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ASYMMETRY OF POSTURE IN INFANCY

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Asymmetry syndrome is one of the forms of delay of neuromotor development, which appears in newborns and infants, and belongs to the group of risk babies (present prenatal, perinatal or postnatal risk factors).

Asymmetry syndrome can be manifested with asymmetric head position, trunk asymmetry, and upper and lower extremity asymmetry on the same side.

Our study included 64 babies with the asymmetry syndrome who were treated at our Clinic. The most frequent risk factors were intracranial hemorrhages, hypoxic-ischemic encephalopathy and asphyxia. Clinical expression of asymmetry was correlated with ultrasound of CNS. The most frequent finding was a complete asymmetry of the head, trunk and extremities. *Acta Medica Medianae 2010;49(3):11-13.*

***Key words**: idiopathic asymmetry, symptomatic asymmetry, infant*

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Introduction

Asymmetry in childhood is a clinical condition with a wide spectrum of different manifestations in the field of form expression, etiology, localization and severity (1). Asymmetry can refer to posture and/or position of limbs, spontanious motor activity, reflexes, postural reactivity, muscular tonus. It can be: idiopathic or symptomatic, i.e. functional or structural (2).

Symptoms of asymmetry can be localized or generalized. Idiopathic asymmetry is most often developing, overcoming and benign and is most often related to position (positional preference). Positional preference is the position prefered by an infant, the position to which it gives priority, i.e., the most liked position, so, it spends most of the time in that position.

Symptomatic asymmetries are the consequences of an other pathological condition; in other words, their cause is known (plagiocephaly, peripheral paralysis of a facial nerve or brachial plexus, developing hip disorder, infantile scoliosis and other body deformities) (3). Asymmetry can be the first symptom of cerebral paralysis - spastic chemipharetic form.

It is of great importance to recognize this clinical condition in order to determine the exact cause using the additional differential diagnostic procedures and conduct an adequate therapy.

Every asymmetry in children born with a risk demands additional diagnostic methods: ECHO CNS, EGG, and when needed, computrized tomography and magnet resonance. Any kind of asymmetric head position, torso and limb asymmetry is considered pathological and requires habilitation therapy. Therefore, if asymmetry syndrom is found in infants and newborns after clinical examination, in their spontanious behaviour or postural reactions, primitive reflexes or tonus, disregarding the objective finding on CNS lesion range and lack of signs of pharesis, it is necessary to immediately start with habilitation therapy (4).

Aim

The aim of this paper is to determine the risk factors of asymmetry syndromes, the form of clinical expression and correlation of the clinical finding with the ECHO CNS finding in our patients.

Patients and methods

Sixty-four children up to 6 months of age with the Dg. Asymmetry syndrome were examined and involved in an early habilitation treatment at the Clinic of Physiotherapy, rehabilitation and prosthetics in Niš.

All children were examined for the first time at the Department for Gynecology, within five days after the birth, and after identifying the risk factor for the neurodevelopmental disorder. After the diagnosis, control examinations were done at the end of every month. The examination included neurokinetic examination (Voita's examination), neurological check-up, ECHO CNS, and in some cases CT and NMR were done. Immediately after diagnosing the asymmetry, the children were involved in habilitation treatment.

Results

Out of 64 children, there were 34 boys and 30 girls. Every child had at least one risk factor for neuromotoric developmental disorder. The prevalence of risk factors is shown in Table 1.

There are 204 risk factors, which on average is 3.2 risk factors per child. The most often risk factors were: risky pregnancy, illness of a mother in pregnancy, asphyxia and intracranial hemorrhage, while the least present risk factor was prematurity. Table 2 shows the number of risk factors per child.

Every child had at least 1, and at the most 6 risk factors in anamnesis. The largest number of children (34) or more than 50% had 3 risk factors in anamnesis. Table 3 shows the time of setting the diagnosis regarding the age of a child.

Dg. syndrome of asymmetry was most often set at the end of the first (37,5%) and in the second month of life (25%). 18,75% of children had this syndrome at birth. Diagram 1 shows the clinical form of asymmetry.

Complete asymmetry was present in 28 children (43,75%), head asymmetry (torticolis) in 24 (37,5%), isolated torso asymmetry in 8 (12,5%) and limb asymmetry in 4 (6,25%), which is shown in Diagram 1.

Clinical finding mostly correlated with ECHO CNS finding (68,75%), which is shown in Diagram 2.

Discussion

Our results show that the syndrome of asymmetry is most often found in euphoric, born on time children with BMI of over 2.500 gr, who were born after the risky pregnancy, and then had asphyxia, hypoxy-ischemic encephalopathy or intracranial bleeding, which is in correlation with the findings of other authors (5,6). It is most often the complete head, torso and limbs asymmetry at the same side. ECHO CNS mostly correlates with a clinical finding, but there are a lot of exceptions, in the sense that it can be more or less voluminous than expected.

Table 1: Prevalence of risk factors in children with asymmetry syndrome

risk factors	HIC	HIE	Asphyxia	HB	risky pregnancy	infect. in pregnancy	prematurity	other
number	22	18	26	18	50	26	8	36

HIC-Haemorrhagio intracranialis
HIE-Hypoxy-ischemic encephalopathy
HB- Hyperbilirubinemia

Table 2: Number of risk factors

number of risk factors	1	2	3	4	5 and more
number of children	6	14	34	4	6
%	9,38	21,87	53,13	6,25	9,38

Table 3: Time of makingthe asymmetry syndrome diagnosis

At birth	*I month*	II month	III month	IV month
12	24	16	8	4
18,75%	37,5%	25%	12,5%	6,25%

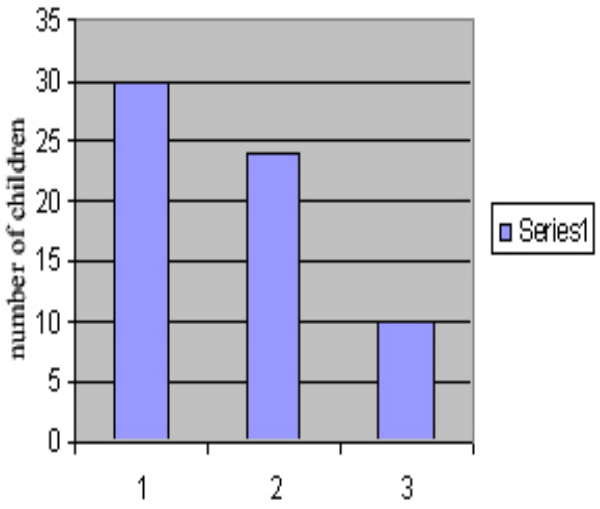

Diagram 1. : Clinical expression

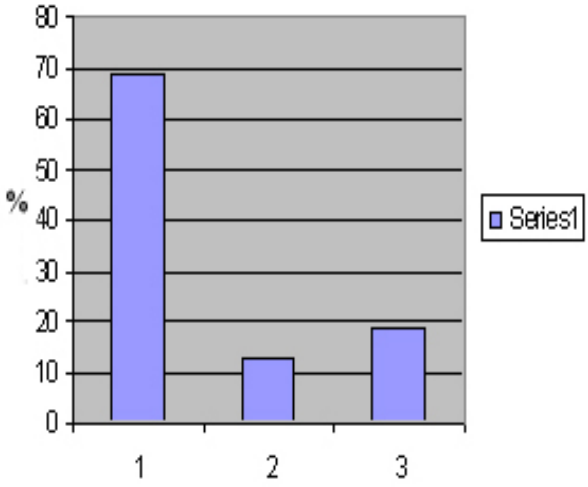

Diagram 2. Corelation of clinical findings with ECHO CNS

It is known that chemopharetic form of cerebral paralysis in children, recognized with difficulty in the first months of life, is most often expressed as asymmetry syndrome in the first half of the first year. That is why it is very important to recognize this syndrome and involve a child in habilitation treatment which can correct asymmetric position/posture and prevent fixing of pathological patterns of positions/posture and movements (7).

Conclusion

1. Asymmetry syndrome is relatively often in the developing period, and almost as a rule it appears in children born with a risk (pre-, peri- or postnatal factors).
2. Asymmetry syndrome can be expressed in a form of asymmetric position of the head, torso, limbs, but most often as a complete asymmetry of one side of the body.
3. ECHO CNS mostly correlates with a clinical finding.
4. Early recognition of an asymmetry syndrome is very important because of involvement of a child in habilitation treatment that can correct the present asymmetry and prevent fixing of pathological patterns of positions/ posture and movements.

References

1. Boere-Boonekamp MM, van der Linden-Kuiper LT. Positional preference: prevalence in infants and follow-up after two years. Pediatrics 2001; 107(2): 339-43.
2. Philippi H, Faldum A, Jung T, Bergmann H, Bauer K, Gross D, et al. Patterns of postural asymmetry in infants: standardized video-based analysis. Eur J Pediatr 2006; 165(3):158-64.
3. Philippi H, Faldum A, Schleupen A, Pabst B, Jung T, Bergmann H, et al. Infantile postural asymmetry and osteopathic treatment: a randomized therapeutic trial. Dev Med Child Neurol 2006; 48(1): 5-9.
4. Nuysink J, van Haastret IC, Takken T, Helders PJ. Symptomatic asymmetry in the first six months of life: differential diagnosis. Eur J Pediatr 2008; 167(6): 613-9.
5. Stellwagen L, Hubbard E, Chambers C, Jones KL. Torticollis, facial asymmetry and plagiocephaly in normal newborns. Arch Dis Child 2008; 93(10):827-31.
6. Van Vlimmeren LA, Helders PJ, van Adrichem LN, Engelbert RH. Diagnostic strategies for theevaluation of asymmetry in infancy-a review. Eur J Pediatr 2004; 163:185-91.
7. Dimitrijević L. Razvojne motorne smetnje u rizične dece. 1. izd. Niš: Medicinski fakultet, Prosveta; 2004. (Article in Serbian)

POSTURALNA ASIMETRIJA U DETINJSTVU

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Sindrom asimetrije je jedan od oblika odstupanja u neuromotornom razvoju novorođenčeta i odojčeta koja pripadaju grupi rizičnih (prisutni pre, peri i postnatalni faktori rizika). Može se manifestovati asimetrijom glave, trupa ili ekstremiteta sa iste strane tela.

Našim istraživanjem obuhvaćeno je 64 dece koja su zbog sindroma asimetrije lečena na našoj Klinici. Najčešće se radilo o deci koja su imala HIC (intrakranijalnu hemoragiju), HIE (hipoksično ishemičnu encefalopatiju) ili asfiksiju. Klinički nalaz bio je u korelaciji sa nalazom EHO-CNS, a najzastupljenija bila je kompletna asimetrija jedne strane tela. *Acta Medica Medianae 2010;49(3):11-13.*

***Ključne reči**: idiopatska asimetrija, simptomatska asimetrija, odojče*