THE IMPORTANCE OF PHYSICAL THERAPY IN THE TREATMENT OF UNILATERAL CONGENITAL BELL PARALYSIS – A CASE REPORT

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ABSTRACT

Peripheral paralysis of facial nerve in the newly-born can be congenital and developed. In clinical sense, paralysis of facial nerve is characterised by paralysis of mimic face muscles that are controlled by a facial nerve. A female newly-born, delivered by caesarean section was clinically diagnosed weakness on the right side of the face. Thirteen days after the birth the newly-born was examined by a physiatrist for the first time due to the weakness of the right facial side. During the first year of life a severe congenital lesion of facial nerve was diagnosed. Rehabilitation treatments were administered during the first year of life, with partialclinical improvement. The seriousness of facial nerve lesion hasa significant influence on the degree of recovery. It is very important to identify the type of lesion by using efficient technology,since it is the only way to provide early and adequate therapy

Keywords: *facial nerve, newly born, paralysis, physical therapy.*

ABBREVIATIONS

EMNG – electromyeloneurography

MR – magnetic resonance

CRP – C-reactive protein

CNS – central nervous system

INTRODUCTION

Facial muscle paralysis is defined as inability of a controlled movement of mimic muscles; it occurs due to dysfunction of facial nerve (of the seventh cranial nerve) that is responsible for their innervation (1, 2). The dysfunction of muscle is usually unilateral; it is characterised by asymmetrical face and difficulties in frontal muscle movements, eyelid muscles, cheeks, lips and chin (2, 3). Both sides of the face are rarely affected (4). Facial nerve paralysis can be congenital and developed (1, 3). Congenital paralysis of facial nerve is idiopathic in most cases, but it can often be found in combination with some syndromes as well (1, 5, 6). Developed paralysis in a newly-born can occur due to bad intrauterine position, delivery trauma, infection or inflammation of facial nerve and tumour of head and

neck (1, 7). Congenital hereditary paralysis of facial nerve was described in the literature (8, 9). Idiopathic paralysis of facial nerve known as Bell paralysis is very rare in the newly-born (3, 10). It was named after Scottish anatomist and surgeon Sir Charles Bell who first described it (11). The sign of Bell paralysis may vary from mild weakness to complete paralysis of mimic muscles of one side of the face (12). Prognostically, Bell paralysis has complete recovery in 80% of cases, in 15% permanent mild damages can be found, while severe damages are present in 5% of cases (4).

CASE REPORT

A female newly-born was delivered by caesarean section due to pelvic position in the 40th gestational week, with Apgar score 9, and asymmetric facial muscles, diagnosed by clinical examination. (Figure 1.) The pregnancy was normal, without any data of intrauterine infections; the mother did not receive any medication during pregnancy. At the first examination of the pediatrician the findings were normal except the weakness of the right side of facial muscles. Laboratory analyzes excluded infections (leukocytes 8.6; CRP 0.1 mg/l; findings blood count were normal). Neurologist diagnosed with paralysis facial nerve, the other neuronal findings were normal. Ultrasound CNS were normal. The finding of otorhinolaryngologist were normal. Thirteen days after the birth the newly-born was examined by the physiatrist for the first time due to asymmetric mimic muscles. During the examination the physiatrist found weakness of the right side of the face, maual muscle test the right side of face the values 0, and administered stimulation treatment for the face muscles. The stimulation treatment included electric stimulation of the damaged muscles and application of thermotherapy in 15 therapeutic procedures, after which the 15-day-break in application of those agents was made. During the application of stimulation treatment, kinesiotherapy was conducted twice per day by making passive movements; kinesiotherapy was not interrupted except when it was necessary due to general condition of the infant (febricity, respiratory and urinary infections and vaccinations).

When the infant was four months old, EMNG examination was done; the finding pointed to lesion of facial nerve of peripheral type and serious degree. (Figure 5.) In order to detect the reason of this facial nerve lesion, MR examination of endocranium was carried out, which pointed to hypotrophy of cerebral parenchyma and dilatation of subarachnoid space, laterally and front-temporally. The finding of MR angiography was normal. After the ad-



Figure 1. Image after birth showing facial muscle asymmetry



Figure 2. Image at the age of seven months at which face symmetric facial muscles whit a peaceful expression.



Figure 3. Image at the age of seven months at which face asymmetric facial muscles during crying

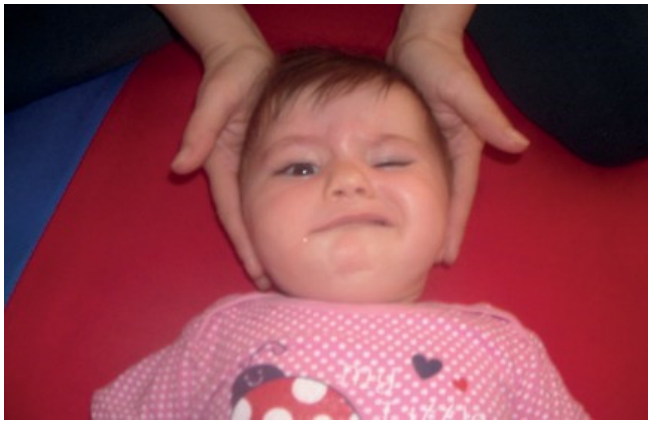


Figure 4. Image at the age of one year in crying at which face asymmetric facial muscles, is olso observed with partial clinical improvement

ministration of physical therapy and stimulation treatment in the duration of seven months, the facial asymmetry was still present together with the paralysis of the right side of the face. Manual muscle test the values of 1. In this period, physical treatment was primarily based on the application of kinesiothrapy which included the exercises of facial muscles, and later electro stimulation. At the age of twelve months the baby's development followed her calendar age, while the functional status of lesion of facial nerve revealed only partial improvement. The eye closed during the sleep and peaceful expression (Figure 2.), but during crying the facial asymmetry was still present. (Figure 3.) Intensive kinesiotherapy was applied further together with the thermotherapy as an introductory procedure. Further application of kinesiotherapy did lead to visible improvement in clinical presentation, manual muscle test the right side of face the values of 3. (Figure 4.)

DISCUSSION

The frequency of congenital facial nerve paralysis is 2.1 per 1000 of live births (1). Congenital facial nerve paralysis may be involved in severe disease of neoplasm, a trauma, a congenital anomaly, but it is more frequently idiopathic (5, 6, 13). Due to its relatively superficial course and long pathway through bony structures of the skull, facial nerve is subject to damage at birth (1, 6, 14); specifically, in our case the risk factors for development of paralysis was caesarean section and to pelvic position. The factors that may lead to facial nerve paralysis are the newly-born weight higher than 3.5 kg at birth, caesarean section, and the first or premature delivery (3). Facial nerve paralysis inthe newly-born is clinically characterised by immobility offrontal muscles with loss of nasolabial fold and facial asymmetry in the region of cheeks without movements at cry-

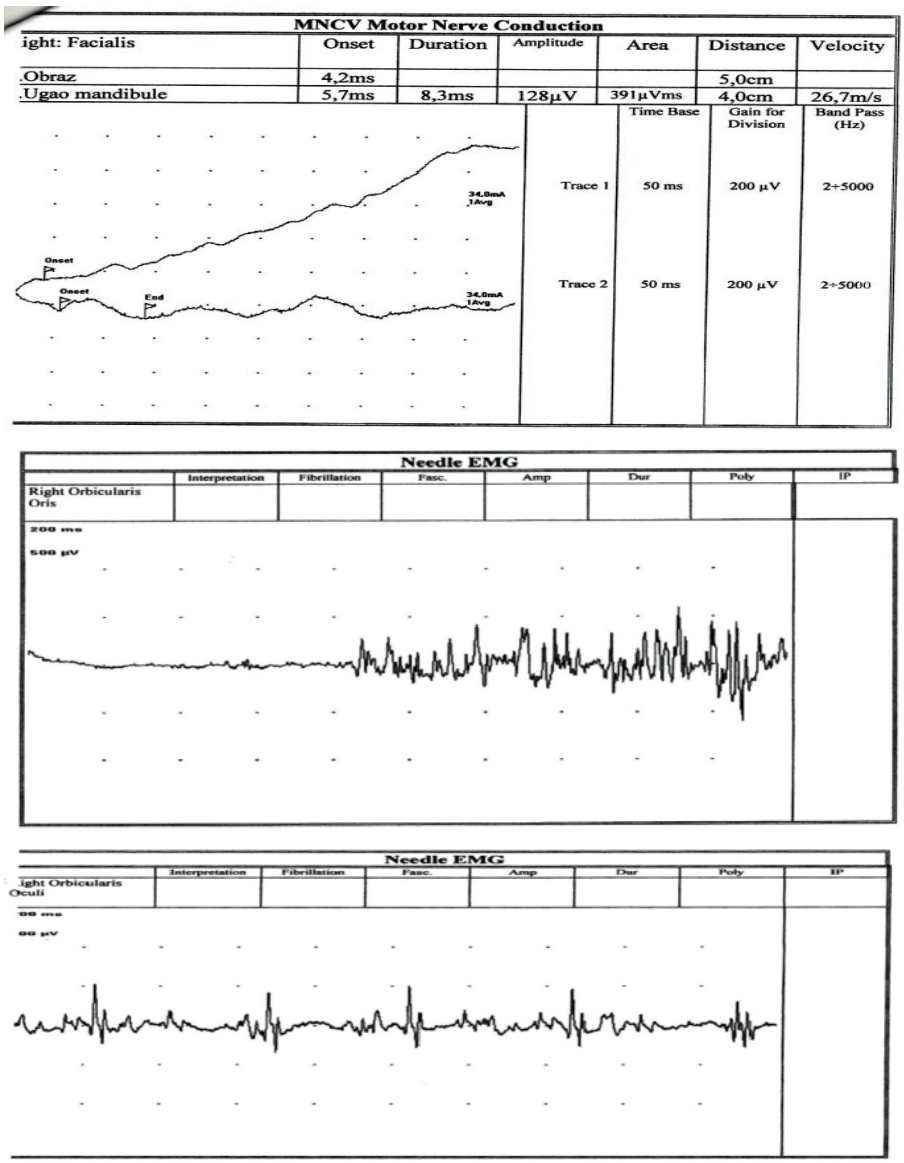


Figure 5. EMNG / the right cheek, mandibular angle, Orbicularis Oris, Orbicularis Oculi

ing, which was the clinical presentation in our case. (Figure 1.) In the cases of serious damage a child cannot close the eye due to complete paralysis of eye muscles (3).

A group of authors showed that the greatest number of facial nerve paralyses were caused by herpes simplex virus. In most of those patients conservative treatment was initiated and complete recovery occurred in 85% of children (14). The seriousness of paralysis influence the degree of recovery; the severe paralysis, like in our case, could hardly achieve complete recovery (3). In order to conduct adequate therapy of facial nerve paralysis, it is necessary to perform detailed diagnostics, since only the identification of authentic diagnosis can provide proper treatment (3). The application of physical therapy in the treatment of Bell paralysis is aimed at facilitation of recovery and decreasing the risk of complications (12). The administration of kinesiotherapy include the plan of correction which involves exercises for mimic muscles that will provide normal functioning of muscles, normal facial expression in peace, and facial symmetry in both voluntary and forceful emotional movements (15). If the administration of persistent physical therapy does not provide results, or the results are slight, it is necessary to perform surgery. The significance of physical therapy before the surgery itself is extremely great, since passive movements maintain trophic and elastic function of muscles and prevent contractions that may influence the result of operation. The greatest number of peripheral facial nerve lesions recover until the second month of life; after this period the possibility of surgery should be considered in cooperation with the specialist of plastic and reconstruction surgery (transfer of gracilis muscle, transplantation of masseteric nerve, stretching of temporalis muscle) (5, 16-18). The aim of this intervention is a restitution of smile and better social communication, since in addition to functional disorders (difficulties in feeding), these children may develop psychological problems caused by the reactions of their environment to their physical appearance. It is necessary to perform surgical treatment and rehabilitation until the seventh year of age, due to psychological status and social adaptation of patients (19). After the surgery, rehabilitation has also very important role in recovery, since it should be followed during kinesiotherapy programme (5). Kinesiotherapy will provide faster recovery and prevent the occurrence of possible complications. The paralysis of one side of the face in a newly-born caused by trauma has much better prognosis in comparison to congenital facial paralysis (1).

CONCLUSION

The severity of facial nerve damage influences the degree of recovery; in slight damages complete recovery is possible, while in more serious damages the application of conservative methods of treatment is important for the process of recovery. It is of vital importance to identify exact type of damage, because only in this way, prompt and proper therapy can be conducted. The administration of physical therapy in the early period may influence the degree of recovery and length of treatment, thus preventing the occurrence of complications.

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