- slight hypertonia at the level of adductor muscles of the tight and of the triceps surae, predominantly left – at rapid dorsal flexion of the leg, the flexion angle decreases significantly.

The infant starts Vojta therapy – 4 sessions a day.

B. Neurologic examination at the age of 4 1/2 months old – chronologic age

- Corrected age – 2 months
- PC – 40,3 cm.
- Bone-Tendon Reflexes- lively especially the calcaneal reflex,
- compared o the previous examination one may remark:
- persistence of Moro reaction,
- Grasping +
- redressing reaction absent,
- at traction, the head is along the trunk axis,
- in ventral decubitus, the head is in Gesell II zone, with SL in "doll's posture", fists closed,
- no longer keeps SL "in chandelier" position,
- spontaneous motility is expressed better,
- Collis horizontal reaction – absent,
- slight tension at the level of the triceps surae (at rapid dorsal flexion of the legs) is maintained,
- follows with the eyes, being attentive to mother,
- motor progress – Vojta Therapy, 4 times a day,
- motor age – 4 ½ months.

The infant continues Vojta therapy – 4 sessions a day.

Fig. 20. Analysis of a premature child – Before therapy

- ventral decubitus position – chronologic age – 5 ½ months
- corrected age– 3 ½ months

Fig. 21. Vojta simulation in a premature child

- First phase of reflex rolling - chronologic age – 5 ½ months
- corrected age – 3 ½ months

Fig. 22. Analysis of a premature child – After therapy

— ventral decubitus position - chronologic age - 5 ½ months
— corrected age - 3 ½ months

CASE 4– M.M.

Birth information
— Date of birth – 15.11.2009 (secondly born)
— Pregnancy period – 29 weeks and 4 days
— Weight at birth – 1650g
— Aspect – Cranian
— Type of birth – Caesarean
— APGAR score – 6 at 1 minute
— 7 at 5 minutes
— PC = 30 cm
— PT = 25 cm
— T = 44cm

At release from hospital – Weight = 2080g
— PC = 34 cm
— PT = 28 cm
— T = 47 cm

DIAGNOSIS at release from hospital – Severe asphyxia at birth
— haemorrhagic syndrome of the newborn infant,
— cerebral haemorrhage
— pulmonary haemorrhage
— hydrocephalus

A. Neurologic examination at the age of 3 ½ months old – chronologic age, Corrected age – 1 ½ months

DIAGNOSIS – Central coordination disorder (twin pregnancy, prematurity)
— Int. hydrocephaly
— PC = 39,5cm
— FA = 3/2
— Bone-Tendon Reflexes are lively and symmetrical,
— redressing reaction absent,
— Moro+
— Galant ++
— without stepping reflex,
— in lateral suspension, slight axial hypotonia without tight abduction,
— sub-axillary vertical suspension for 10 seconds,
— at traction, the head lags behind,
— in ventral decubitus, the head is in Gesell I-II zone,
— slight tendency to hyperextension of cervical spine,
— Grasping+
— in crouched position, supports his weight,
— without anti-gravitational reaction,
— Grenier reaction absent bilaterally,
— posture reactions (Vojta, Collis, Peiper) corresponding to 1st month,
— generally maintains fists closed, the thumb being palmar adducted,
— the infant is lively, following moving objects with the eyes,
— oculo-palpebral reflex and cochleo-palpebral reflex are absent.

The infant starts Vojta therapy – 4 sessions a day.

B. Neurologic examination at the age of 5 1/2 months old – chronologic age, Corrected age – 2 months
— PC – 41,5 cm.
— FA = 2/1
— Bone-Tendon Reflexes- lively ,
— redressing reaction absent,
— Moro+
— Galant +
— Collis horizontal reaction – absence of hand support on the flat surface,
— in Vojta reaction – does not abduct the tight,
— in traction reflex, the head is in the trunk's axis,
— in ventral decubitus, the head is in Gesell II zone, with SL in "doll's posture", fists closed,

— a slight paravertebral cervical hypertonia is maintained,
— Grasping +
— maintains himself in sub-axillary suspension,
— in crouched position does not have anti-gravitational reaction,
— Grenier reaction absent,
— Peiper Reaction corresponding to 1st trimester,
— reaches for toys and grasps them
— the thumb is no longer palmar adducted,
— very lively infant, follows moving objects, smiles easily to the people around him,
— motor age – 3 ½ months.

The infant continues Vojta therapy – 4 sessions a day.

Fig. 23. Analysis of a premature child – Before therapy

— ventral decubitus position - chronologic age – 5 ½ months
— corrected age - 3 ½ months

Fig. 24. Vojta simulation in a premature child

— First phase of reflex rolling - chronologic age - 5 ½ months, corrected age - 3 ½ months

Fig. 25. Vojta simulation in a premature child – Reflex crawling

— ventral decubitus position - chronologic age - 5 ½ months
— corrected age - 3 ½ months

Fig. 26. Analysis of a premature child – After therapy

— ventral decubitus position - chronologic age – 5 ½ months
— corrected age - 3 ½ months

CONCLUSIONS

Using Vojta Therapy we can influence the motor pathologic models in a premature child (we may recall the ideal partial models). Early initiation of the Vojta Therapy leads to the substantial rehabilitation of the neuro-psycho-motor deficit.

In the premature child, Vojta Therapy will be instituted taking into consideration the child's health condition, age and tolerance in being touched. In order to obtain the desired effects, the Vojta Therapy sessions (4 sessions a day) are performed in comfortably heated environments, while the therapist communicates with the little patient permanently.

The family, in their role as co-therapist, will be instructed so as to be able to continue Vojda Therapy at home, too.

BIBLIOGRAFIE / BIBLIOGRAPHY

1. Berard C. et al. 2008. La paralysie cérébrale de l'enfant. Sauramps Med., p. 25-29.
2. De Groot L. 1993. L'intervention précoce et la stimulation du développement chez l'enfant prématuré. Motr. Cérebr. Tome 14 ; 1: 10-16.
3. Dhondt J.L. Prematurité et depistage néonatal, Arch. Pediatr., 15 s1, 2008, pg. 7-11.
4. Escoban G. J., Cormick M. C., Zupancic J. A., Coleman-Phox K., Armstrog M. A., Greene J. D., Eichenwald E. C., Richardson D. K., 2006. Unstudied infants: outcomes of moderately premature infants in the neonatal intensive care unit. Archives of Diseases in childhood Fetal et Neonatal Edition, 91: F 238-44.
5. Gosselin J., Amiel Tison C. 2007. Évaluation neurologique de la naissance à 6 ans. Ed. II de CHU Sainte-Justine, Masson. p. 28-30.
6. Lupea I. Tratat de Neonatologie. Cluj Napoca : Editura Medicală Universitară "Iuliu Haţieganu", 2000: 74,75,179-185.
7. Marlow, N. et al (2005). Neurologic and developmental disability after preterm birth. The New England Journal of Medicine, 352 (9) 9 – 19.
8. Marshall H. Klaus, Avroy A. Fanaroff. Care of the high-risk neonate; Saunders-Elselvier; 2001. p. 107, 468-469.
9. Morrison J. Twin gestation and premature birth, J. Perinatol, 2005, 25: 1-3.
10. Polin Richard A., Spitzer Alan R. Twin pregnancies and multiple births in: Fetal and neonatal secrets. Mosby-Elselvier; 2007. p. 31-32.
11. Vojta V. 2000 - Die zerebralen Bewegungsstörungen im Säuglingsalter. Frühdiagnose und Frühtherapie. Hippocrates Verlag GmbH. Stuttgart.
12. Vojta V., Peter A. 2001. Das Vojta Prinzip. Muskelspiele in Reflexfortbewegung und motorishe Ontogenese. Ed. Springer.