Can a Motor Development of Risky Infants Be Predicted by Testing Postural Reflexes According to Vojta Method?

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ORIGINAL PAPER
SUMMARY
Introduction: The term symptomatic risky infant applies to those children who would for different reasons, prenatal, perinatal or postnatal have the emotional, intellectual or physical disability. Goal: of this study was to prove whether the motor development of symptomatic high-risk infants can be predicted by examining postural reflexes by method according to Vojta. Material and methods: The study was conducted as a retrospective study which involved symptomatic high-risk infants who are habilitated at the Department of Developmental diagnosis, habilitation and rehabilitation of Pediatric Clinic, Clinical Center of Sarajevo University. It included 25 symptomatic high-risk infants in different age groups. Results: The total number of children covered by the survey with the diagnosis of symptomatic risky infants was 25, from which 13 are boys and 12 girls. In the sample analyzed at baseline age of children ranged from 1 to 8 months with an average age of 4.5 months. The largest number of infants at baseline was in the 3rd month of life–5 (20%). At the first examination as well as control examination in all patients were used the following postural reflexes: Traction test by Vojta, Test of horizontal hanging–Collis experiment and axillary hanging position or test of axillary hanging. Landau reaction was used in 2 patients. The most common variation in postural reflexes at the first examination are recorded in the Vojta reflex and Test of horizontal hanging in 24 (96%) infants, then hanging in the axillary position or rehearsal subaxillar rise in the 23 (92%) infants. At the control examination after treatment for postural deviation Vojta reflex was reduced, however, continued to maintain and affect motor development. Conclusion: The study of postural reflexes by method according to Vojta for symptomatic high-risk infants can predict motor development.

Keywords: symptomatic risky infant, postural reflexes, Vojta method

1. INTRODUCTION
Children who are in the antenatal, perinatal or postnatal period exposed to risk factors, belong to the symptomatic group of children at risk. The term symptomatic child at risk applies to those children who would for different reasons, prenatal, perinatal or postnatal have the emotional, intellectual or physical disability. Symptoms of the risk are signs of deviation from normal development due to damage to the central nervous system (1).

They are warning signs on which it is necessary to react with appropriate therapy to prevent the development of clinical damage to the central nervous system which leads to cerebral palsy. Twenty to thirty percent (20-30%) of patients at developing age are children with damage to the central nervous system and are one of most prevalent morbidity groups at that age (2,3).

If symptoms of risk are detected, early habilitation can prevent further development of the disorder, disease or damage.

In neonates and infants deviation from normal motor development is manifested by change in muscle tone (usually hyper tonus) with a significant reduction in the natural diversity of the movement which has been superseded by scarcity, the same kind of movement or excessive movement caused by any stimulus. Deviations in the motor development of children can be recorded by postural reflex test method according to Vojta (4,5).

2. GOAL
The goal of this study was to answer the question whether the motor development of symptomatic high-risk infants can be predicted by examining postural reflexes by method according to Vojta?

3. MATERIAL AND METHODOLOGY
The study included 25 symptomatic risk children that are habilitated the Department of Developmental diagnosis, habilitation and rehabilitation of Pediatric Clinic, Clinical Center of Sarajevo University. The method used is retrospective analysis where in the data analysis is used structural analysis where the percentage shares are described the structure of the analyzed sample by various criteria of classification. The results are presented in tables and figures and accompanied by appropriate comments and conclusions. Data on deviations in traction reflex during the first and control examination were compared using chi-square test to determine differences and Pearson correlation coefficient to determine the association of individual variables.
Regarded as statistically significant differences are at the level of p<0.05.

4. RESULTS

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number (N)</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Male</td>
<td>13</td>
<td>52.0</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>48.0</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 1. Sample analysis by Gender

In our sample we had 13 or 52% male and 12 female or 48% of symptomatic high-risk infants.

The most common discrepancies are recorded in the Test of horizontal hanging and Vojta reflex at 24 or 96% of infants, then hanging in the axillary position or sub axillar hanging at 23 or 92% of infants, traction test by Vojta in 16 or 64%, and the Landau reaction in 2 or 8% of children.

During control examination after therapy by Vojta method deviations in postural reflexes decreased, but the deviations are still present. On Vojta reflex and horizontal Collis test is positive 17 or 68% of infants, the axillary hanging test is positive 6 or 24% of infants, and the traction test by Vojta only 3 or 12%.

Analysis and comparison of differences in traction experiment by Vojta in the primary and control examination shows that a total of 16 or 64% of cases during the primary review also maintained in 3 or 12% of cases during the control examination. Statistical analysis shows that between the primary and control examination there were no statistically
significant differences (p>0.05).

Analysis and comparison of variations in Vojta reflex during the first and control examination shows that a total of 23 or 96% of the deviations during the first examination also remained in 17 or 68% of cases during the control examination. Statistical analysis shows that the primary control and inspection have statistically significant differences (p<0.05).

Analysis and comparison of variations in postural reflex Landau reaction during the first and control examination shows that a total of 2 or 100% of the deviations during the first examination also remained in one or 50% of cases during the control examination. Statistical analysis shows that the primary control and inspection have statistically significant differences (p<0.05).

Analysis and comparison of variations in the postural reflex Landau reaction during first and control examination shows that a total of 2 or 100% of the deviations during the first examination also remained in one or 50% of cases during the control examination. Statistical analysis shows that the primary control and inspection have statistically significant differences (p<0.05).

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5. DISCUSSION

Children who are in the antenatal, perinatal or postnatal period exposed to risk factors, belong to the symptomatic group of children at risk. Symptoms are signs of the risk of deviation from normal development due to damage to the central nervous system. Damage to the immature brain can lead to mild or severe developmental disorders in a child. To detect these disorders recorded used is the diagnostic method according to Vojta which examines postural reflexes or reactions of symptomatic risky infants. The goal of this research is to answer the question of whether the motor development of infants at risk can be predicted by examining postural reflexes by Vojta method.

The study included 25 symptomatic high-risk infants habilitated at the Department of Developmental diagnosis, habilitation and rehabilitation of children, of different age groups, from which 13 are boys (52%) and 12 girls (48%).

At the first examination of infants, 12 or 48% belonged to a group from 3 to 6 months of age, 8 or 32% at the age up to 3 months, 4 or 16% from 6 to 9 months and only 1 or 4% from 9 to 12 months.

During the first control examination in all patients were used the following postural reflexes: Traction test by Vojta, Test of horizontal hanging–Collis experiment and axillary hanging position or test of axillary hanging. Landau reaction was used in 2 patients, a probe of hanging head by Collis-vertical Collis experiment and experiment by hanging head according to Peiper-Ispert are not used.

The most common variation in postural reflexes at the first examination are recorded in the Vojta reflex and test of horizontal hanging at 24 or 96% of infants, then hanging in the axillary position or rehearsal sub axillary rise in at 23 or 92% of infants, Landau reaction was used in 2 cases and in both were recorded deviations. The smallest differences were recorded in the postural reflex test of traction by Vojta in 16 or 64%, because the children were examined at the age of 3-6 months when the head control is established.

On follow-up examination after therapy administered by Vojta method, the deviation is reduced in postural reflex, however, continued to maintain, and affecting the child’s motor development. The most common variation in postural reflexes at the follow-up examination are recorded in the Vojta reflex and test of horizontal hanging in 17 or 68% of infants, then the Landau reaction differs in one infant which is 50%, axillary hanging position for 6 or 24%. The smallest differences were recorded in the postural reflex Traction test by Vojta in 3 or 12%.

From the 25 infants in the sample, in which was recorded variation in Vojta reflex, 96% of them has deviated in the first examination, while at the control examination, according to Vojta with 68% of infants are registered deviations. Statistical analysis shows that between the first and control examination there are statistically significant differences with regard to the result of chi-square test value of 12.214 with p<0.05. Deviation in Vojta reflex within the control examination in relation to the first examination was reduced but still with significant impact on motor development.

In 96% of children at baseline was noted deviation during the performance of Horizontal Collis test, while at the control examination, after therapy by Vojta, with 68% of infants deviation is registered. Statistical analysis shows that between the first and control examination there is statistically significant differences with regard to the result of chi-square value 12.214 with p<0.05. Variance in the postural reflex test of horizontal hanging–horizontal Collis experiment on control examination in relation to the first examination they were reduced but still significant in effect to the motor development of children.

In test of axillary hanging position it is noticed deviation in 92% of infants at baseline, while at the control examination, after therapy by Vojta, deviation remained in 24% of infants. Statistical analysis shows that between the first and control examinations exist statistically significant differences with regard to the result of chi-square value of 6.864 with p<0.05. Deviation in the postural reflex axillary hanging position on the control examination in relation to the first examination was reduced but still significant and affects the motor development of children.

Gajewska E, Sobieski M, Samborski W, examined the motor development of 57 symptomatic high-risk infants in the first 3 months of age. The tests were performed using two methods. The first was the Munich functional diagnostic development, and other variations in postural reflexes by Vojta method. The survey also provided a correlation between these two methods. It was shown that both methods are sensitive in the detection of motor disorders of child development, and that they can predict motor development. Good correspondence of results suggests that both methods can be used interchangeably (6).

Zafeiriou I, Tsikoulas G, Kremenopoulos M, Kontopoulos E, conducted research on 204 symptomatic high-risk infants who have had differences in postural reflexes up to 1 year of life. Then the children are followed by the age of 3 years when diagnosis of a cerebral palsy could be set. Deviation in five or more of postural reflexes during the first months of life has been associated with the diagnosis of atetoid and spastic form of cerebral palsy. The study found a correlation between variations in certain reflexes until age of 1 year with a final diagnosis. This research has shown that the testing of postural reflexes before 1 month quantitatively and qualitatively is useful diagnostic tool for monitoring the child’s motor development. (7)

Molteni C, Magasiner V, Sayed R, Karplus M, explored the impact of low birth weight on motor development. As the sample were used two groups of infants, the first with very low birth weight, and another group with normal birth weight. There were significant differences in postural responses between the two groups. The first group of infants had greater differences in postural reflexes than the other group with normal birth weight. The research showed that the postural reflexes by Vojta method is useful as part of the neurological assessment of high risk infants (8).

Costa GC, Radice C, Raggi A, AM Kron, Angrisano A, Busato E, conducted extensive research on 2382 children. The authors examined the postural reflexes by Vojta between 4 and 6 weeks of life, a study was done as a screening method. They followed the children’s motor development and a year after 2295, or 96.3% of children who after the
first visit had a normal development, were normal after one year. The authors of the study describe the evolution of babies who were abnormal on first examination and started the importance of early rehabilitation. (9)

Imamura S, Sakuma K, Takahashi T, examined the motor development of 713 symptomatic high-risk infants. Infants were examined and classified into groups as infants with normal motor development, infants with very light motor disorders, moderate motor impairment, infants with severe motor dysfunction, suspected of suffering from cerebral palsy and other diseases at baseline. After a year the children were again examined and it was concluded that the significantly is increased number of children with normal motor development. It should be noted that the classification of cases is performed by the postural reflex test by Vojta and that the second examination is carried out after treatment by Vojta (10).

Samantha P, Mayiya P, in their work, which dealt with the 91 symptomatic infants at risk, emphasize the importance of postural reflex test method according to Vojta as a useful diagnostic method that at an early age of the child can predict motor development, and thus make possible duly rehabilitation (11).

6. CONCLUSION
The study of postural reflexes by Vojta method in symptomatic high-risk infants can predict motor development of children, and is a very useful diagnostic tool to detect abnormalities in motor development of children. This argument also favors the international literature, which tells about the usefulness of tests of postural reactions by Vojta method for the detection and monitoring of motor development in early life. Deviations in all 7 or more than 4 postural reflex at baseline until 3 months of life talking about moderate or more severe disturbance in motor development of a child under the age of one year in substantial numbers continue to diverge. Of course, deviations would be much more pronounced that infants are not treated according to Vojta therapy.

REFERENCES
5. Gajewska E, Samborski W. Application of Vojta’s method for early detection of developmental disturbances in very low birthweight infants with regard to Apgar score and asymmetric body positions; Annales Academiae Medicae Stetinensis, 2006; 52, Suppl 20:101-4.

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