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MAIN ARTICLE

Outcome of facial physiotherapy in patients with prolonged idiopathic facial palsy

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Abstract

Objective: This study investigated whether patients who remain symptomatic more than a year following idiopathic facial paralysis gain benefit from tailored facial physiotherapy.

Methods: A two-year retrospective review was conducted of all symptomatic patients. Data collected included: age, gender, duration of symptoms, Sunnybrook facial grading system scores pre-treatment and at last visit, and duration of treatment.

Results: The study comprised 22 patients (with a mean age of 50.5 years (range, 22–75 years)) who had been symptomatic for more than a year following idiopathic facial paralysis. The mean duration of symptoms was 45 months (range, 12–240 months). The mean duration of follow up was 10.4 months (range, 2–36 months). Prior to treatment, the mean Sunnybrook facial grading system score was 59 (standard deviation = 3.5); this had increased to 83 (standard deviation = 2.7) at the last visit, with an average improvement in score of 23 (standard deviation = 2.9). This increase was significant ($p < 0.001$).

Conclusion: Tailored facial therapy can improve facial grading scores in patients who remain symptomatic for prolonged periods.

Key words: Bell's Palsy; Idiopathic Facial Paralysis; Physiotherapy (Techniques); Treatment Outcome

Introduction

Idiopathic facial paralysis, or Bell's palsy, is an acute lower motor neurone paralysis of the facial nerve diagnosed when all other pathological conditions have been excluded. Despite there being evidence that early intervention with corticosteroids improves the chances of recovery at three and nine months,[1–3] 30 per cent of patients continue to suffer from facial asymmetry at rest, as well as hyperkinesis, synkinesis and psychological problems.[4,5]

The use of various methods of facial therapy in the acute phase of recovery, including massage and exercise, has been well described in the literature. Although some benefit has been described, very little high quality evidence has been published on the effects of therapy in those patients who have persistent symptoms that last for more than a year.[4]

In this paper, we present the results of tailored facial therapy used in combination with botulinum toxin A in patients with persistent symptoms of weakness, synkinesis and spasm lasting for more than a year following idiopathic facial palsy.

Materials and methods

Ethical approval

As this was a retrospective study reviewing the outcome of accepted treatment, ethical approval was not required.

Data collected

This was a two-year retrospective review of all patients who presented to the physiotherapy department with persisting symptoms (facial weakness, asymmetry, synkinesis and spasm) following idiopathic facial paralysis. Data collected included: patient age, gender, duration of symptoms, Sunnybrook facial grading system scores pre-treatment and at last visit, and duration of treatment.

Statistical analysis

The effect of treatment on the Sunnybrook facial grading system scores was analysed using a paired *t*-test, in which the pre-treatment and last treatment values, and change in values, were compared. The effects of a range of factors, including age, duration of symptoms, treatment and the effects of Botox,

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were then considered using independent samples *t*-tests and Pearson correlation coefficients. All analyses were performed using IBM SPSS® version 19, with $p < 0.05$ deemed to be indicative of statistical significance.

Results

Eighty-seven patients attended the physiotherapy department with persisting facial symptoms following treatment for idiopathic facial paralysis. Analysis of this data identified 23 patients whose symptoms had persisted for more than a year. One patient was excluded from the study because they transferred to another physiotherapy department. In total, there were 19 females and 3 males, with a mean age of 50.5 years (range, 22–75 years). The mean duration of symptoms was 45 months (range, 12–240 months). The average duration of follow up was 10.4 months (range, 2–36 months).

Prior to treatment, the mean Sunnybrook facial grading system score was 59 (standard deviation (SD) = 3.5); this increased to 83 (SD = 2.7) at the last visit, with an average improvement in score of 23 (SD = 2.9). This increase was significant ($p < 0.001$).

The improvement in score did not correlate significantly with patient age ($p = 0.894$) or duration of symptoms ($p = 0.666$). However, there was a strong correlation between duration of treatment and change in score ($p < 0.001$). There was no significant association between Botox use and change in score ($p = 0.423$). Table I provides a summary of the statistical analysis findings.

Discussion

Despite adequate medical therapy, incomplete recovery following idiopathic facial paralysis can occur in up to 30 per cent of patients. This can result in persistent facial weakness, asymmetry, spasm and synkinesis. This can have a dramatic impact on the psychological well-being of the patient, contributing to a reduced quality of life.[4,5]

Ongoing treatment for this group of patients involves facial physiotherapy. Most studies describe the use of this therapy in the acute setting during the recovery phase. Very little has been published on the effects of facial physiotherapy after prolonged weakness, although its benefit has been described in a recent Cochrane review[6] and by Lindsay *et al.*[7]

Our department holds a multidisciplinary clinic on a weekly basis for patients presenting with facial weakness. All patients that have shown no evidence of recovery at three months undergo clinical examination and imaging to exclude pathology affecting the nerve. Once idiopathic facial paralysis is established, the patients are referred for facial therapy. From a group of 87 patients with idiopathic facial palsy, we determined that 23 had been symptomatic for a period of more than a year.

During the first consultation, facial symmetry and tone of the patient were assessed using the Sunnybrook facial grading system (a well-established, validated scoring system for evaluating facial movement outcomes; Figure 1). Flexibility of facial musculature was also recorded, and, following consent, photographic evidence of facial expression was collected to provide visual documentation of progression. Emotional well-being was assessed, and, if necessary, counselling was arranged via the hospital or local psychology teams.

Initially, treatment focused on massage to improve mobility and circulation and to encourage patients to 'engage' with their face. Eye protection was also emphasised. Patients were taught eyelid and brow stretching techniques, and were actively encouraged to close the affected eye on a regular basis. Taping techniques of the eye and angle of the mouth were also demonstrated for proprioceptive feedback; patients were encouraged to practise these for up to 3 hours a day.

TABLE I
FACIAL PHYSIOTHERAPY OUTCOMES IN RELATION TO AGE, SYMPTOM DURATION, TREATMENT DURATION AND BOTOX USE*

Parameter	Patients (*n*)	Sunnybrook facial grading system scores					
		Initial score		Final score		Change in score	
		Mean (SD)	*p*	Mean (SD)	*p*	Mean (SD)	*p*
Patient age (years)			0.122		0.060		0.894
– <50	10	65 (4.9)		88 (3.3)		23 (4.6)	
– 50+	12	54 (4.6)		78 (3.7)		24 (3.8)	
Symptom duration (months)			0.686		0.955		0.666
– <24	14	58 (4.8)		80 (3.5)		22 (3.6)	
– 24+	8	61 (4.7)		88 (3.6)		27 (4.8)	
Treatment duration (months)			0.048		0.172		<0.001
– <6	11	65 (4.4)		80 (3.6)		15 (2.4)	
– 6+	11	54 (5.1)		85 (4.0)		31 (4.2)	
Botox used?			0.153		0.339		0.423
– No	14	56 (3.7)		81 (3.0)		25 (3.7)	
– Yes	8	66 (6.6)		86 (5.2)		20 (4.7)	

*In patients with prolonged idiopathic facial paralysis. SD = standard deviation

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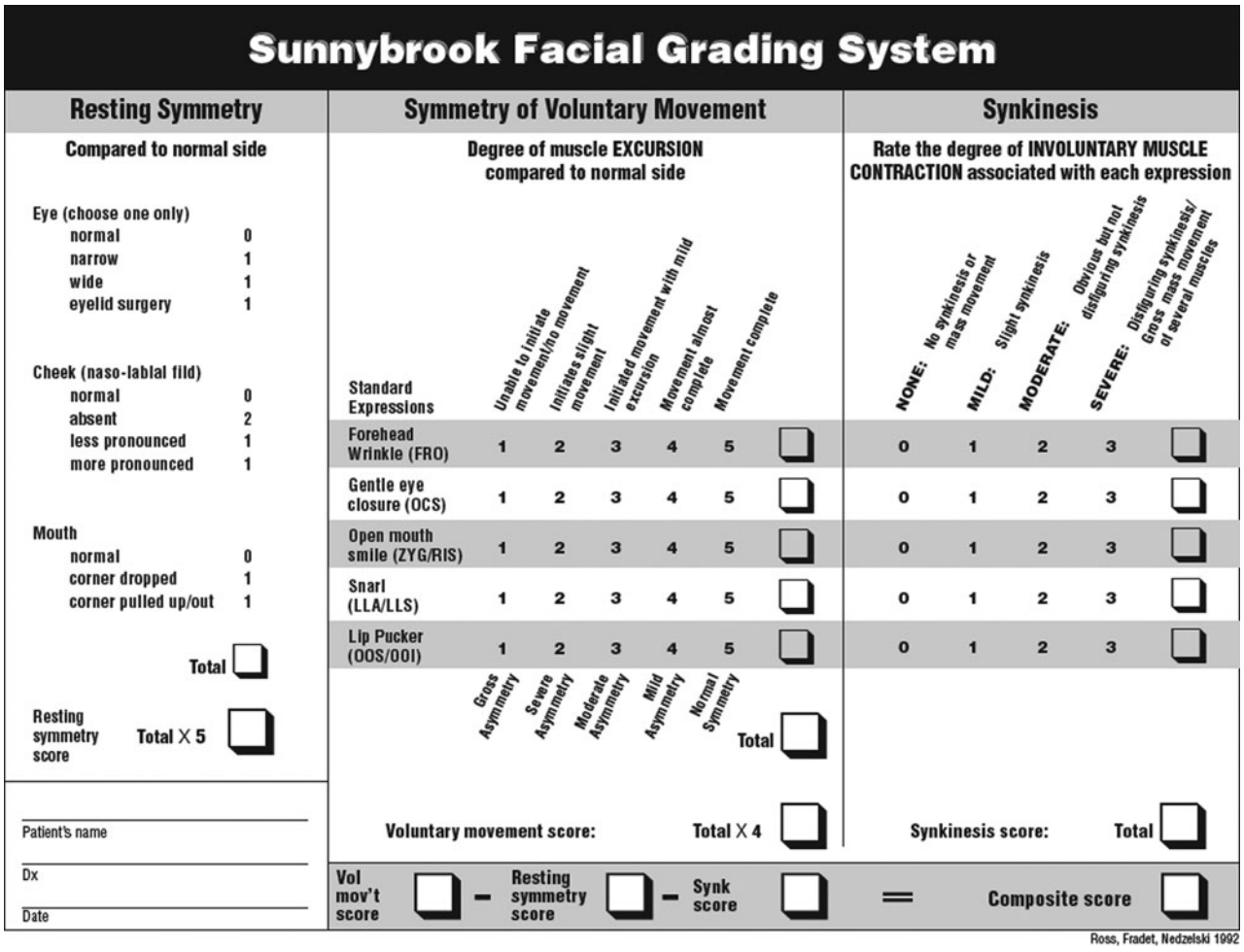

FIG. 1
Sunnybrook facial grading system.

Following initial assessment, patients were provided with individually tailored therapy depending on the identification of specific muscle inactivity. This relied on neuromuscular retraining, often using sound production to facilitate the action of a muscle of particular expressions. For example, patients might have been asked to produce sounds such as 'ow' as in 'how now', in order to facilitate depression of the lips thereby activating the depressor anguli oris and depressor labii inferioris muscles, and 'egg', which requires activation of the zygomaticus and levator anguli oris muscles which are necessary to generate particular smile patterns.

Botulinum toxin A was administered to eight patients with troublesome hemi-facial spasm, synkinesis or hyperactivity of the contralateral side, to aid rehabilitation.

Treatment is offered once per week or more often, depending on the level of support required. Progress is measured using the Sunnybrook grading system by two independent facial therapists at each visit. Therapy is continued until the patient's symptoms plateau. Patients are then either discharged or referred onto other services, such as plastic surgery, depending on their level of recovery.

Using the above tailored therapy, there was a significant improvement in Sunnybrook scale scores; these increased from 59 (SD = 3.5) pre-treatment to 83 (SD = 2.7) post-treatment ($p < 0.001$). The improvement in score was not associated with patients' age ($p = 0.894$); those aged less than 50 years had an increase in score of 23 (SD = 4.6), compared with 24 (SD = 3.8) in patients aged 50 years or more.

Symptom duration was not significantly associated with: the score at presentation (Pearson's r = 0.091, $p = 0.686$), the final score (r = 0.013, $p = 0.955$) or the change in score (r = −0.098, $p = 0.666$). This indicates that, regardless of how long a patient has had symptoms, their initial condition and the effectiveness of treatment are relatively unaffected (Figure 2).

Patients who had received treatment for a longer duration were found to have significantly lower initial scores (r = −0.426, $p = 0.048$). Treatment duration was positively correlated with the final score, albeit non-significantly (r = 0.302, $p = 0.172$). There was a

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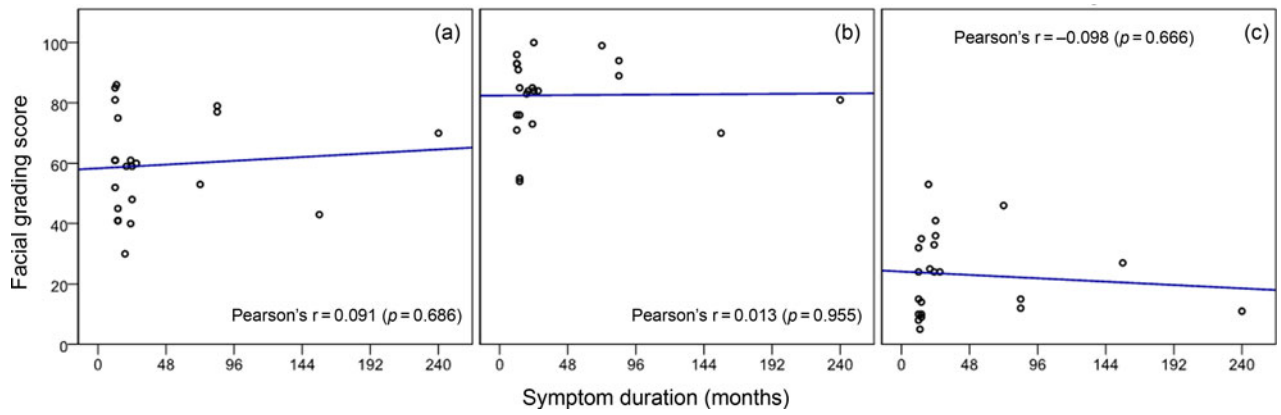

FIG. 2
Scatter plot demonstrating the relationships between (a) initial, (b) final and (c) change in Sunnybrook facial grading system scores and symptom duration.

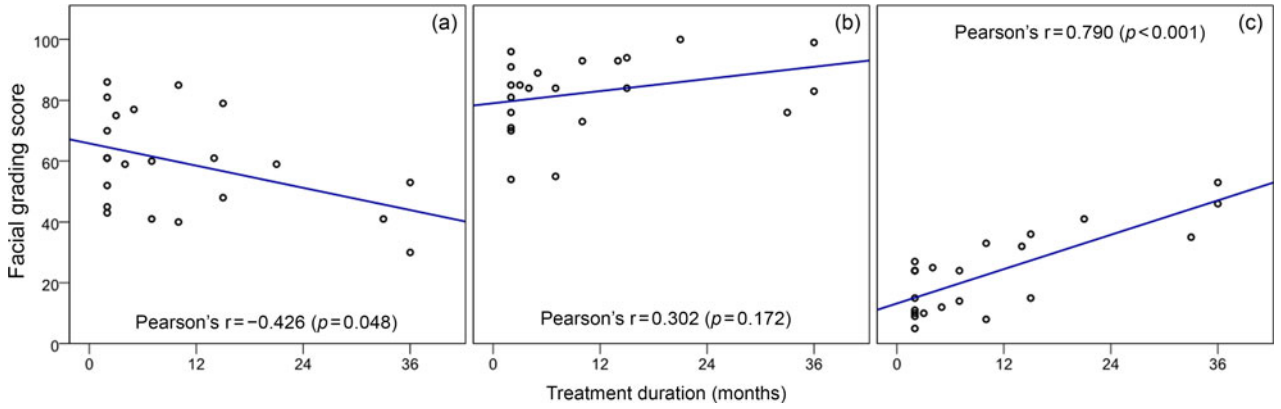

FIG. 3
Scatter plot demonstrating the relationships between (a) initial, (b) final and (c) change in Sunnybrook facial grading system scores and treatment duration.

strong correlation between treatment duration and the change in score ($r = 0.790$, $p < 0.001$). This implies that longer treatment durations may be beneficial to patients (Figure 3).

- **Despite adequate medical care, 30 per cent of patients with idiopathic facial paralysis remain symptomatic**
- **Physiotherapy can be of benefit, but most papers focus on the acute setting, with limited evidence of treatment outcomes for patients who remain symptomatic for more than a year**
- **There was significant improvement in Sunnybrook facial grading system scores for patients receiving tailored facial physiotherapy who remained symptomatic for prolonged periods**
- **All patients who remain symptomatic following idiopathic facial paralysis should be assessed and offered tailored treatment if available**

There was no significant association between Botox use and change in score ($p = 0.423$), with mean improvements in score of 20 (SD = 4.7) for patients receiving this treatment, compared with 25 (SD = 3.7) in those that were not.

Conclusion

Although this is a small, non-randomised trial, there is evidence that tailored facial therapy, used in combination with Botox injections, can improve facial grading scores in patients who remain symptomatic after a prolonged period. In our study, this finding was independent of age and symptom duration. Those patients who demonstrated a good understanding of neuromuscular rehabilitation and completed their home exercise programme effectively appeared to achieve a better outcome.

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