不同运动贴扎治疗偏瘫痉挛期肩痛对比研究

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摘要 目的:对比分析不同运动贴扎法治疗偏瘫痉挛期肩痛的临床效果。**方法:**收集康复医学科 120 例脑卒中后偏瘫痉挛期肩痛住院患者,按照随机数字表法分为治疗组、对照组和空白组各 40 例。所有患者均接受常规康复干预,对照组采用三角肌与前锯肌运动贴扎措施(常规方法),治疗组采用冈上肌、菱形肌与上斜方肌运动贴扎方法(新型方法),疗程均为 1 个月。空白组不予运动贴扎干预。**结果:**治疗 1 个月后,在 VAS 评分方面,对照组改善(3.4±0.2)分,治疗组改善(4.9±0.3)分,2 组比较差异有统计学意义($P<0.01$);在无痛 PROM 方面,对照组改善幅度(23±0.8)°,治疗组改善幅度(42±1.4)°,2 组比较差异有统计学意义($P<0.01$);治疗组的疼痛与活动度改善均优于对照组($P<0.01$);治疗组和对照组的 VAS 评分、无痛 PROM 改善幅度均显著高于空白组($P<0.01$),而上肢 FMA 评分、改良 Ashworth 评分与空白组比较差异无统计学意义($P>0.05$)。**结论:**新型贴扎方法能够显著改善脑卒中后偏瘫痉挛期疼痛、无痛被动关节活动度范围,该方法对偏瘫痉挛期肩痛的功能改善具有更好的辅助作用。但是贴扎治疗对单纯软组织支持短暂不持久,稳定性欠缺,可能远期效果不佳;痉挛期肢体肌张力持续增高,肌力增长缓慢,短时间内采用贴扎与训练对上肢运动功能和肌张力改善较少。

关键词 偏瘫;痉挛期;肩痛;运动贴扎

脑卒中后偏瘫痉挛期患者肩痛是卒中后常见并发症,临床约有 70% 患者可出现该症状,严重影响其上肢功能及日常生活能力恢复^[1]。肩痛发生机制以及临床治疗多样化,临床干预结果也报道不一。运动贴扎(kinesio-taping, KT)自 1979 年由 KENZO KASE 开发以来,已被广泛应用于康复。因其使用简单、方便、无创、有效而被广泛应用于偏瘫痉挛期肩痛患者中^[1-2]。

常规的三角肌配合前锯肌贴扎在处理肩部肌筋膜疼痛方面有显著效果。KALICHMAN 等^[3]指出,该方法在处理软组织源性疼痛方面具有有效性。而脑损伤导致的肩关节疼痛原因更为复杂,如异常姿势、高肌张力、低肌力、肌筋膜紊乱、神经卡压等。HARPUT 等^[4]在 2017 年提出肩胛骨贴扎配合冈上

肌贴扎,可改善肩胛骨异常模式,增加肩关节稳定,减轻神经卡压症状。目前国内采用肩胛骨配合冈上肌贴扎的相关研究缺乏,本研究旨在分析不同贴扎康复干预,探讨肩胛骨与冈上肌运动贴扎治疗偏瘫痉挛期肩痛的临床康复效果。

1 临床资料

1.1 病例选择标准

1.1.1 纳入标准 ① 均符合脑卒中诊断标准,偏瘫分期为痉挛期;② 具有肩痛症状;③ 年龄 18~75 岁;④ 患者及家属能积极配合治疗^[2]。

1.1.2 排除标准 ① 影像学检查或/和临床检查提示肩关节周围肌腱韧带断裂、关节囊撕裂等软组织损伤;② 患有神经根型颈椎病;③ 汉密尔顿抑郁量

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表(Hamilton Depression Scale,HAMD)≥24分;④简易智能精神状态检查量表(mini-mental state examination,MMSE)≤16分^[2]。

1.2 一般资料

于2017年6月—2018年7月在南京医科大学附属淮安第一医院康复医学科住院且符合纳入标准的脑卒中患者中选取120例痉挛期肩痛患者,经过南京医科大学附属淮安第一医院临床研究伦理委员会审查批准(YL-P-2017-019),按照随机数字表法分为治疗组、对照组和空白组各40例。3组基本资料比较差异无统计学意义($P>0.05$),见表1。

表1 3组基本资料比较($\bar{x}\pm s$)
Table 1 Comparison of general data in three groups ($\bar{x}\pm s$)

组别	n	性别		年龄/岁	病程/月
		男	女		
对照组	40	21	19	61.0±1.6	2.3±0.3
空白组	40	20	20	60.8±1.6	2.3±0.5
治疗组	40	20	20	60.3±1.7	2.2±0.4

2 方法

2.1 治疗方法

所有患者均接受常规康复训练、物理治疗、作业治疗等,康复训练以Brunnstrom训练方法为主,积极矫正上肢异常运动模式,促进分离运动的出现。本研究使用宽5cm的肤色运动贴布(苏宁械备20150063号,生产批号SBW17062809)。贴布两端固定于肢体没有张力,中间部分均施加轻微(15%~25%)张力^[2,4]。

2.1.1 对照组 ①三角肌贴扎:将Y型贴布的基部固定于肱骨三角肌粗隆下方3cm处,中间沿三角肌前束和后束的外边界施加张力,前束和后束尾部分别固定于锁骨外侧及肩胛冈^[3]。②三角肌固定贴扎:I型贴布,上臂内旋位屈肘90°,基部固定于肱骨大结节下方,分别沿着水平线前、后包绕上臂施加张力,固定于三角肌前束和后束。③前锯肌贴扎:I形贴布,基部固定于患侧胸廓侧壁的第5、6、7、8肋骨处,尾部沿着前锯肌下部肌束延展施加张力,固定于肩胛骨下角内侧缘处,呈部分叠加状。

2.1.2 治疗组 ①肩胛骨贴扎:3根I形贴布,一根基部固定于脊柱中央颈₆位置,沿菱形肌纤维施加张力,固定于患侧冈上肌^[4];另一根基部固定于脊柱中央胸₄位置,沿菱形肌纤维施加张力,固定于冈下肌;第3根基部固定于锁骨中点前面,向背侧延伸施加张力,固定于平胸₅₋₆水平处,使贴布大约垂

直于上斜方肌的肌纤维走向。②冈上肌贴扎(增加肩关节稳定性方面优于三角肌贴扎):I形贴布,基部固定于肱骨大结节下方3cm处,没有张力,然后将患者肩部外展,颈部向对侧侧屈,贴布沿冈上肌向上延展施加张力,固定于肩胛骨上角^[5-7]。

治疗组和对照组均采用肩关节矫正贴扎^[3],I形贴布,坐位,患侧肩外展45°,屈肘90°,基部固定患侧肩胛骨内侧上角,从肩胛内侧上角沿着肩峰上方,向前贴绕肩锁关节,并以螺旋状向前向下向后向外环绕,施加张力,固定于外侧肘横纹上3cm处。2组粘贴时均严格按照顺序贴扎,2d1次,7次为1个疗程,疗程期间休息1d,共治疗1个月,注意观察患者是否有水泡等不良反应。空白组未做贴扎处理。

2.2 评估指标

3组治疗前、治疗1个月后分别采用以下4个指标进行评估并记录。评估皆由固定人员完成。

2.2.1 疼痛评分 以视觉模拟评分法(visual analogue scale,VAS)为判定标准^[7],使用视觉模拟评分表或标尺,进行评分记录和统计,分值为0~10分,0分为无痛,10分为剧痛,分值越高疼痛感越强,反之疼痛感越轻。

2.2.2 无痛被动关节活动度(passive range of motion,PROM)测量 测量工具为关节角度尺,按照肩关节活动范围检查方法,测量肩被动前屈、外展、内旋、外旋角度并记录^[2,4]。肩关节正常活动范围为前屈0°~180°,外展0°~180°,外旋0°~90°,内旋0°~90°,角度越大,活动越好。

2.2.3 上肢运动功能评定(Fugle-Meyer Assessment,FMA) 由瑞典学者Fugle-Meyer针对脑卒中后肢体功能,在Brunnstrom分期的基础上于1975年设计的,其中上肢部分33个小项,每个小项分为3级,分别记为0分(不能做)、1分(部分完成或完成不充分)和2分(能充分完成),最高66分,分数越高,功能越好^[2,3,8]。

2.2.4 改良肌张力评定(改良Ashworth) 该法有6级,级别越高张力越高^[2,3,9]。

2.3 统计学方法

采用SPSS 21.0软件进行统计分析。所得计量资料采用($\bar{x}\pm s$)表示,多组间采用单因素方差分析,计数资料采用 χ^2 检验。 $P<0.05$ 为差异具有统计学意义。

3 治疗结果

3.1 3组治疗前后VAS评分比较

见表2。

表 2 3 组治疗前后 VAS 评分比较 ($\bar{x}\pm s$) 分
Table 2 Comparison of VAS scores before and after treatment in three groups ($\bar{x}\pm s$) Scores

组 别	<i>n</i>	治疗前	治疗后	改善幅度
对照组	40	7.3±0.6	2.9±0.4	3.4±0.2 ¹⁾
空白组	40	7.3±0.7	4.8±0.6	2.5±0.5
治疗组	40	7.1±0.7	2.2±0.3	4.9±0.3 ¹⁾²⁾

注:与空白组比较,1) $P<0.01$;与对照组比较,2) $P<0.01$ 。
Note: Compared with the blank group, 1) $P<0.01$; Compared with the control group, 2) $P<0.01$.

3.2 3 组治疗前后无痛 PROM 比较
见表 3。

表 3 3 组治疗前后无痛 PROM 比较 ($\bar{x}\pm s$)
Table 3 Comparison of painless PROM before and after treatment in three groups ($\bar{x}\pm s$) 。

组 别	<i>n</i>	治疗前	治疗后	改善幅度
对照组	40	61±2.3	83±3.1	23±0.8 ¹⁾
空白组	40	62±5.4	70±3.8	8±1.0
治疗组	40	59±3.8	101±3.5	42±1.4 ¹⁾²⁾

注:与空白组比较,1) $P<0.01$;与对照组比较,2) $P<0.01$ 。
Note: Compared with the blank group, 1) $P<0.01$; Compared with the control group, 2) $P<0.01$.

3.3 3 组治疗前后上肢 FMA 评分比较
3 组治疗后上肢 FMA 评分改善幅度比较,差异均无统计学意义($P>0.05$),见表 4。

表 4 3 组治疗前后上肢 FMA 评分比较 ($\bar{x}\pm s$) 分
Table 4 Comparison of FMA scores of upper limbs before and after treatment in three groups ($\bar{x}\pm s$) Scores

组 别	<i>n</i>	治疗前	治疗后	改善幅度
对照组	40	16.49±0.82	17.82±1.38	1.33±1.57
空白组	40	16.82±0.92	18.08±2.52	1.26±2.01
治疗组	40	16.33±0.61	17.98±2.41	1.65±2.24

3.4 3 组治疗前后改良 Ashworth 评分比较
3 组治疗后改良 Ashworth 评分改善幅度比较,差异均无统计学意义($P>0.05$),见表 5。

表 5 3 组治疗前后改良 Ashworth 评分比较 ($\bar{x}\pm s$) 分
Table 5 Comparison of modified Ashworth scores before and after treatment in three groups ($\bar{x}\pm s$) Scores

组 别	<i>n</i>	治疗前	治疗后	改善幅度
对照组	40	1.85±0.28	1.28±0.25	0.57±0.12
空白组	40	1.91±0.32	1.24±0.30	0.67±0.22
治疗组	40	1.92±0.35	1.31±0.26	0.61±0.10

4 讨 论

脑卒中后偏瘫痉挛期患者在康复阶段肩痛发生风险较高,发病因素相对较多,肌痉挛、肩袖撕裂、肩关节半脱位、肩关节误用综合征、周围神经损伤及肌松弛等因素均会诱发肩痛。而疼痛又是限制关节被动活动的主要因素。目前临床针对脑卒中偏瘫痉挛期肩痛症状多直接使用黏性柔韧材料——运动贴布。GOKSU 等^[10]提出,贴布是治疗疼痛的较好的非创伤治疗方法。贴布也被证实多种疾病中治疗疼痛的同时能够改善关节活动度^[11-12]。不同于传统的胶带,具有透气、防水、生理兼容性强及伸缩性良好、使用方便等特点。

本研究中使用的运动贴扎有这 4 种效果:使肌肉功能正常化,增加淋巴和血管流动,减轻疼痛,有助于矫正^[5]。贴布的主要作用归因于贴布的张力,其引起拉伸载荷,压力剪切力的变化,触发皮下软组织和筋膜中的机械感受器^[8]。中枢神经系统整合了感觉输入并调节伽玛运动反射,从而导致肌张力的增加。而且,对称的矫正、稳定的提高能够改变运动的生物功能以及促进感觉运动功能,以微弱的感觉输入抑制可能是贴布效应的原因^[5-7]。

本研究中对照组贴扎方法,通过三角肌贴扎提高肩关节稳定,降低肩关节的负荷,并通过改善肩胛骨旋转障碍来改善患侧肩关节稳定性,从而达到改善肩部疼痛及提高患者预后的效果。

本研究中治疗组贴扎方法特别关注肩胛骨的“X”,一个“X”是菱形肌-前锯肌,另一个“X”是胸小肌-斜方肌。斜方肌贴扎目的是在肩关节活动时,减少上斜方肌活动增加下斜方肌活动,从而增加下斜方肌肌力,减少胸小肌的痉挛,改善臂丛神经营养状况,从而减轻疼痛^[4]。治疗组的菱形肌贴扎是加强安静状态下肩胛骨的上回旋,从而减轻胸廓特别是胸大肌、胸小肌的短缩痉挛^[3]。有研究提示,该种治疗方法对降低肩关节疼痛增加关节稳定有较好的疗效^[3,5]。这可能是治疗组优于对照组的原理之一。本研究中对照组的三角肌运动贴扎并不能减少疲劳引起的肩关节位置感觉障碍,治疗组的冈上肌贴扎优于三角肌贴扎,能增加肩关节稳定性,减少肩关节疼痛及减少关节半脱位^[3,5]。这可能是治疗组优于对照组的原理之二。

本研究中患者无痛 PROM 改善的原理可能为:随着疼痛减轻,肩胛骨、肩袖肌(冈上肌)稳定性提高,关节不对称的矫正,肌肉紧张度下降,患者的姿势得到矫正,患者无痛 PROM 逐渐增加^[13-14]。另一个因素是贴布应用可能有助于增加肌肉的强度/活

化,贴布可以将肩胛骨相对于正常位置向后定位。因此,肩胛骨的正确定位增加了肩部稳定性肌肉的激活,从而增加了肩部 PROM。RAVICHANDRAN 等^[2]证实了类似的发现。

肩关节运动损伤后普遍采用贴扎处理,对肌肉活动和运动表现都有积极影响,从而改善疼痛及运动功能。但 FRASSANITO 等^[15]指出运动贴扎仅能在短期内减轻疼痛,但可增加长期生物力学效应。HOCHSPRUNG 等^[16]指出,运动贴扎在早期治疗疼痛方面不优于常规物理治疗方法,但未否认其治疗效果。LIM 等^[17]提出在肌肉骨骼疾病中,运动贴扎的长期效果不如运动效果。KOC AK 等^[18]在研究运动贴扎治疗关节炎症的疾病中也提出其短期治疗效应,慢性疼痛疾病中不建议使用。由此可见,贴布的短期、快速治疗效果明显,但长期治疗效应一般,慢性疾病不建议使用。脑卒中恢复慢,病程长,后期肩关节疼痛处理更应依赖肩关节功能训练。本研究存在治疗时间不足,未做长期随访,长效未知,仅供临床参考。

肩关节是不稳定的游离关节,其稳定性依赖神经有效调配下的周围软组织支持。贴扎治疗对单纯软组织支持短暂不持久,稳定性欠缺,疼痛和被动活动度改善虽较明显,但可能远期效果不佳。而痉挛期肢体肌张力持续增高,肌力增长缓慢,故而短时间内采用贴扎与训练对上肢运动功能和肌张力改善较少。

综上所述,在脑卒中后偏瘫痉挛期肩痛患者中采用新型运动贴扎法,患者肩部疼痛、无痛被动关节活动度改善更明显。

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(下转第 234 页)

Treatment of Kinesiology Taping Combined with Exercise Training in Children with Foot Valgus Caused by Cerebral Palsy

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ABSTRACT Objective: To investigate the clinical effect of kinesiology taping combined with exercise training in children with foot valgus caused by cerebral palsy. **Methods:** The children aged 2 to 6 years old with foot valgus caused by cerebral palsy who were treated in the rehabilitation center of the Second Affiliated Hospital of Heilongjiang University of Traditional Chinese Medicine from January 2018 to April 2019 were selected as the research subjects, and 60 cases met the inclusion criteria were selected and were divided into control group and treatment group according to the random number table method, with 30 cases in each group. The control group was given conventional treatment (exercise therapy, acupuncture treatment, massage therapy); the treatment group was given kinesiology taping on the basis of conventional treatment and the patch was removed after 24 hours, followed by another patch at an interval of 24 hours. Both groups were treated 12 weeks. Before and after treatment, the children in both groups were respectively evaluated by footprint map three-line method for foot valgus degree and relaxed calcaneal stance position (RCSP) angle measurement. **Results:** There was no significant difference between the two groups in terms of foot valgus degree and angle of RCSP before treatment ($P > 0.05$). After 12 weeks' treatment, the foot valgus degree in the treatment group was improved, and the difference was statistically significant compared with before treatment ($P < 0.05$). After treatment the foot valgus degree in the treatment group was better than that in the control group, and the difference was statistically significant ($P < 0.05$). After treatment angle of RCSP in the control group was $(-5.48 \pm 1.04)^\circ$, and angle of RCSP in the treatment group was $(-4.83 \pm 0.32)^\circ$, which was statistically significant compared with before treatment in each group respectively ($P < 0.001$), suggesting that angle of RCSP was improved in both groups. After treatment, the angle of RCSP in the treatment group better than that in the control group, the difference was statistically significant ($P < 0.01$). **Conclusion:** Kinesiology taping combined with exercise training can effectively improve foot valgus caused by cerebral palsy in children.

KEY WORDS cerebral palsy; foot valgus; kinesiology taping ; exercise training

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(上接第 229 页)

Clinical Effects of Kinesio-taping on Shoulder Pain in Patients with Spastic Hemiplegia after Stroke

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ABSTRACT Objective: The aim of this study is to analysis clinical effects of different kinesio-taping on shoulder pain in patients with spastic hemiplegia after stroke. **Methods:** One hundred twenty patients from Rehabilitation Department with shoulder pain in spastic hemiplegia after stroke were randomly divided into observation group, control group and blank group, with 40 cases in each group. All patients received routine rehabilitation intervention. The control group was treated with the deltoid muscle and serratus anterior muscle (routine kinesio-taping), while the observation group was treated with the supraspinatus muscle, rhomboid muscle and superior trapezius muscle (new kinesio-taping). The curative effects were observed after 1 month. Patients in the blank group were not affected by kinesio-taping. **Results:** After one month of treatment, VAS scores were improved by (3.4 ± 0.2) in the control group and (4.9 ± 0.3) in the treatment group ($P < 0.01$). The improvement amplitude of painless PROM was $(23 \pm 0.8)^\circ$ in the control group and $(42 \pm 1.4)^\circ$ in the treatment group. The comparison was statistically significant ($P < 0.01$). The pain and activities of patients in the treatment group were better than those in the control group. VAS scores and painless PROM both in the treatment group and the control group were significantly better than those in the blank group ($P < 0.01$). There were no significant differences of FMA scores and modified Ashworth scores in the treatment group and the control group compared with those in the blank group ($P > 0.05$). **Conclusion:** The new method of kinesio-taping on shoulder pain has a significant effect on improving the function of patients with stroke during spasticity. But kinesio-taping therapy is short and unstable, and the long-term effect may be poor. During the spasticity period, the muscle tension of limbs keeps increasing, and the muscle strength grows slowly. In a short time, kinesio-taping and training have little effect on the motor function and muscle tension of the upper limbs.

KEY WORDS hemiplegia; spasticity; shoulder pain; kinesio-taping

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