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SHORT COMMUNICATION

MARMA THERAPY FOR STROKE REHABILITATION – A PILOT STUDY

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Objective: **To examine feasibility and acceptability issues and to gather preliminary outcome data to ascertain the numbers needed for a trial of Marma massage therapy for stroke rehabilitation.**

Design: **Pilot non-randomized controlled trial, comparing standard care with standard care plus Marma therapy in post-stroke patients with a nested qualitative study.**

Participants: **Adult patients who had an infarction or haemorrhage at any brain location with a Barthel Index score of 75/100 or less.**

Methods: **Feasibility was assessed in terms of recruitment and response rates and loss to follow-up, and acceptability was assessed by patient interviews ($n=13$). The main outcome measure was the Barthel Index.**

Results: **The recruitment rate was 0.53 patients per week in a stroke unit with an admission rate of 15.1 per week, the response rate was 91% and the loss to follow-up 30%. Most patients believed that the massage was beneficial, and although some reported pain, all interviewed would choose it again. The effectiveness data showed no significant differences in changed scores. However, the secondary measure follow-up score differences of the Motricity Index at 6 and 12 weeks and the trunk control test at 6 weeks suggest a possible greater improvement in the intervention group ($p<0.05$, $p<0.01$).**

Conclusion: **There are grounds for a future trial of Marma therapy ($n=172$), which would be feasible and acceptable to patients.**

Key words: cerebrovascular accident, complementary therapies, rehabilitation, recovery of function, pilot projects, feasibility studies.

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INTRODUCTION

Previous research has shown that physical stimulation positively affects recovery from stroke (1). A review of physiotherapy rehabilitation was unable to resolve which approaches are superior (2).

Marma therapy is a massage-based therapy with a long tradition in Indian Ayurvedic medicine. It involves stimulating "Marma points" with vigorous pressure to promote healing, mainly on the affected side. There are 107 Marma points where flesh, veins, arteries, tendons, bones and joints meet (Fig. 1). It is held that the effectiveness of Marma therapy is related to the sensitivity of these points. Marma points are therefore selected on the basis of their sensitivity, which reduces as function returns. There have been no controlled studies of Marma therapy. The aims of this research were to assess the feasibility and acceptability of Marma massage as a method of treatment for stroke, and to assess the possible effect over and above usual care.

METHODS

Design

Pragmatic non-randomized single-blind controlled pilot trial, comparing standard care with standard care plus Marma therapy in post-stroke patients, with interviews. For practical reasons, (therapist availability), the study used sequential group allocation.

Participants

Thirty participants were recruited from an acute stroke unit. The intervention was given in the stroke unit, community hospitals and patients' homes. Recruitment was from October 2003 to December 2004.

Inclusion criteria

Patients of any age with an infarction or haemorrhage at any brain location with a minimum Barthel Index (BI) score (3, 4) of 75/100 and a minimum Abbreviated Mental Test (AMT) (5) score of 8/10.

Exclusion criteria

Clinically unstable patients, with a history of concurrent serious co-morbidity. As this was a pilot study no formal power calculation was made. The researcher who assessed patients and the statistician were blinded to allocation. A control group received usual multi-disciplinary stroke rehabilitation. This included individualized remedial therapy, dependent on assessed need. Care was similar in all organizations and typically given on a daily basis.

Methods

Three 45-minute sessions of Marma therapy were applied each week for 6 weeks, plus usual stroke care. The therapy focused on the Marma massage points corresponding to body areas affected by the stroke.

All measures were used at baseline, at 6 weeks (end of treatment) and 12 weeks from baseline (the primary end-point), except for the National

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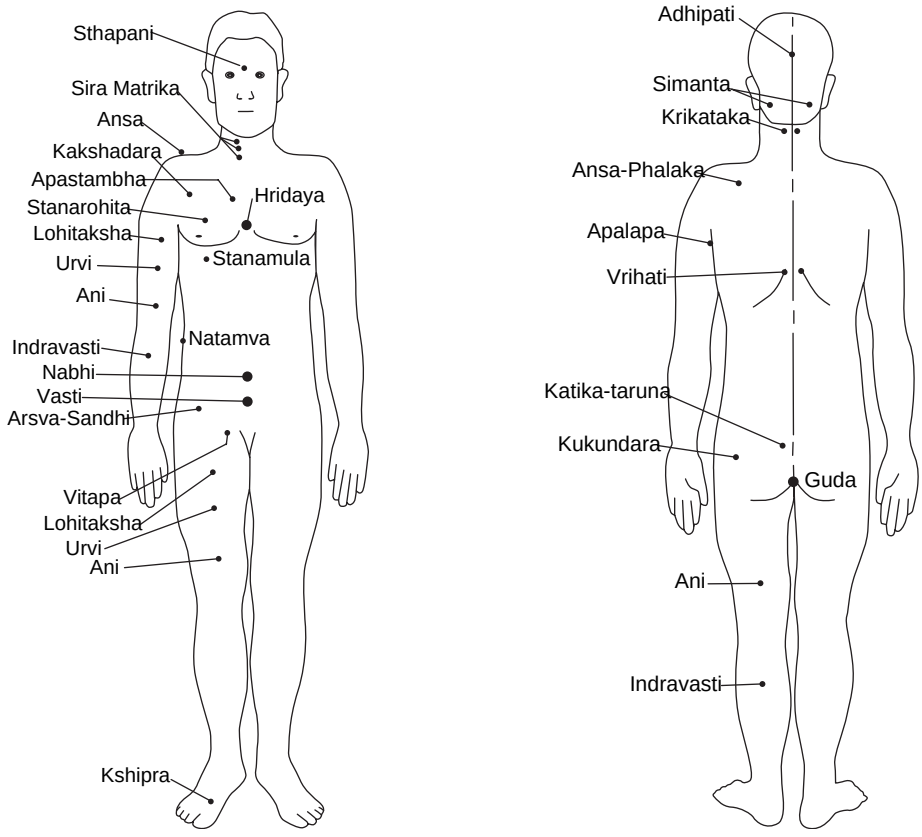

Fig. 1. Primary locations where Marma massage is applied.

Institute for Health stroke scale (NIHSS), which was used as a baseline assessment of stroke severity.

BI (range 0–100) was used to assess functional status (3, 4).

Secondary measures. The Motricity Index (MI; range 0–100) assessed functional status of the limbs (6, 7). The Trunk Control Test (TCT; range 0–100) assessed 4 trunk activities (e.g. sitting up) (6, 7). The 9 Hole Peg Test (9HPT; seconds) measured co-ordination and dexterity (8). The NIHSS (range 0–42) was used to assess neurological impairment after stroke (9). The AMT (range 1–10) provided an assessment of cognitive function/ability to give consent (5). Structured interviews were used to elicit qualitative feedback from the intervention group after 6 weeks.

Outcomes were analysed on an intention-to-treat basis. The primary analysis compared the change in BI scores between the treatment and control groups using non-parametric Mann-Whitney tests. Secondary analyses made similar comparisons with regard to the other outcomes. Data from structured interviews were analysed by content analysis (13).

Ethical approval was gained from the North and East Devon Research Ethics Committee.

RESULTS

Table I shows that the 2 groups were well matched for age, gender, cognitive ability and stroke severity. The baseline BI and TCT scores show a clinically meaningful (but not statistically significant) difference in favour of the intervention group. The 9HTP scores indicate that the control group might have been less physically able than the intervention group.

Fifty-seven patients (1.01 per week) were assessed for eligibility and of 33 who were eligible, 30 (91%) were recruited (0.53 per week). Nine participants (30%) were lost to follow-up through death (2), declining health (4) and personal choice (3).

Of the 15 participants in the intervention group, 10 patients received all 18 sessions, 1 received 13, 1 received 6, 1 received 3, and 2 patients received 2 sessions.

There were no serious adverse events. Of the 13 interviewees, 9 enjoyed their Marma therapy, 7 believed it had been beneficial and 9 reported that it was painful at times, causing 2 withdrawals. The amount and frequency of massage sessions was thought to be appropriate by all. All participants said they would choose to have the massage again.

Effectiveness (Table I)

Primary outcome. There were no significant differences in BI scores between groups at 6 or 12 weeks, and no difference in change scores at either time point. Sensitivity analyses showed that the difference in the BI scores at baseline was not distorting the results.

MI affected side. The intervention group seemed to improve more than the control group. Although the difference in change scores was not significant, the between-group difference in absolute scores (which was not significant at baseline) became significant at both 6 and 12 weeks.

TCT. At 6 weeks there were no significant differences in change scores, although a significant difference in median scores

Table I. *Baseline and follow up scores with changes in score from baseline*

	Group median (inter-quartile range)					Median change from baseline (inter-quartile range)		
Outcome measure	Intervention	*n*	Control	*n*	*p*-value	Intervention	Control	*p*-value
Age (years) Mean (SD)	72 (9.67)	15	74 (9.85)	15	0.62			
Gender	8 M/7 F		8 M/7 F					
AMT Mean (SD)	8.93 (0.78)		9.33 (0.72)		0.35			
NIHSS	6.00 (1.28, 8.00)	15	6.38 (3.00, 12.00)	15	0.32			
BI								
Baseline	40.00 (25.00, 50.00)	15	25.00 (15.00, 40.00)	15	0.15			
Week 6	75.00 (55.00, 85.00)	12	47.50 (36.25, 93.75)	12	0.38	30.00 (21.25, 38.75)	37.50 (7.50, 65.00)	0.50
Week 12	80.00 (70.00, 92.50)	13	55.00 (35.00, 95.00)	9	0.48	35.00 (22.50, 60.00)	40.00 (12.50, 72.50)	0.83
MI affected side								
Baseline	59.00 (38.50, 82.50)	14	51.50 (42.50, 75.50)	14	0.59			
Week 6	82.25 (62.50, 88.50)	12	56.25 (33.00, 71.38)	11	0.02*	15.75 (0.88, 24.13)	3.75 (−15.13, 19.63)	0.33
Week 12	86.50 (75.75, 98.00)	12	54.00 (35.00, 75.75)	8	0.01**	18.00 (0.38, 37.38)	4.00 (−18.00, 45.50)	0.52
TCT								
Baseline	75.00 (58.25, 100.00)	15	55.00 (42.75, 87.00)	15	0.15			
Week 6	100.00 (75.00, 100.00)	11	68.50 (40.00, 87.00)	11	0.03*	13.00 (0.00, 37.00)	25.00 (1.00, 26.00)	0.49
Week 12	87.50 (74.25, 100.00)	12	87.00 (49.50, 100.00)	9	0.65	0.00 (0.00, 22.00)	25.00 (6.50, 50.50)	0.09

*Significant at $p < 0.05$, **$p < 0.01$.
AMT = Abbreviated Mental Test; NIHSS = National Institute for Health Stroke Scale; BI = Barthel Index; MI = Motricity Index; TCT = Trunk Control Test.

indicated that the intervention group were making better progress. However, at 12 weeks, the clinically (but not significantly) meaningful difference in favour of the control group in the change scores suggested that any gain was short-lived.

9-Hole Peg test. For the unaffected hand: at 6 weeks there were no significant differences, although at 12 weeks the control group showed a significantly greater improvement from baseline. For the affected hand there were no significant differences.

DISCUSSION

We did not expect our pilot study to produce definitive data on efficacy. Although there were no significant differences in the change in the BI between the 2 groups, those in the control group improved slightly more than those in the intervention group. There was also a significant difference in favour of the control group for the 9HPT, suggesting that Marma therapy when combined with conventional therapy might reduce the benefits of conventional treatments. However, it is also possible that this is an artefact of the considerably lower baseline BI score of the control group, giving them more scope for improvement and the low numbers of participants.

The secondary outcome data also gave indications of a beneficial treatment effect. In particular, the MI differences at 6 and 12 weeks and the TCT differences at 6 weeks may suggest a greater or more rapid improvement in those treated with Marma therapy.

Study limitations found in secondary outcome measures should be interpreted very cautiously due to the absence of randomization, imbalance in baseline measures and low numbers recruited, which ensured that any difference in the BI was unlikely to be significant unless the treatment effect was implausibly large. Further limitations include the 9 patients (30%) lost to follow-up. In addition data on conventional therapy intensity were not collected.

Around half of those assessed were not eligible. Delays in consenting meant that 16% of patients who might have been recruited were discharged before consent could be obtained. However, the proportion agreeing to participate was encouraging (91%).

No major adverse effects were seen, confirming that in the setting of acute stroke, Marma therapy is safe. The interview data indicated that it is both tolerable and acceptable to the majority of patients.

Despite the studies limitations, we have for the first time established the safety and feasibility of conducting a trial of Marma therapy in an acute stroke service setting in the UK, and derived valuable information regarding treatment tolerability. The tentative evidence of improvements favouring the intervention group suggests that this therapy may be worth further investigation. Before planning further studies, a mechanism may be explored through functional magnetic resonance imaging (fMRI) studies.

Notwithstanding considerable advances in treatment in recent years, over half of stroke survivors remain severely disabled. Marma therapy, while widely used in Aryuvedic practice is as yet inconclusively tested. Our pilot study has shown that, in due course, a larger, appropriately powered trial of Marma massage therapy as an adjunct to conventional Western multidisciplinary stroke rehabilitation should be feasible and safe. While this study did not allow calculation of accurate sample sizes, findings from other research (10) indicate that a trial with 64 participants in each arm would have 80% power to detect a difference of 10 points in BI scores.

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