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Application of the PNF (Proprioceptive neuromuscular facilitation) method in the facial palsy

Zastosowanie metody PNF (Proprioceptive neuromuscular facilitation) w przypadkach porażenia nerwu twarzowego

Summary

Facial palsy much is making it difficult for the sick person to function in the society. Asymmetry of the face, problems with the articulation, hampered accepting foods is only some of symptoms of this illness. The number of vexing long staying problems much is lowering the physical and mental state what next has the intense influence on the psyche of the sick person. Fortunately many possibilities a medicine of the 21st century is bringing which to us, allow for early reacting and the significant reduction of negative results in the course of this illness. Presenting the possibility is a purpose of the work of applying the PNF concept in the facial palsy. Results: In the facial palsy the kinesitherapy we should begin like earliest. Peculiarly in the application they will be useful here elements of the PNF concept.

Key words: PNF (Proprioceptive neuromuscular facilitation), facial palsy, physiotherapy

Streszczenie

Obwodowe porażenie nerwu twarzowego znacznie utrudnia choremu funkcjonowanie w społeczeństwie. Asymetria twarzy, problemy z artykulacją, utrudnione przyjmowanie pokarmów to tylko niektóre z symptomów tej choroby. Szereg dokuczliwych dolegliwości długo utrzymujących się znacznie obniża samopoczucie, co ma z kolei ogromny wpływ na psychikę chorego. Na szczęście wiele możliwości, jakie niesie nam medycyna XXI wieku, pozwala na wczesne zareagowanie oraz znaczne zmniejszenie negatywnych następstw w przebiegu tej choroby. Celem pracy jest przedstawienie możliwości zastosowania koncepcji PNF w porażeniu nerwu twarzowego. Wnioski: W porażeniu nerwu twarzowego kinezyterapię należy rozpocząć jak najwcześniej. Metoda PNF odgrywa bardzo ważną rolę na etapie rehabilitacji w porażeniu nerwu twarzowego.

Słowa kluczowe: PNF (Proprioceptive neuromuscular facilitation), porażenie nerwu twarzowego, fizjoterapia

Introduction

The district facial palsy causes lots of difficulties to the sick person especially in the society area. A facial asymmetry, problems with the articulation, hampered accepting foods are only some of symptoms of this illness. The number of vexing long staying problems much is lowering the frame of mind what next has the intense influence of the sick person psyche. Fortunately many possibilities, which bring to us the 21st century medicine, allow for early reacting and the significant reduction of negative results in the course of this illness.

The facial nerve is seventh from twelve pairs of cranial nerves. He contains motor, sensory fibres and little parasympathetic fibres. However in the majority part these are motor fibres, which are supplying the muscles of the face and the neck in nervous connections. He is supplying in felling way the auditory canal and the paracentral surface of the auricle. He is also moving information about the taste from 2 / 3 front of tongue. Parasympathetic fibres are allocated for glands and mucous membranes of throat, palate, the nasal cavity and salivary glands (Stems, Williams, 2013). (Fig. 1.)

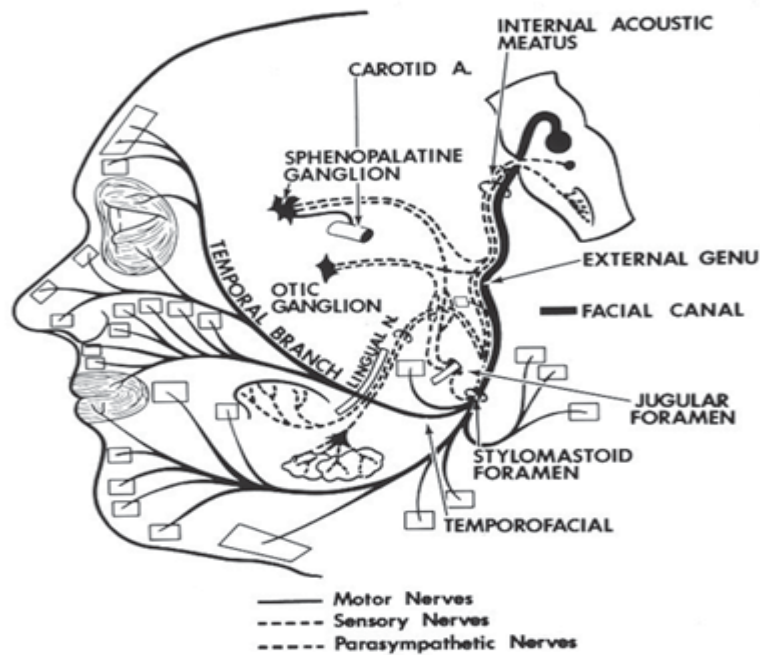


Fig. 1 Facial nerve

District paralysing of the facial nerve is characterized above all by a lack of the locomotion of muscles for the one side of the face (monoplegia facialis). As a result of this damaging the face of the sick person is becoming asymmetrical. It is reaching for smoothing skin wrinkles out on the ill side. Muscles correctly innervated half of the face are winning over the paralysed ones. Here drawing the tip of the nose aside and tormenting the account of mouth are characteristic on the ill side (Bakuła et al. 2002). Not-closing the eyelid, caused by muscle paralysis of the circular bow watch, is a biggest problem which can cause inflammatory processes of the dry cornea, and in consequence with her ulceration. Paralysis is most visible at face moves during the conversation. Only muscles on the healthy side are contracting and are pulling the mouth and the nose to it. This is reaching for disturbing the process of the secretion of saliva as well as for disturbing tasting in front 2/3 of tongue. It can also achieve the numbness of the smell. As the first manifestations in the examination sick persons are reporting pain behind the ear and loss of the taste. They have also problems in taking foods as well as oversensitivity to high sounds caused by injuring the stapes muscle which the inner ear is sheltering from high sounds. Establishing the kind of paralysis is very important, especially if this is central or district damage. If we are talking about paralysis located at the central nervous system level, manifestations are different from of the ones of district origin. It is also reaching to one side of carrying movements of muscles of the face, however it is regarding only the lower part of the facial nerve. An ability to kept frown is staying, and the process of the secretion of saliva and tasting isn't disturbed. It is happening this way therefore, because the innervation of muscles of the top of the face comes from both cerebral hemispheres (Bakuła et al. 2002).

Reasons for injuring the facial nerve can be of primitive or secondary coming. We can achieve primaevial injury in case of sudden cooling down the face. It can also be the inflammatory or allergic process, injuries to the temporal bone, the brain stem as well as the viral infection (Herpes Simplex) (Finsterer, 2008). Pathological processes however being in progress can be a secondary cause in the immediate vicinity of nerve, e.g. cancers, otitis media, shingles, parotitis (Byrne, Chu, 2008; Peiteresen, 2002).

Very much at establishing the accurate diagnosis additional examinations are of help. Rtg, the computed axial tomography and the magnetic resonance are vivid basic researches. We can also carry out the electromyography which is checking the activity of muscles. However electroneurography is checking over the excitability and the speed of handing nerve impulses (Bahar et al. 2005; Bakuła et al. 2002). Also checking the hearing is an important examination. A scale of Pietruski and Hous'a and Brackmanna will also be useful in the assessment of the degree of damaging the activity of the VII nerve (Bożek-Sochacka et al. 2004; Brzoznowski et al. 2010).

Curing the facial palsy in the first contact consists in absorbing glucocorticosteroids and vitamins from the group B. However to results of the treatment is enjoying considerable influence time of beginning therapy, the sooner we will start treating the negotiations will be more favourable. It isn't possible here to forget about the education of the patient about the course of disease, but first of all about the prevention of complications. We should remember not to lead for the corneitis, by applying appropriate drops reducing drying the conjunctiva. It is possible for that purpose to apply also passive closing

the eyelid, or carrying an eyepatch. It is also essential in order to keep the face in the identical temperature, slowly to prevent to sudden cooler weathers and draughts. It is possible to raise the corner of the mouth by applying the relevant application with tape (taping). The patient should not sleep on the paralysed side in order not to stretch the skin and muscles. Physiotherapy is valuable supplementing the drug treatment. We should apply the local central heating in the form of thermal compresses or the Sollux lamp (blue filter). The warm weather is precipitating regenerations of the nerve. The electrostimulation leaning against the electro examination is also being recommended (Adamczak 2003; Huber et al. 2008). However the long conducted electrostimulation can lead the market to contractures of paralysed muscles. Galvanizations cathodal using the Bergoniego mask and the iontophoresis with the appropriate medicine prescribed by the doctor (Low et al. 2009). Therapy using changeable magnetic fields is bringing promising benefits to the low frequency in the form magneto of the stimulation (Cieřlar et al. 2002; Mucha et al. 2006). Massage of paralysed muscles of the face, above all of muscle of the circular bow watch and the mouth should be conducted painlessly (Magiera, Walaszek 2003). However physical treatments or the pharmacotherapy won't replace the move conscious of the most important activity he is which alone of muscles for us. Therefore the kinesipathy is here very valid for the component on the way to full moving back oneself of symptoms of illness. The patient should alone in front of a mirror perform proper exercises which the physiotherapist will commission to him. Letting movements are very valid for it for reconstructing the correct function of muscles of the face on the side paralysed.

We are ranking among exercises which the patient alone can carry out e.g. whistling, blowing through the straw into the bottle with water, blowing balloon, stuffing the cheek with the tongue, frowning, pronouncing sound (e.g.: B, O, P, U), wide opening the mouth, baring teeth. The patient should perform these exercises several times per day. We can get very good effects during the individual work with the patient. Presence of the psychotherapist which exactly is discussing and showing exercises is helping and motivating the sick person. The patient knows how correctly to make a move, and in addition the psychotherapist can additionally stimulate the works of the muscles of the sick person. An enough already spread PNF concept is presenting such possibilities to us. This method enables to reconstruct the motor function of the patient by stimulating proprioceptors and exteroceptors of the body. PNF therapy perceives the patient as a whole, that is isn't dealing with only a malfunctioning body part but also is using healthy his parties. A fact that PNF is a completely painless and friendly method is a great plus for the patient. She is leading to the highest level of educating the sick person and to active his involvements in making plans for therapy and the further rehabilitation. On account of wide abilities of the influence, the PNF method is applied with patients with neurological problems but also at the orthopedic ward, of pediatrics, as well as at the orthotherapy (Kiebzak et al. 2006; Dominiek et al. 2009) (Fig. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12).



Fig. 2 Raising eyelids is a task of patient (like at being surprised). The psychotherapist is combatting or support the movement. (musculus epicranius)



Fig. 3 Knitting one's brows is a task of patient. The psychotherapist is combatting or support the movement. (musculus corrugator supercilii)



Fig. 4 Tightening eyes is a task of patient. The psychotherapist is combatting or support the movement. (musculus orbicularis oculi)



Fig. 5 The patient task is to wrinkle the nose (kind of something evil-smelling). The psychotherapist is combatting or support the movement. (musculus nasali)

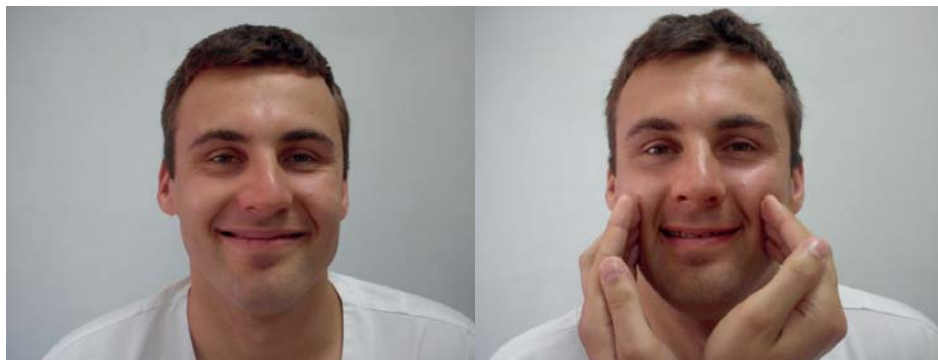


Fig. 6 The patient task is to smile. The psychotherapist is combatting or support the movement. (musculus risorius, musculus zygomaticus)



Fig. 7 Doing the small beak is a task of patient. The psychotherapist is combatting or support the movement. (musculus orbicularis oris)



Fig. 8 The patient task squinting is (as if the sun dazzled into eyes). Therapist's task is to counteract or assist in movement. (musculus orbicularis oculi)

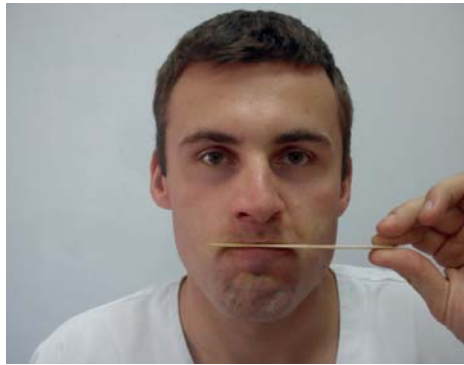


Fig. 9 The patient task holding is with mouth tongue depressor. The psychotherapist is making rather small moves left and to the right with tongue depressor. (musculus orbicularis oris)



Fig. 10 Of patient transferring once is a task upper time of the lower lip in direction to the hand and back. (musculus orbicularis oris)



Fig. 11 Therapist is drawing aside with tongue depressor upper lip on the ill side. Pressing the tongue depressor to teeth is setting the patient (move like at shaving the moustache off). (musculus orbicularis oris)

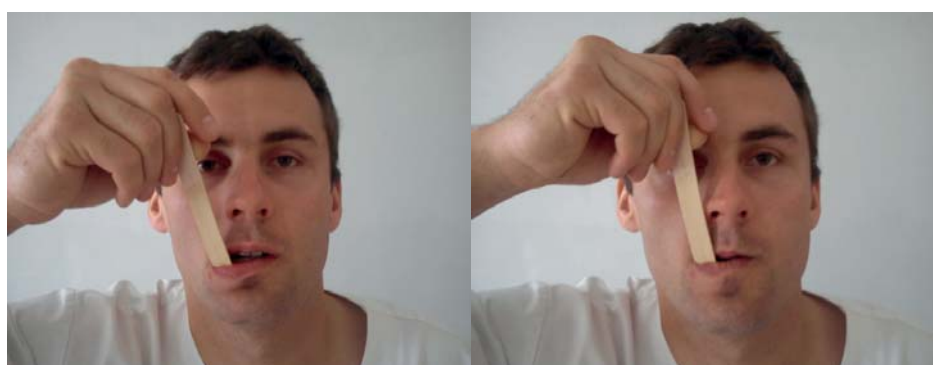


Fig. 12 The psychotherapist is drawing aside with tongue depressor lower lip on the ill side. Pressing the tongue depressor to teeth is setting the patient (move like at shaving the beard off). (musculus orbicularis oris)

Discussion

If a proper treatment is applied negotiations are rather favourable. The patient is coming back to the efficiency after about two months, however it is conditioned individually and depends on the cause of paralysis. Here an age of the patient is outweighing. Younger persons as a rule more quickly are coming back to the efficiency than elderly people. However Obrębowski and Pruszewicz are underlining, that if in the period of 2 first weeks manifestations of recovering, i.e. an improvement in the muscle tone, an appearance of trace active movements and an improvement in findings aren't observed, one should consider the surgical treatment (Obrębowski, Pruszewicz, 2001; Choi et al. 2013). Krukowska and others conducted the assessment of the impact of physiotherapy to the regeneration of the facial nerve. Excitabilities of the nerve are pointing at the being of indicating the rate of the accommodation, i.e. the evaluation based on the strength of the electric stimulus needed for provoking a cramp. It

enables the early evaluation of injuring the facial nerve and keeping up with his acrobatics, negotiations and optimum planning physiotherapy are facilitating sick persons with injuring the facial nerve. Amongst 70 patients were taken planned containing therapy exercises of facial muscles of the face, automatic massage (so-called face-taping exercise), manual massage, sollux, impulse magnetic field of the low frequency, laser biostimulation. An improvement was get amongst patients in the time from 2 up to six weeks of the treatment (Czernicki et al. 2010). Peitersen applied the neuromuscular re-education with persons with paralysing muscles of the face. The patient performed exercises recommended by him in front of a mirror from 5 to 10 times per day getting the improvement after 14 treatment days (Peitersen, 1982). Examinations conducted by Kiebzaka, in which he analyzed dynamics of the return of the function of facial muscles at children with symptoms of the facial palsy, were shown, that had get good results in the group where neurophysiological methods of Vojty streamlining were applied, PNF and Castillo-Morales'a. (Kiebzak et al. 2006).

Notifications of other authors are confirming the rightness of the associated drug treatment and the rehabilitation what is supporting optimal conditions of the regeneration of the nerve, reinerwację and return of the activity of the mime face (Matos 2011; Allufi et al. 2012).

Conclusions

1. PNF method plays a very important role on the rehabilitation stage facial palsy.
2. The facial palsy kinesiotherapy should be started as soon as possible.
3. The rehabilitation in the significant degree influences dynamics of the return of the activity of paralysed facial muscles.

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