*EFFECTVENESS OF ACUPUNCTURE IN PATIENTS WITH PERIPHERAL FACIAL PALSY.*

***Review***

***Erisa MANE1 PT, MSc; Elda LATOLLARI2 PT, MSc;***

*1Ministry of Health and Social Protection, Healthcare Specialist; UMT, FMTS, lecturer.*

*2 Physical therapist*

***Introduction:*** *Facial palsy is a form of temporary facial paralysis resulting from damage or trauma to the facial nerves. Physical therapy include facial exercises, therapeutic methods and different modalities. The acupuncture is a new oriental method and its efficacy results on neuromuscular improvement of facial symmetry.*

***Objectives:*** *The main purpose of this study is to identify the effects of physiotherapeutic methods in the management of patients with Facial Palsy. The specific objectives that were achieved through this study are:*

* *To analyze the role of acupuncture.*
* *To compare methods and studies.*

***Method****: This study is a meta analysis, literature review of 10 randomized control trails of the last 7 years. All studies have a major focus on the use of acupuncture in patients with facial palsy. The methodology of studies varies in randomized trails, including 2419 patients. Datas are extracted from 21 medical data bases. The evaluation is realized with the PEDro scale and EpiMeta which shows the validity of each*

***Results****: The literature used in this study claimed that conservative physiotherapeutic treatment and alternative therapies such as acupuncture with exercises is effective in improving of facial symmetry and muscular function. 20 % of trails have used acupuncture combined with medications, one trail has studied laser acupuncture and 10% of trails has studied electrotherapy. The most accomplished studies are those with big number of people. Effectivity of therapy depends on depends on intensity and frequency of the therapeutic sessions. According to PEDro, 1 study has 3 points, 6 studies, respectively 60% have medium level 4-6 points and 3 studies respectively 30% have high level with 7-10 points.*

***Conclusion****: After analyzing and discussing the selected literature, we conclude that the most commonly used method acupuncture with exercises. The most frequent tests are House Brackman scale and FDI. Scientific research on this topic is limited, so it is suggested to increase research by different medical staff and authors.*

***Key Words****: facial palsy, physical rehabilitation, acupuncture*

**BACKGROUND**

**1. What is Facial Palsy**

Facial palsy is an acute onset, idiopathic peripheral lower motor neuron paralysis affecting all facial expression muscle groups in one side of the face only. The disease results in physical, social, and psychological effects by causing facial nerve dysfunction. Depending on the affected trunk and localization (proximal or distal), various patterns of motor function loss can be seen and used for primary diagnosis of the lesion site. In most research studies, Bell’s palsy is thought to resolve spontaneously within three weeks, and most patients heal spontaneously within that time. After this period, most cases are thought to involve sequelae such as paresis, contracture, facial spasm, or synkinesis.

Corticosteroids and antiviral drugs are widely used in the acute stage of the disease to accelerate the healing process and reduce the risk of complications. However, because the traditional form of treatment is not an effective option in patients with sequelae, the medical treatment of sequelae of Bell’s palsy is limited to treatments such as botulinum toxin type A, surgery, and physiotherapy.

Acupuncture is a low-risk and safe therapeutic method in various diseases, including Bell’s palsy, and there is no evidence of any deleterious effects. It is, therefore, safely used as a complementary treatment in both children and adults. Electroacupuncture is particularly widely used in the treatment of Bell’s palsy. Owing to the importance of facial symmetry in terms of perceived attractiveness and its effect on interpersonal communication, patients exhibiting no improvement after antiviral and steroid therapy and who develop sequelae may receive electroacupuncture therapy to bring about the best possible and earliest improvement and to halt complications. Thus, we designed this study to investigate whether acupuncture is effective and safe in treatment of Bell’s palsy sequelae and evaluated its effectiveness in terms of functional and electrophysiological findings.

**2. METHODS AND DESIGN**

This study is a meta analysis, literature review of 10 randomized control trails of the last 7 years. All studies are focused in analyzing effects of physical therapy especially method of acupuncture for treatment of facial palsy. All studies have a major focus on the use of acupuncture in patients with facial palsy. The methodology of studies varies in randomized trails, including 2419 patients. The age of patients varies from 15-75 years old. The follow-up varies from 12 weeks to 2 years. All included patients are diagnosed with unilateral facial palsy. In study are included also patients who are treated with acyclovir and prednisolone. Patients which are excluded from study are patients diagnosed with central facial palsy (caused by tumors, AVC, brain trumas etc). Each patient gave written informed consent before commencing any study-related procedure.

**3. Measures**

The main measures for this study are the results and improvement of patients. The improvement of patients is valued by: mimics (movements of eyes, eyebrows, smile, air, clenching of teeth), improvement of facial symmetry, improvement of synkinesis. In some studies is used medical images, videos, pictures, sense examination, EMG, ENG.

Specific measures: pain, FDI, Huse-Brackman Scale, Sunny Brook system, CMPAs, 16PF, stiffness scale, presence of spasm and contractures.

**4. SEARCHING STRATEGY**

Datas are extracted from 21 medical data bases like TRIP, MEDLINE, Pubmed, Cochrane library, CINAHL, AMED, EMBASE,LILACS, Science of Web, ProQuest 5000, Meditext, Science Direct, Physiotherapy Evidence Database, Proquest Digital Dissertations, AustralianDigital Thesis Program, PEDro, WangFang Database, Google Scholar, ClinicalTrials.gov, Scielo, DARE. The evaluation is realized with the PEDro scale and EpiMeta which shows the validity of each study.

**5. STUDY CRITERIA**

**5.1. Included criteria**

• RCT studies

• Studies of the last 7 years

• English studies

• Free studies

• Studies with specific results

• Studies that included patients with age above 18

• Studies that study effects of acupuncture in peripheral facial palsy

**5.2. Excluded criteria**

• Non free studies

• Review studies

• Studies with no good results

• Studies that are made before 2010

• Studies that are focused in central facial palsy

• Studies that are focused in children

**5.3. Criteria for included patients**

• Patients with peripheral facial palsy

• House-Brackman Scale (Grade II)

**5.4. Criteria for excluded patients**

• Central facial palsy

• Patients with pacemaker,

• Patients with psychological problems

**6. THE TABLES**

**1) Table of therapy frequency used in studies**

In these table we showed 10 studies that we are analyzing in this review. Two studies valued effects of acupuncture and medication in treatment of peripheral facial palsy, one study valued effects of laser acupuncture, two studies valued effects of electroacupuncture and the last five studies valued effected of manual acupuncture combined with exercises.

**2) Table of study, measures and results**

In this table we have shown the measures that are done in each of the studies. Every study has its own measures but mostly of them have used measured like pain, stiffness, FDI (facial disability index, House-Brackman scale, SunnyBrook system, presence of contractures, spasms, CMAPs (latency of nerve potential), synkinesis questionnaire, 16PF (personality factors questionnaire). We included also the therapy that is used in each of the studies. Therapies are acupuncture that is used in all studies but also compared with laser, electro stimulation, medication (prednisolone) and exercises (mimics: eyes movements, lips mobility, ). We also included the results of each study.

**3) Validity of studies by PED-ro scale**

**PEDRO SCALE**

1-eligibility criteria were specified

2. subjects were randomly allocated to groups (in a crossover study, subjects were randomly allocated an order in which treatments were received)

3. allocation was concealed

4. the groups were similar at baseline regarding the most important prognostic indicators

5. there was blinding of all subjects

6. there was blinding of all therapists who administered the therapy

7. there was blinding of all assessors who measured at least one key outcome

8. measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups

9. all subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analysed by “intention to treat”

10. the results of between-group statistical comparisons are reported for at least one key outcome

11. the study provides both point measures and measures of variability for at least one key outcome

**7. Results**

|  |  |  |
| --- | --- | --- |
| **Therapy** | **Nr of studies** | **Frequency** |
| Acupuncture + Medication | 2 | 20% |
| Laser Acupuncture | 1 | 10% |
| Electroacupuncture | 2 | 20% |
| Acupuncture | 5 | 50% |

**Table 1. Frequency of therapy**

**Graph 1. Frequency of therapy**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Nr** | **Study** | **Measure** | **Therapy** | **Results** |
| **1** | Liu Li-an et al; 2013 | House-Brackman scale | Electroacupuncture: Dicang (ST4), YangBai (GB14), Tayiang (EX-HN5), Yifeng (TE17), Hegu (L1), Xiaguan(ST7), Quanlian(SI 18) | The cured rate: 68.9% continuous wave group, 60% diperse wave and 65.9% intermittent wave.  No significant difference (p>0.05) in 3 groups. |
| **2** | Sha-Bei Xu et al; 2013 | House-Brackman scale  Mimics: movement of eyes, eyebrows, strengthen of teeth | Acupuncture: Dicang (ST4), Jiache (ST6), Yangbai (GB14), Xiaguan (ST7), Taiyang (EXHN5), Quanliao (SI18) and Yifeng (TE17), Hegu (LI4) | After 6 months, patients in the de qi group had better facial function (4.16, 95% confidence interval [CI] 2.23–7.78),  better disability assessment (9.80, 95% CI 6.29– 13.30)  Better quality of life (29.86, 95% CI 22.33–37.38). |
| **3** | Du Ling-zhi; 2013 | House-Brackman scale  Portman scale  -FDIP -FDIS | Acupuncture: Dicang (ST4), Jiache (ST6), Yangbai (GB14), Xiaguan (ST7), Taiyang (EXHN5), Quanliao (SI18) and Yifeng (TE17), Hegu (LI4) and special acuipoint Lingui Baffa | Method of Lingui Bafa is more effective than normal acupunture |
| **4** | Tung et al 2015 | House-Brackman scale | -Prednisolone 30 mg, pepdicine 20 mg -Akupunktura : Quanliao (SI18), Sibai (ST2), Dicang (ST4), Jiache (ST6), Yangbai (GB14), Hegu (LI4), Yifeng (TE17) Taiyang (EX-HN)  Exercise | The overall improvement (grade 3 or better) was 86.9% in the steroid group, 96.4% in the acupuncture group and 89.5% in the control group respectively.  The difference in degree of recovery and speed of recovery in the three groups not statistically significant |
| **5** | Kwon et al; 2015 | House-Brackman scale  FDI  Movement of lips  Stage of stifness | Akupunktura : Quanliao (SI18), Sibai (ST2), Dicang (ST4), Jiache (ST6), Yangbai (GB14), Hegu (LI4), Yifeng (TE17) Taiyang (EX-HN)  prednisolone | The acupuncture group exhibited greater improvements in the FDI social score (mean difference, 23.54; 95 % confidence interval, 12.99 to 34.08) and better results on the FDI physical function subscale (mean difference, 21.54; 95 % confidence interval, 7.62 to 35.46), Sunnybrook Facial Nerve Grading score (mean difference, 14.77; 95 % confidence interval, 5.05 to 24.49), and stiffness scale (mean difference, −1.58; 95 % confidence interval,−2.26 to −0.89) compared with the waiting list group after 8 weeks. No severe adverse event occurred in either group |
| **6** | Zhang et al; 2016 | House-Brackman scale  16PF  Symmetry of face | Acupuncture Quanliao (SI18), Sibai (ST2), Dicang (ST4), Jiache (ST6), Yangbai (GB14), Hegu (LI4), Yifeng (TE17) Taiyang (EX-HN dhe cupunc ushtrimor | The de qi group had better facial function ( [OR]: 4.16, 95% [CI]: 2.23–7.78).  In de qi group, the low HB (OR: 0.13, 95% CI: 0.03–0.45)  Low Social Boldness score (OR: 0.63, 95% CI: 0.41–0.97). In control group, low HB s (OR: 0.25, 95% CI: 0.13–0.50), low Vigilance score (OR: 0.66, 95% CI: 0.50–0.88), and high Tension score (OR: 1.41, 95% CI: 1.12–1.77) |
| **7** | Liu et al2018 | House-Brackman scale | Medicaments, cupuncture, burning of plants | Compared with drug group, combined group showed an obviously higher total effective rate, M wave amplitude of facial nerve of orbicularis oculi muscle, orbicular muscle of mouth as well as frontalis muscle, and the motor unit potential voltage. The facial movement incubation period of the combined group is significantly shorter than that of the drug group (p<0.05). |
| **8** | Li et al; 2018 | ESA (muscular force of eyes)  ECWM | Akupunkturë: Cuanzhu (BL2), Yangbai (GB14), Sizhukong (SJ23), Shangming, Waiguan (SJ5), and Zhaohai (KI6) dhe Bi’nao (LI14) | Bi’nao is a safety method in treating the hypophasis of patients with Bell’s palsy |
| **9** | Ton et al; 2019 | House-Brackman scale  FDI  Sunnybrook system | Normal laser in points ST4, ST6, ST7, SJ17 BL2, GB14, SI18 | LLLT have shown positive therapeutic effects in acute Bell’s palsy, |
| **10** | Oksuz et al; 2019 | House-Brackman (III)  Sunnybrook system  Facial nerve potential | Acupuncture and electroacupuncture  Medical treatment | There was significant difference between pretreatment and posttreatment compound motor action potential values of the patients within the acupuncture group (p Z 0.036). However, the significance level in the improvement rate in the acupuncture group was higher than that of the control group. |

**Table 2. Measures and results**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PED-ro Scale** | | | | | | | | | | | | | |
| **Nr** | **Study** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **All** |
| **1** | Liu et al 2013 | **0** | **1** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **1** | **1** | 4 |
| **2** | Sha-Bei et al 2013 | **1** | **1** | **1** | **1** | **0** | **0** | **1** | **1** | **1** | **1** | **1** | 8 |
| **3** | Du-Zhing-Li et al 2013 | **0** | **1** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **1** | **1** | 5 |
| **4** | Tong et al 2015 | **1** | **1** | **0** | **1** | **0** | **0** | **1** | **0** | **1** | **1** | **1** | 6 |
| **5** | Kwon et al 2015 | **1** | **1** | **1** | **1** | **0** | **0** | **1** | **1** | **1** | **1** | **1** | 8 |
| **6** | Zhang et al 2015 | **0** | **1** | **0** | **0** | **0** | **0** | **1** | **1** | **0** | **0** | **0** | 3 |
| **7** | Liu et al 2018 | **0** | **1** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **1** | **1** | 5 |
| **8** | Li et al 2019 | **1** | **1** | **0** | **1** | **1** | **0** | **1** | **1** | **0** | **1** | **1** | 7 |
| **9** | Ton et al 2019 | **0** | **1** | **0** | **1** | **1** | **0** | **0** | **1** | **0** | **1** | **1** | 6 |
| **10** | Oksuz et al 2019 | **1** | **1** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **1** | **1** | 5 |

**Table 3: Validity of studies**

**Graph 2. Validity of study**

**Validity of studies**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Frequency** | **Percent** | **Valid Percent** | **Cumulative percent** |
| **Valid Low**  **Medium**  **High**  **Total** | 1  6  3  10 | 10.0  60.0  30.0  100.0 | 10.0  60.0  30.0  100.0 | 10.0  70.0  100.0 |

**Tab 4 . Validity of studies according to level**

**According to PED-ro**

* **0-3 points = low level**
* **4-6 points = medium level**
* **7-10 points = high level**

**Graph2. Validity of studies according to level**

**DISCUSSION**

Peripheral facial palsy is caused by an idiopathic lesion in facial nerve (7 th cranial nerve). Its incidence range 15-30 cases for 100000 people in a year. Patients experience not only physical problems but also have psychological problems because face loses its symmetry and they don’t look good. Physical symptoms include: people can’t open and close eye in affected side, can not smile in proper way because facial muscles in affected side are weak and have lost their tones. Physical rehabilitation is an option for treating facial palsy. My study is a meta analysis, literature review which have in focused effects of acupuncture in treating facial nerve palsy. According to my work I conclude that protocol of rehabilitation consists in: acute phase starts with corticosteroids (prednisolone). Physical rehabilitation starts from weeks 2-4 and lasts till weeks 26-42. After medication treatments we start exercises like PNF and neuromuscular rieducation. PNF exercises cause muscular contractions and reduce time of rehabilitation (Brach et al 1997). This study included 14 patients and its focus was on effects of exercises. Then this study was improved by Cronin et al (2003). Results of the study showed that exercises improved muscular weakness and nerve function. Our study is focused in analyzing effects of acupuncture. Acupuncture is a good option for treatment and does not have any side effects. All studies are realized in Asia because acupuncture is developed in China, Japan, South Korea while in Europe acupuncture is used more and more nowadays. Li et al (2015) made a literature review, meta-analysis which had in focus effects of acupuncture. All studies in this review studied effects of acupuncture comparing with other rehabilitation methods but databases were not completed and with errors. Results of this review showed that acupuncture was a very effective rehabilitation methods but there was not enough data related to safety of acupuncture.

At same year Wang et al studied effects of acupuncture combined with vitamin B-12. All studies included in this review were RCT studies. Results showed that acupuncture combined with vitamin B-12 had more positive effects in rehabilitation of patients comparing with patients who were treated only with acupuncture (RR = 0.71, 95 % CI: 0.58 to 0.87; p = 0.001). For having better results in rehabilitation of patients with acupuncture is important two factors: experience of therapist with acuiponts manipulation and how cooperative are patients because acupuncture is a very complicated method. Effects of acupuncture depends on penetration depth, force of penetration of the needles.

When facial palsy is valued with grade III or IV (House-Brackman Scale) exercises are not so much effective in treating facial palsy (Teixiera et al 2015). In this case it is recommended to use electro acupuncture combined with exercises. Electric current helps in regeneration of nerve while exercises helps muscles to be strong and to retake their tones. Exercises are: smile, ironic smiling, kiss, lip mobility etc. This study included a small number of people and its results were not completed.

Laser is a good option that is used to reduce inflammation. Laser reduces inflammatory cytokines and helps in reproduction of anti inflammatory factor (main growth factor of fibroblasts). Then laser stimulates prostaglandins which plays an important role in regeneration of tissues, collagen synthesis. According to Chow et al low level laser (LLL) dilates blood levels, increase microcirculation, improve neural regeneration and immunological processes. LLL increases cell reproduction and plays an important role during mitosis phase.

Laser is used not only in medicine but also in esthetic field. Study at 2019 (China University hospital) studied effects of laser acupuncture in treatment of chronic facial palsy. Laser acupuncture is used during chronic phase of nerve palsy but we do not a lot about effects of laser acupuncture that’s why this study is made. This was a pilot study and they included 32 patients. Every patients is valued by House-Brackman scale. Laser helps to stimulate in acupuncture points. After 6 weeks researchers concluded that patients were recovered. They gained facial symmetry. Study had good result but there were a small number of patients. It is necessary to make other analysis.

**CONCLUSION**

During acute phase it is good to use laser acupuncture because helps in reduction of inflammation. Laser acupuncture with exercises reduce time of rehabilitation.

Exercises are very important option in treating facial palsy. Effects of exercises are: muscular force, good muscular tonus and improvement of nerve function.

Acupuncture is a method with no side effects and is very effective in rehabilitation of peripheral facial palsy. Acupuncture gives good results in physical and social aspects.

During chronic phase it is good to use electro acupuncture. Muscles are very fragile and right below the skin and for this reason it is recommended low frequencies of electro acupuncture. This stimulation helps in nerve regeneration and facial symmetry.

We conclude that: Physical therapy is the best option in treatment of peripheral facial palsy. After analyzing and discussing the selected literature, we conclude that the most commonly used method acupuncture with exercises.

**REFERENCES**

* Beurskens C. H. G. & Heymans P. G. 2003 “Positive Effects of Mime Therapy on Sequelae of Facial Paralysis: Stiffness, Lip Mobility, and Social and Physical Aspects of Facial Disability”, Otology and Neurotology, vol 24, no. 4, pp. 677–681.
* Chen-Yan Zh., Sha-Bei X. , Huang B. , Peng D., Gui-Bin Zh. , Xiang L., Guang-Ying H., Min-Jie X., Zong-Kui Zh. & Wang W 2016 “Needle Sensation and Personality Factors Influence Therapeutic Effect of Acupuncture for Treating Bell’s Palsy: A Secondary Analysis of a Multicenter Randomized Controlled Trial”, Chinese Medical Journal, vol 129, no 15, pp 1789- 94.
* Ertemoglu O. C., Kalaycıoglu A., Uzun O. , Kalkısım S. N. , Zihni B.N.,Yıldırım A. & Boz C. 2018 “The Efficacy of Acupuncture in the Treatment of Bell’s Palsy Sequelae”, Journal of Acupuncture and Meridian Studies, vol 3, no 2, pp 2-9.
* Fanrong L., Ying L., , Shuguang Y., Changdu L., Lingxiang H., Dong Zh., Xiuli Y. & Li Yi L. 2003 “A Multicentral Randomized Control Study on Clinical Acupuncture Treatment of Bell's Palsy”, Journal of Traditional Chinese Medicine, vol 26, no 1, pp. 3-7.
* Hyo-Jung K. , Jun-Yong Ch. , Myeong Soo L. , Yong-Suk K. , Byung-Cheul Sh. & Jong-In K. 2015 “Acupuncture for the sequelae of Bell’s palsy: a randomized controlled trial” BioMed Central, vol 16, no 246, pp 2-8.
* Lian L., Yonhong Zh., Qinghua L. & Zhuli Y 2013, “Comparison of efficacy and safety evolution of electroacupuncture with different waveforms for peripheral facial paralysis patients”, World Journal of Acupuncture-Moxibustion, vol 23, no 2, pp 17- 22.
* Sha-bei X., Huang B., Chen-yan Zh., Peng D., Yuan Q., Gui-juan B., Gui-bin Zh., Min-jie X., Xiang L., Guang-ying H. & Wang W. 2013 “Effectiveness of strengthened stimulation during acupuncture for the treatment of Bell palsy: a randomized controlled trial” CMAJ, vol 185, no 6, pp 2-7.
* Ton G., Li-Wen L., Hui-Ping N., Hsien-Yin L., Yi- Hung Ch., Cheng-Hao T., ChunHung T., Wen-Chao H. & Yu-Chen L. 2018 “Efficacy of laser acupuncture for patients with chronic Bell’s palsy A study protocol for a randomized, double-blind, sham-controlled pilot trial”, Medicine Journal, vol 98, no 58, pp 2-6.
* Tong M. F., Kit Chow K. Sh., Bong Chan Y. P., Wah Wong K. A., Ying Wan Sh. S., Ka Wah N. R, Chan G., Chan Sh. W. & Keung L. Ch. 2015 “A prospective randomised controlled study on efficacies of acupuncture and steroid in treatment of idiopathic peripheral facial paralysis”, Acupunct Med , vol 27, pp 169–173.
* Xia F., Junliang Han J., Liu X., Wang J., Jiang Zh., Wang K., Wu S. & Zhao G. “Prednisolone and acupuncture in Bell’s palsy: study protocol for a randomized, controlledtrial”, Trails Journal, vol 12, no 128, pp 2-5 .
* Xiaolin L., Lin J., Huang X., Lin L. & Zhang R. 2017 “The effect of hyperbaric oxygen therapy combined with acupuncture and moxibustion in treatment of traumatic peripheral facial nerve injury and electromyography (EMG) data analysis”, Bio Medres India, vol 28, no 12, pp 5561-5564.
* Xiaoyan L., Chunlan Chen., Chuang Zh., Zunyuan L., Wei L. & Zhidan L. 2018 “Augmentation effect of acupuncture on Bi’nao for hypophasis in patients with Bell’s palsy: study protocol for a randomized controlled trial”, BMC Journal, vol 13, no 136, pp 2-9.
* ZHAO Ji-ping Zh., Yan-zheng P. & Jun W. 2010 “Effect of Acupuncture Combined with Blood-letting by a Three-edged Needle on 50 cases of Bell’s Palsy at the Acute Stage”, Journal of Traditional Chinese Medicine, vol. 30, no. 2, pp 118-121.