

PHYSIOTHERAPY FOR PREVENTION AND MANAGEMENT OF SHOULDER PAIN IN STROKE PATIENTS : AN EVIDENCE BASED STUDY

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Abstract

Stroke is one of the common case of physical disability . The common complication after stroke is pain and dysfunction of shoulder of paralyzed arm. Shoulder pain affects from 16% to 72% of patients after a cerebrovascular accident. Hemiplegic shoulder pain causes considerable distress and reduction in activity and can markedly hinder rehabilitation. So, shoulder pain management in stroke patient is used in the field of rehabilitation to improve patient's functional abilities .The ideal management of hemiplegic shoulder pain is prevention. Shoulder taping may be used to prevent shoulder pain. In acute case of hemiplegia , modified wheelchair arm rest is useful for shoulder pain reduction. If shoulder pain persist then treatment should include TENS, IFC, LASER, KINESIOLOGICAL TAPING and INTRAMUSCULAR ELECTRICLE STIMULATION. We have reviewed the available literature on hemiplegic shoulder pain to explore the best management strategies.

Keywords : Stroke , Hemiplegic shoulder pain

Introduction

Stroke is “ A Clinical syndrome consisting of rapidly developing clinical sign of focal (or global in case of coma) disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent causes other than a vascular origin “ (WHO⁷). In patient with stroke a number of common impairments have been identified. These include impaired motor function , abnormal muscle tone, shoulder pain and subluxation, speech problems, cognitive impairments, sensory impairments, urinary incontinence and dysphagia. (Lawrence et al) shoulder pain resulting from hemiplegia is common clinical consequence of stroke. About 16% to 72% persons have the pain in the shoulder after the stroke. Hemiplegic shoulder pain(HSP) is a shoulder pain that is present at rest , during passive or active movement on hemiplegic side after stroke with no direct relation to trauma or injury. (kim et al. 2014). HSP can begin as early as 2 weeks post stroke but typically occure within 2-3 months post-stroke. (Coskum et al. 2013) . Shoulder pain can affect successful transfers , maintaining balance, effective hand function and performing activities of daily living.

Physiotherapy has been used in the treatment of hemiplegic shoulder pain. Taping, Modified wheelchair arm support, Transcutaneous electrical nerve stimulation, Interferential current, Intramuscular electrical stimulation, LASER therapy – all are used for prevention and management of hemiplegic shoulder pain. Treatment outcomes are measured by visual analog scale (VAS) or numerical pain rating scale (NPRS) at baseline and at end of the treatment phase. Evidance based research is needed to determine effective prophylaxis and document the therapeutic effect of different modalities and techniques in various presentation.

Inclusion criteria for articles

- Randomised controlled trials.
- The articles that includes subjects with stroke.
- Use of physiotherapy intervention for prevention or management of hemiplegic shoulder pain.
- Visual analog scale (VAS) or numerical pain rating scale (NPRS) as one of the outcome measure.

Methodology

The articles were searched in Pubmed, Elsevier, Cochrane library, google scholar by using keywords like stroke, hemiplegic shoulder pain etc. The articles were taken from journal of clinical rehabilitation, American journal of physical medicine & rehabilitation, Journal of healthcare engineering, Archives of physical medicine and rehabilitation, Agri. Journal of Turkish, Journal of disability and rehabilitation.

Table 1 : Physiotherapy management for prevention or management of shoulder pain in stroke patient

Study Design	Year	Author	No. of Subject	Treatment	Intervention	Outcome Measures	Results	Level of Evidence
RCT (Single blind)	2000	-HC Hanger et al.	Total=98 (n=49) Treatment Group (n=49) Control Group	Strapping of affected shoulder by non-stretch tape	In treatment group strapping of affected shoulder for 6 weeks and control group underwent to standard physiotherapy for 6 weeks.	All subjects were assessed at entry (0 week) ,at end of the treatment phase(week 6) and 2 month later (week 14) by visual analog scale(VAS) for shoulder pain measure.	At end of the study “NO SIGNIFICANT” difference is determined for shoulder pain reduction in both group.	1 b
RCT (single blind)	2018	-Ruihan pan et al.	Total=120 (n=60) Treatment Group (n=60) Control Group	Affected shoulder is supported by modified wheelchair arm support	Treatment group received modified wheelchair arm support for 60 min/day ,6 day/week, for 4 weeks and control group received basic rehabilitation training for 4 weeks.	Outcome was measured at 4 weeks and at 12 weeks by visual analog scale (VAS) or numerical pain rating scale (NPRS).	At 4 weeks , the median of pain intensity was higher in the control group. At 12 weeks also pain intensity was higher in control group.	1 b
RCT (single blind)	2005	-Chae J et al.	Total=61 (n=31) Treatment Group (n=30) Control Group	Intramuscular electrical stimulation for hemiplegic shoulder pain	Treatment subjects received intramuscular electrical stimulation to supraspinatus ,posterior and middle deltoid and upper trapezius for 6hours/day for 6 weeks and control subjects received cuff type sling for 6 weeks.	All subjects assessed by brief pain inventory question 12 and 11 point numeric rating scale at baseline and at end of the treatment (6 weeks) and at 3,6,12 month post treatment.	The electrical stimulation group exhibited a significantly higher success rate than control group.	1 b
RCT (double blind)	2018	-Lin Yang et al.	Total=19 (n=10) Treatment Group (n=9) Control Group	Kinesiologic al taping in affected shoulder	Treatment group received treatment once aday, 5 day/week for 4 weeks. Treatment group received kinesiologic al taping with tension for supraspinatus, teres minor, anterior-middle-posterior deltoid. Control group received kinesiologic al taping without tension for same muscles.	All subjects assessed by neumerical pain rating scale (NPRS) at baseline and at end of the treatment phase (4 weeks).	There was “STASTICALLY SIGNIFICANT” difference in demographic variable between the treatment and control group.	1 b
RCT (Double blind)	2014	-Suriya amarit D. et al.	Total=30 (n=15) IFC Group (n=15) Placebo Group	Interferential current stimulation in hemiplegic shoulder	IFC Group received interferential current for 20 min. with frequency at 100 Hz in vector mode and an intensity was increased until the patient felt a strong tingling sensation.	Pain intensity was measured at baseline and immediately after treatment by neumerical pain rating scale or visual analog scale.	Participants reported a greater reduction in pain after treatment with IFC than with placebo group.	1 b
RCT	2008	-E Kim A et al.	Total=19 (n=10) TENS Group	Trans-cutaneous electrical nerve	TENS Group received basic rehabilitation with 15 session/3 weeks of TENS	VAS (visual analog scale) evaluate shoulder pain in	In TENS group statically significant	1 b

			(n=9) Placebo Group	stimulation in hemiplegic shoulder.	stimulation and placebo group received placebo current with basic rehabilitation for 3 weeks.	both group at baseline and at after treatment.	pain reduction noticed than placebo group.	
RCT	2015	-Paolo pillastrin et al.	Total=32 (n=16) Treatment Group (n=16) Control Group	Neuromuscu lar taping on painful hemiplegic shoulder.	The experimental group received the application of NMT for 45min/day for 4 weeks with standard physical therapy programme (SPTP) where as the control group received SPTP for 4 weeks.	The VAS were assessed before and after the intervention with follow up at 4 weeks.	The experimental group had a greater reduction in pain compared to the control group at the end of the intervention.	1 b
RCT	2009	-Engin Koyuneu et al.	Total=50 (n=25) Treatment Group (n=25) Control Group	Functional electrical stimulation on affected shoulder.	The study group patient received FES to supraspinatus and posterior deltoid muscles with conventional rehabilitation where control group only received conventional rehabilitation.	The shoulder pain of all patients during resting, passive range of motion and active range of motion was measured with the visual analog scale (VAS).	Comparison of the resting, active range of motion and passive range of motion VAS value changes showed "NO SIGNIFICAN T" difference between two groups.	1 b
RCT	2009	-Azra Karabeg ovic et al.	Total=70 (n=35) Experimen tal Group (n=35) Control Group	LASER Therapy of painful shoulder	The experimental group received LASER therapy by laser machine BTL 2000 with laser probe of 50 Mw and wavelength of 830 nm , 3 J at each painful point by contact laser probe for 6 weeks, at first 3 weeks everyday ,at second 2 weeks 3 times/week and last week 2 times/week laser therapy was given. where control group received TENS for 6 weeks. And both group also received kinesio therapy and ice massage.	Outcome was measured by VAS at baseline and immediately after treatment , at end of the treatment phase (6 weeks).	The pain intensity in shoulder was significantly reduced in experimental group.	1b

Conclusion

According to these articles MODIFIED WHEELCHAIR ARM REST and NEUROMUSCULAR TAPING techniques are effective for prevention of hemiplegic shoulder pain. If shoulder pain is not prevented then it's management is necessary to improve patient's functional abilities. LASER therapy, IFC stimulation, KINESIOLOGICAL TAPING, TENS, INTAMUSCULAR ELECTRICAL NERVE STIMULATION- these physiotherapy techniques are very effective for management of hemiplegic shoulder pain. STRAPPING and FES are not effective for management of hemiplegic shoulder pain.

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