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CASE STUDY: PHYSIOTHERAPY PROGRAM IN BELL'S PALSY

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Abstract

Introduction: Bell's palsy is an acute facial nerve disease where the first symptom is pain in the mastoid area and causes facial paralysis¹. In one year the incidence of this disorder can occur in 23 people out of 100,000 people². Problems caused by Bell's palsy include the occurrence of facial asymmetry, a decrease in muscle strength on the side of the injured face, which results in decreased functional ability and interferes with activities. Bell's palsy treatment can be given medical therapy and physiotherapy programs. Physiotherapy plays a role in increasing muscle flexibility, facilitating weak muscles in carrying out movements to improve muscle work. This report follows up on the research of³, conducted the same program on 8 patients with similar complaints, getting results that are in accordance with this study.

Case Presentation: A 50 years male, had a profession as civil servants and muslim, residing in Ngawi, East Java. The examination that has been carried out on the patient found that there is asymmetry on one side of the face, there are limitation in the movement of opening and closing the eyes, limitations in smiling, puffing the cheeks and smile, while the movements of frowning and raising the eyebrows have not been able to do.

Management and Outcome: Physiotherapy modalities with infrared, electrical stimulation, massage facial to increasing muscle flexibility, facilitating weak muscles in carrying out movements to improve muscle work. Furthermore, to determine the patient's progress, measurement results were used in the form of a Manual Muscle Testing (MMT) to determine the increase in strength in facial muscle and Ugo Fisch Scale to determine the increase in functional ability in facial muscle.

Discussion: This study was to measure the effects of electrical stimulation, infrared and facial massage on patients with Bell's palsy. This report will follow up the research of³ about their study on 8 patient with the same complaint whether there are result that are ini sync with this study.

Conclusion: It is proven that cases of Bell's Palsy that receive in the form of infrared, electrical stimulation and massage can increase muscle strength and can increase facial functional activity

Keyword: Infra Red, Electrical Stimulation, Facial Massage, Manual Muscle Testing, Ugo Fish Scale



Introduction

Bell's palsy is an acute facial nerve disease where the first symptom can be pain in the mastoid area and cause hemiparesis or facial paralysis¹. *Bell's Palsy* is defined as facial nerve paresis with idiopathic peripheral type, which can affect the upper or lower face causing loss of taste on one side of the tongue or ipsilaterally. Symptoms of this disease are usually mild with complete recovery in about 2-3 weeks. The risk of developing this disease is 2% for life p . In one year the incidence of this disorder can occur in 23 people out of 100,000 people . Bell's palsy can occur in men and women where a comparison of the age of her in 10-40 years and occurred in the face of the right and left, with the number of cases of the same lot².

This disease usually comes quickly, even in a matter of hours or overnight with symptoms including on side of the face, invisible forehead wrinkles, weak facial muscles, looks like a tired person, difficult to speak, difficulty to blink eyes and something even unable to, dropping lips, or tilted so that is difficult to speak, difficulty eating and drinking, pain in or around the ear, sensitivity to sound, excessive or reduced salivation, loss of taste. While symptoms on one side of the eye such as difficulty closing the eyes , diminished her , brow eyes and lower eyelids seemed to fall, when exposed to light become sensitive⁴.

Problems that occur in Bell's palsy *are* facial asymmetry , on the side of the lesion it will feel stiff and thick , on the side of the lesion there is a decrease in facial muscle strength, and irritation is most likely on one side of the eye with the lesion.

In the case of Bell,s palsy, physiotherapy plays a role in the restoration of functional abilities to be more optimal, so it is hoped that patients can carry out all their activities more easily such as eating and drinking, smiling, gargling, blinking and others. Giving an infrared aiming improve the circulation and causes a reduction in pressure on local edema⁵. The health benefits of massage are to occur enhancement right flexibility, providing a relaxed, and stimulates the sensory receptors in the tissue of the skin to reduce spasm⁶.

Giving flow *Faradic* which is one of the intervention of physiotherapy in heading right to provide stimulation on the muscles which point the stimulus in the skin as well as for Enhancing muscle work either pitch it is in part the outside and on the inside, the flow *Faradic* cause onset of effect therapist namely the facilitation contraction in the muscles, to train the work on the muscles, and also to train the work on the new muscle⁷. Stimulation repetitive electrical will provide information to be forward to the “ supra spinal mechanism,”and then going on pattern of motion and integrate in to the movement patterns of the functional⁸.

³Said that the granting of infrared, electrical stimulation and massage can reduce stiff the muscles of face patient bell's palsy dextra. This study was to measure the effects of electrical stimulation, infrared and facial massage programs using the Ugo Fisch scale on patients with right Bell's palsy. This report will follow up the research of³ about their study on 8 patient with the same complaint wethwer there are results that are in sync with this study.

Case Presentation

The patient feels that his lips have been drooping for three days and his eyes are difficult to close. At that time, when he was about to perform ablution, the patient felt the water leaking while gargling. In the morning the patient was taken to a neurologist by the family for a checkup and then given medicine by the doctor. Because after 3 days the complaints did not improve, the doctor was referred to physiotherapy. The patient currently has difficulty gargling, eating, speaking and closing his eyes. The patient feels more uncomfortable when driving because the eyes feel sore but when resting feels more comfortable. Patients already receiving treatment in poly neurologist with a given medication and now has to undergo physiotherapy. Personal history of the patient, the patient was an unmarried civil servants at the same time so do activities at home alone and often use fan wind after a long day at home or while sleeping. The aim is to facilitate the increase in the strength of the muscles face the patient and optimization for increasing the ability of the functional face of the patient.

Management and Outcome

Assessment inspection basic physical between covers several aspects of vital sign, inspection, and palpation. On examination of inspection obtained their asymmetrical in any one side of the face / ipsilateral, patients are not able to close my eyes, can not be raised eyebrows and frowned, asymmetric smile. Based on the palpation study, no pain was found .

Findings in vital sign examination showed normal conditions in all aspects (blood pressure, respiratory rate, pulse rate, temperature).

Table 1. Vital Sign Examination

Vital Signs	Interpretation
Blood Pressure : 130/ 80mmHg	Within normal limits
Pulse : 84x/minute	Within normal limits
Breathing : 18x/minute	Within normal limits
Temperature : 36 C	Within normal limits

In the examination of basic motion using active motion examination . For this active movement examination, it was found that there were limitations in the movement of opening and closing the eyes, limitations in smiling, puffing the cheeks and prodding, whereas in the movements of frowning and raising the eyebrows, it was not possible to do this .

Table 2. Examination Results on Facial Muscle Strength

muscle activator	muscle function	MMT value
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m. frontalist	wrinkled forehead	0 (not the contraction of muscles)
m. orbicularis oris	Scream or whistle	1 (minimum muscle contraction)
m. zygomaticus major	Smile	1 (minimum muscle contraction)
m. orbicularis oculi	Close your eyes	3 (there are contractions but do with maximum effort)

Examination of facial muscle strength, measured by Manual Muscle Testing (MMT) which has 4 rating categories from 0 to 5, Where 0 is no contraction and 5 is normal contraction with maximum effort, the result show that at m. frontalis muscle contraction did not occur and was given a value of 0, in m zygomaticus major and m. orbicularis oris the same contraction accured, namely minimal muscle contraction and was given a value of 1, in m. orbicularis oculi was found to have contractions but was performed with difficulty and was given a score of 3.

For functional on the face using a *Ugo Fisch Scale* , this examination is aimed at evaluating the progress of the movement in the face of patients with Bell's Palsy. The use of when it aims to provide an assessment on side sick and the healthy side with five positions are not the same , namely when it breaks, frowned, closing his eyes, smile and whistled. Here used 4 rating given in % for each position are listed in the table below among others:

Table 3. Assessment of Patient Ability in %

0%	Zero means complete asymmetry , and no voluntary movement occurs
30%	Poor means healing towards asymmetry
70%	Fair means partial healing towards symmetrical
100%	Normal means contraction and controlled

Percent here is a percentage that matches the ability of the patient which will relate to the muscle strength that occurs in each movement. The score will be well worth it if it is close to 100 , so that if it has not been approached or reached the sum of 100 from all activity should act physiotherapy still do to prevent the syptoms of remainder we caused.

The percentage figure from each position are converted into scores with points as shown in the table below :

Table 4. Point Value of Ugo Fisch Scale

Rest position	20
Frowning	10
Close eyes	30
Smile	30
Whistling	10

For conditions normal in the sum of five positions a face that is numbered 100. Score evaluation obtained from figure percentage multiplied by each point. Where will be obtained and final score from the sum of the five point of assessment.

For thr final value of the five aspects, they are classified in a classification table according to their degree, which is presented in the table below :

Table 5. Degrees of Ugo Fisch Scale

Degree	Score	Results
I	100	Normal
II	75-99	Mild paralysis
III	50-75	Moderate paralysis
IV	25-50	Paralysis was severe
V	1-25	Severe paralysis
VI	0	paralysis total

Describes the severity of the disease experienced by someone who has *Bell's palsy* which is grouped into grades I to VI. Where it is said to be normal or cured if the patient has a score of 100 so that it is categorized into grade I, and it is said to have total paralysis if the patient has a score of 0 so it is categorized into grade VI.

Table 6. Results of Examination Functional on Muscles Face

Face position	Score
At rest	20 points x 70% = 14
wrinkled forehead	10 points x 0% = 0
Closing the eyes meeting	30 points x 30% = 9
Smile	30 points x 30% = 9
Whistling	10 points x 30% = 3
Total value	35

In the examination above, an assessment of the five points of the facial position on the Ugo Fisch scale is carried out which is multiplied by a percentage that is according to the ability of the patient. Where in the resting position the final score is 14, when frowning, the final score is 0, when closing the eyes, the final score is 9, when smiling, the final score is 9, and when whistling, the final score is 3. Overall, the total score is 35, where in this condition the patient is in the category of grade IV group, which means the patient has moderate to severe paralysis on one side of his face.

Sensibility test using tactile sensation and tongue taste test. Examination of the patient's sensibility used a tactile examination which obtained a decreased sensation, on examination the therapist touched the patient's left and right face which found a thicker feeling felt on the side of the face that experience weakness. On examination of the soy sauce taste test, it was reported that the patient was still able to distinguish sour, sweet, salty and bitter tastes so that no decrease in taste was found.

Physiotherapy Program Plan

All physiotherapy measures will be given to patients where the patient undergoes all treatment procedures in the hospital. The patient was admitted to the physiotherapy clinic. The purpose of all the modalities of physiotherapy given is improving recovery or prevent the degeneration of the nerves and muscles, for muscle relaxation and effect sedative, Facilitating their muscle contraction, muscle work can be educated back, give exercise on muscle were paralyzed, relaxes and improves blood circulation and the preservation of tone muscles. At table below this would explain all the actions are awarded

Table 7. Physiotherapy Program

Intervention	Dose	Information	Aim
infra red	F:3 times a week I:30- 40 cm patient tolerance Time : 15 minutes	Perpendicular position of weak areas	increase circulation so that the pressure edema, local will be reduced
Electrical stimulation	F: 3 times a week I: patient tolerance faradic current Q: 3 sets , each motor point contractions 30 times.		facilitating contraction of muscle, memberikan exercise on muscle, as well as train the work at o tot the new

Facial massage	F : 3 times a week I: 3-5 times repetition of every move Time:5-10 Minutes	To increase flexibility, produce a relaxing effect ,
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Discussion

Muscle Strength Measurement Results with MMT

Table 8. MMT measurement results from the first to seventh therapy

	Score						
	IT	T2	T3	T4	T5	T6	T7
M .Frontralis	0	0	1	1	1	3	3
M.Orbicularis Oculi	3	3	3	3	3	3	4
M. Zygomaticus Major							
M. Zygomaticus Minor	1	1	1	1	1	3	3
M.Orbicularis Oris	1	1	1	1	1	1	3

The table above shows and increase in muscle strength from T1 to T7. Application of electrical stimulation using current faradic for facilitating contraction of muscle obtained an increase in T1 from the value (0) musculus frontalis, value (3) musculus orbicularis oculi, the value of (1) musculus zygomaticus major, musculus zygomaticus minor, musculus orbicularis oculi, which increased in T7 be value (3) musculus frontalis, value (4) musculus orbicularis oculi, value (3) musculus zygomaticus major, musculus zygomaticus minor, musculus orbicularis oris.

Results of Measurement of Facial Functional Ability (Ugo Fisch Scale)

Table 9 . Functional Ability Measurement Results from the first to seventh therapy

T1	Saat istirahat	$20 \times 70\% = 14$
	Mengerutkan dahi	$10 \times 0\% = 0$
	Menutup mata rapat	$30 \times 30\% = 9$
	Tersenyum	$30 \times 30\% = 9$
	Bersiul	$10 \times 30\% = 3$
	Jumlah	35
T2	Saat istirahat	$20 \times 70\% = 14$
	Mengerutkan dahi	$10 \times 0\% = 0$
	Menutup mata rapat	$30 \times 30\% = 9$
	Tersenyum	$30 \times 30\% = 9$
	Bersiul	$10 \times 30\% = 3$
	Jumlah	35
T3	Saat istirahat	$20 \times 70\% = 14$
	Mengerutkan dahi	$10 \times 0\% = 0$
	Menutup mata rapat	$30 \times 30\% = 9$
	Tersenyum	$30 \times 30\% = 9$
	Bersiul	$10 \times 30\% = 3$
	Jumlah	35
T4	Saat istirahat	$20 \times 70\% = 14$
	Mengerutkan dahi	$10 \times 30\% = 3$
	Menutup mata rapat	$30 \times 70\% = 21$
	Tersenyum	$30 \times 30\% = 9$
	Bersiul	$10 \times 30\% = 3$
	Jumlah	50
T5	Saat istirahat	$20 \times 70\% = 14$
	Mengerutkan dahi	$10 \times 30\% = 3$
	Menutup mata rapat	$30 \times 70\% = 21$
	Tersenyum	$30 \times 30\% = 9$
	Bersiul	$10 \times 30\% = 3$
	Jumlah	50

T6	Saat istirahat	20 x 100% = 20
	Mengerutkan dahi	10 x 70% = 21
	Menutup mata rapat	30 x 100% = 30
	Tersenyum	30 x 70% = 21
	Bersiul	10 x 30% = 3
	Jumlah	74
T7	Saat istirahat	20 x 100% = 20
	Mengerutkan dahi	10 x 70% = 21
	Menutup mata rapat	30 x 100% = 30
	Tersenyum	30 x 70% = 21
	Bersiul	10 x 70% = 21
	Jumlah	113

On the result of the measurement of the ability of functional use (*Ugo Fisch Scale*) during T1 and T7 found any increase in the ability of the functional are significant mainly on the activity of closing the eyes and when the rest already obtained the result of a perfect 100%, while the activity wrinkled forehead, smiling and whistling already happened increase be 70%. From the result of therapy above obtained prognosis both in the case of bells palsy this.

1. Infrared

Have physiological effects to the enhancing metabolism in layers of superficial skin that causing increase the supply of oxygen and nutrients to the tissues that eventually will provide relaxation to the muscles and the effect on increasing the ability of contraction in the muscles⁹.

This is in accordance with the study of³ who provided physiotherapy actions in right *Bell's palsy* patients and the sample consisted of 8 people. In table 4, it can be seen that there is an increase in the average, namely at rest with a scale of 0.38 to 7.00 which means that when the condition is still there is an increase; in the position of frowning the scale of 4.50 rose to a scale of 8.13 where this also increased; for the position of closing the eyes obtained a scale of 6.38 to a scale of 16.50 which in this condition of closing the eyes also increased; when smiling from a scale of 7.88 it rose to 18.00 which means that in this smiling position there is also an increase; the position of whistling from a scale of 3.50 rose to a scale of 7.00 which means that in this whistling condition there is also an increase.

2. Electrical Stimulation

ES can suppress chemical mediators required for reconnection of axon twigs with motor end plates in muscles as well as reduce random electrical activity of nonfunctioning muscle fibers. ES that maintains a partial nerve supply can simulate muscle overuse and contribute to suppression of chemical mediators required for the reinnervation of denervated fibers¹⁰. In this study, Sheth MS et al., for groups A and B, the difference in the mean score of the facial scoring system at the end of 4 weeks was found to be statistically significant ($z = 4,861$, $z = 4,016$, $p < 0.001$). However, at the end of 4 weeks the difference in median values between groups was not found to be

statistically significant ($z=0.420$, $p=0.675$). Conclusion: Results show no benefit or harm with electrical stimulation in subjects with early facial paralysis .

Flow faradic is one intervention fisioterapi that is useful to provide stimulation or stimulation of the muscles work which point the stimulus in the skin and to play arole in enhancing muscle work which is located in part outside or in part inside. Stimulation electrical granted on nerve hatched will result ini facilitation for weak muscle in movement in a movevent of his⁸.

In the study of Emad Eldin, 2020 said that the application of TENS and faradic currents appears to be a safe method in treating bell's palsy because it can reduce the severity of the symptoms, especially in the early stages, with a preference to apply TENS rather than faradic currents alone or with TENS¹¹.

3. Massage

Will provide stimulation in network software to improve the flexibility of muscles, giving stimuli early on receptor of sensory tissue in the skin which can ultimately cause effect of relaxation. Massge provided with a smooth (gentle) in the face of the lesions will reduce complaints numbness or sense of te bales are felt by the patient, the enchancement metabolic processes where the nature of muscle physiology is expeted to be maintained properly ang to keep the relaxation of muscle face between another onmusculus frontalis, musculus orbicularis oculi, musculus zygomaticus major, musculus zygomaticus minor, musculus orbicularis oris⁶.

Conclusion

It is proven that cases of Bell's palsy that receive treatment in the form of infrared, electrical stimulation and massage can increase mescle strength and can increase facial functional activity.

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