Irradiation Technique in Bell's palsy. An Evidence Based Study

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Abstract:

Introduction: *Bell's palsy, where facial muscle weakness along with expression gets affected, added with watery eyes and social stigma involved in these patients early recovery helps to improve subject's confidence.* ***Aims & Objective*** *of this original case presentation was to analyse the impact of irradiation technique among a 45 year old Bell's palsy subject using Sunny brook Facial Nerve Grading System score and SD curve.* ***Materials & Methodology:*** *This study subject with left Bell's palsy was treated with irradiation technique along with facial muscle exercises on alternate days from 30.10.2017 to 20/11/17 for 10 therapy sessions.* ***Results:*** *Pre and post were analyzed with statistical means with P<.05* ***Conclusion:*** *an effective therapy with evidence enhances early recovery on bell's palsy was evident as major outcome of this study*

Key words: - proprioceptive neuromuscular facilitation, irradiation, strength – duration curve, Bell's palsy, sunny brook facial nerve grading scale.

INTRODUCTION:

Bell's palsy is an acute unilateral peripheral paralysis or weakness of the face which may lead permanent disfigurement to the affected side of the face. (De Almeida et al 2009).

Prevalence: Incidence of Bell's palsy ranges from 20 per 100,000 in UK, 53 per 10,000 and13 per 10,000 in U.S (Pavlands et al 2002)., while research reports on incidence of Bell's palsy from India were not found .

Gender, age: The disease affects men and women in equal numbers and without predilection for either side of the face (Ztiemstra et al 2007) with highest incidence from 30- 45 years (Lockhart et al 2009) Aetiology of Bell's palsy is often idiopathic, but herpes simplex virus, type – 1, is suggested with current evidence, where patient experience inflammation with mechanical compression and possible demyelisation and ischemia of facial nerve (GILDEN 2004) Clinical presentation where the subjects present with abrupt unilateral weakness resulting in drooping of the eyebrow and the corner of the mouth (Tiemstron et al 2007) with Bell's phenomenon when the eye rolls upward on attempted closure , while the eyelids does not close and lower eyelids drops(Gildon 2004) along with excessive tearing and drooling

(Holland et al 2004) Treatment of Bell's palsy includes corticosteroids, Antivirals (Sullivan et al 2007) with non pharmacological treatment using physiotherapy with TENS, Electrical stimulation; massage (Holland et al 2004)

Aims and Objectives: - The aims and objectives of this case study presentation were to evaluate the efficacy of irradiation technique of PNF using Sunny Brook Facial nerve grading system and strength duration curve.

Material And Methodology: 45 year old male driver had a sudden onset of Bell's palsy (left side) and was treated on 23/10/17 with Predmet 16 mg for 10 days (steroid), Zovitar- 800mg for 5 days and multivitamin by a Chennai based neurologist, from 30/ 10/17 to 20/11/17 he was treated at this college with physiotherapeutic means with deviation of angle of mouth and inability to close eyes, S- D curve was done for muscles such as Orbicularis oris , Orbiculris Oculi and recorded . Also Sunny Brook Facial nerve grading score was recorded. He was treated with irradiation technique of PNF followed by facial muscles exercises (where overflow of effort occurs) for 10 sittings on alternate day. S-D curve was redone, Sunny Brook Facial nerve grading score was recorded again and analysed.

Results:-TABLE: - 1

TABLE OF RESULTS OF PRE & POST ON SUNNY BROOK FACIAL NERVE GRADING SCORE USING STUDENT 't' TEST

		SD	SE	t	P
PRE	**60**				
POST	**34**	15	8.66	3	< 0.01

Sunny brook facial nerve grading scale on 3 items. Subjective rating score on prognosis of Bells Palsy Presently patient is able to close his eyes fully and symmetry of movements were recorded

FINDINGS OF SD CURVE: - Strength duration curve don for the muscles namely orbicularis ori and oculi on 30/10/2017 and has shown response at 0.01 msec with an intensity of 11 milli ampere, but after 10 therapy sessions same muscles on 20/11/17 had a response at 0.01 msec with 4 milli ampere. Hence further evidence for positive prognosis with irradiation technique, home exercises and muscles of facial expressions were effective in treating subjects with Bell's palsy, however larger sample size and other studies using EMG may further validate the findings of this study.

DISCUSSION:

Prognosis of Bell's palsy is a RCT among 496 patients 83% recovered facial function in the corticosteroid group (in three months) (SULLIVAN ET AL 2007) , but Cochrane review with no benefit of steroids were reported (Salinas et al 2004) .An improvement on 12 patients with chronic Bell's palsy for 6 months period study was reported by (Targan et al 2000).

Prognosis of Bell's Palsy depends on age (Devriese et al 1990) younger the patient better the prognosis of this study subject prognosis of this study subject could be added to younger age of 45 years but 20% - 30 % of the cases are left with varying degrees of permanent disability (Shav et al 2005). About 10 % patients with Bell's palsy may experience recurrences after a mean latency of 10 years (Pitts et al 1988).

80 – 85% of prognosis occurs in 3 months (Slavkin 1999) hence follow up further are recommended. RCT of 40 participants using PNF techniques among Bell's palsy have shown recovery in 4 weeks of treatment (Kumar and Bagga 2015) while Sardarul et al 2013 have used PNF technique among Bell's palsy where patients have shown good improvement similar to the findings , This study subject has shown improvement with PNF techniques .

PNF based rehabilitation provide faster recovery in comparison to conventional means (Barbara et al 2010) and Manigandan et al 2007 in a RCT among Bell's palsy recorded facial symmetry to be effective than conventional therapeutic means, also facial symmetry was restored in this study subject in two weeks of therapy . Irradiation principles of PNF used are more effective at improving facial symmetry and reducing facial disability (Sardarul 2013).This study subject was treated with irradiation and improved early as supported by the above studies.

CRITICAL ANALYSIS OF THE STUDY FINDINGS:-

1) Only exercise modality was used as therapeutic mean in this study.

2) Evaluation was done with SD curve and not done using qualitative prognostic approach.

3) Outcome measure was because of steroid therapy or irradiation technique was not analysed.

4) Apart from being a case study, shorter duration and electrotherapy, massage were not used in this study were the short comings.

5) Further studies using EMG, NCV and comparison of electrotherapy versus exercises, including during control group, longer duration follow up are highly recommended as continuation of this study.

CONCLUSION: Physiotherapy with evidence in a shorter time frame as shown in this original case study outcome can be considered in the treatment of Bell's palsy subjects for early and effective recovery.

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