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针灸联合康复理疗对急性脑梗死患者脑部血流供应及炎性因子的影响*

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摘要目的:探讨针灸联合康复理疗对急性脑梗死(ACI)患者脑部血流供应及炎性因子的影响。**方法:**选取2017年1月~2018年8月期间我院收治的ACI患者63例,根据随机数字表法将患者分为对照组(n=31)和研究组(n=32),对照组在常规西医治疗基础上给予康复理疗治疗,研究组在对照组基础上结合针灸进行治疗,1周为1个疗程,两组均治疗4个疗程。比较两组患者治疗4个疗程后的临床疗效,治疗前、治疗4个疗程后的脑部血流供应指标、炎性因子指标以及Fugl-Meyer运动功能评分(FMA)、改良Barthel指数评分(MBI)、神经功能缺损评分(NIHSS)。**结果:**研究组治疗4个疗程后总有效率为78.13%(25/32),高于对照组的51.61%(16/31)($P<0.05$)。两组患者治疗4个疗程后FMA、MBI均较治疗前升高,且研究组高于对照组($P<0.05$),NIHSS较治疗前降低,且研究组低于对照组($P<0.05$)。两组患者治疗4个疗程后平均血流量(Qm)、平均血流速度(Vm)均较治疗前升高,且研究组高于对照组($P<0.05$),外周阻力(Rv)、动态阻力(DR)均较治疗前降低,且研究组低于对照组($P<0.05$)。两组患者治疗4个疗程后血清白介素-6(IL-6)、超敏C反应蛋白(hs-CRP)、肿瘤坏死因子- α (TNF- α)水平均低于治疗前,且研究组较对照组降低($P<0.05$)。**结论:**针灸联合康复理疗治疗ACI患者,效果明显,可有效改善患者运动功能、神经功能及脑部血流供应情况,降低机体炎性因子水平,提高日常生活能力,具有一定的临床应用价值。

关键词:针灸;康复理疗;急性脑梗死;脑部血流供应;炎性因子

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Effects of Acupuncture and Moxibustion Combined with Rehabilitation Physiotherapy on Cerebral Blood Flow Supply and Inflammatory Factors in Patients with Acute Cerebral Infarction*

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ABSTRACT Objective: To investigate the effects of acupuncture and moxibustion combined with rehabilitation physiotherapy on cerebral blood flow and inflammatory factors in patients with acute cerebral infarction (ACI). **Methods:** A total of 63 patients with ACI, who were admitted to the 910st Hospital of the PLA Joint Logistics Support Force from January 2017 to August 2018, were selected and were randomly divided into control group (n=31) and research group (n=32). The control group was treated with rehabilitation physiotherapy on the basis of conventional Western medicine. The research group was treated with acupuncture and moxibustion on the basis of the control group's therapy. 1 week was a curative effect. Both groups were treated for 4 courses. The clinical efficacy of the two groups after 4 courses of treatment was compared. The cerebral blood flow supply index, inflammatory factor index, Fugl-Meyer motor function score (FMA), modified Barthel index score (MBI) and neurological deficit score (NIHSS) were compared before and after 4 courses of treatment. **Results:** The total effective rate of the research group was 78.13% (25/32) after 4 courses of treatment, which was significantly higher than that [51.61% (16/31)] of the control group ($P<0.05$). The FMA and MBI in both groups increased after 4 courses of treatment compared with those before treatment, the indexes in the research group were higher than those in the control group ($P<0.05$). The NIHSS was lower than that before treatment, and the index in the research group was lower than that in the control group ($P<0.05$). The mean blood flow (Qm) and mean blood flow velocity (Vm) of the two groups after 4 courses of treatment were higher than those before treatment, and the indexes in the research group were higher than those in the control group ($P<0.05$). The peripheral resistance (Rv) and dynamic resistance (DR) were lower than those before treatment, and the research group was lower than the control group ($P<0.05$). The levels of serum interleukin-6 (IL-6), high-sensitivity C-reactive protein (hs-CRP) and tumor necrosis factor- α (TNF- α) of the two groups after 4 courses of treatment were all lower than those before treatment, the research group was lower than the control group ($P<0.05$). **Conclusion:** Acupuncture and moxibustion combined with rehabilitation physiotherapy is effective in treating ACI patients. It can effectively improve the motor function, nerve function and cerebral blood flow supply of patients, reduce the level of inflammatory factors, and improve daily living ability. It has certain clinical application value.

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前言

急性脑梗死(Acute cerebral infarction, ACI)是指脑血供突然中断致使脑组织坏死,具有高发病率、高致残率、高死亡率等特点,是临床常见的急危重症^[1,2]。据统计^[3],我国每年新发脑卒中患者数量约有150万以上,其中80%为ACI。由于我国人口老龄化的加剧,其发病率呈现不断升高趋势。随着现代医学的发展,临床诊断与抢救水平不断提升,ACI死亡率逐渐下降,但疾病本身的高致残率仍给患者带来了不同程度的功能障碍,对患者正常生活造成严重影响^[4,5]。随着康复理疗的发展,主张在发病后尽早实施康复训练,以更好地改善患者的预后及生活质量^[6]。然而既往相关研究报道^[7],ACI患者仅进行常规的康复训练,仍难以达到满意的治疗效果。针灸具有平衡阴阳、调和气血、疏经通络之功效^[8,9]。鉴于此,本研究通过针灸联合康复理疗治疗ACI患者,取得满意疗效,现报道如下。

1 资料与方法

1.1 一般资料

选取我院于2017年1月~2018年8月期间收治的63例ACI患者,纳入标准:(1)均符合2014版《中国急性缺血性脑卒中诊治指南》^[10]中有关ACI的相关诊断标准;(2)经MRI或颅脑CT确诊;(3)首次发病或既往有脑卒中史,伴有偏瘫;(4)患肢肌力 ≤ 3 级;(5)患者及其家属均知情同意,且签署同意书;(6)发病到入院时间 ≤ 24 h。排除标准:(1)合并认知功能障碍者;(2)合并感染性疾病者、自身免疫性疾病者;(3)合并恶性肿瘤、血液系统疾病、心肝肾等脏器功能障碍者;(4)短暂性脑缺血发作、进展性卒中者;(5)近1个月内接受过抗凝药物治疗者。本研究已获我院伦理委员会的批准通过。根据随机数字表法将患者分为对照组($n=31$)和研究组($n=32$),其中对照组男18例,女13例,年龄44~78岁,平均(66.37 ± 3.62)岁;基底节区脑梗死9例,中脑梗死6例,脑桥梗死8例,延髓梗死8例;既往有高血压史者12例,有糖尿病史者15例,有烟、酒嗜好者11例。研究组男17例,女15例,年龄46~79岁,平均(65.92 ± 3.79)岁;基底节区脑梗死10例,中脑梗死7例,脑桥梗死9例,延髓梗死6例;既往有高血压史者11例,有糖尿病史者14例,有烟、酒嗜好者12例。两组患者一般资料比较无差异($P>0.05$)。

1.2 治疗方法

两组患者入院后均给予脑细胞保护剂、降纤酶等基本治疗,在此基础上,对照组于生命体征稳定48h后给予康复理疗,具体训练包括:由专业的康复医师对患者进行康复训练,训练应遵循由易到难、由简到繁的康复原则,包括维持关节活动度、翻身、坐位、维持坐位平衡、站立、维持站姿平衡、步行、上下楼梯、独自进食、自行解决大小便等日常生活训练,同时根据患者具体情况给予物理电治疗。以上训练30~40 min/次,1次/天,1

周为1个疗程,共治疗4个疗程。研究组在对照组的基础上联合针灸进行治疗,具体操作如下:(1)醒脑开窍法,点刺不留针:取尺泽、极泉、委中、内关、三阴交等穴位,常规消毒,选用毫针(苏州医疗用品厂有限公司生产,规格:0.35 mm*(40~50)mm),快速交替刺入皮下;(2)矩阵头部针法,平补平泻:上午取双侧颞穴、四中穴、肢体配肩髃、双侧完骨、外关、曲池、足三里、合谷、阴陵泉、血海、环跳、太冲,留针20 min,下午双侧取穴,完骨、风池、天柱,留针20 min,1次/天,1周为1个疗程,共治疗4个疗程。

1.3 观察指标

(1)治疗4个疗程后参考《脑卒中患者临床神经功能缺损程度评分标准》^[11]中有关ACI的疗效判定标准,具体如下:基本治愈:临床症状基本恢复正常,神经功能缺损评分(Neurological deficit score, NIHSS)^[12]减少 $>90\%$;显著进步:临床症状明显恢复,50% $<$ NIHSS减少 $\leq 90\%$;进步:临床症状部分恢复正常,20% $<$ NIHSS减少 $\leq 50\%$;无效:临床症状未见显著改善甚至加重,NIHSS减少 $\leq 20\%$ 。总有效率=基本治愈率+显著进步率。(2)于治疗前、治疗4个疗程后采用Fugl-Meyer运动功能评分(Fugl-Meyer motor function score, FMA)^[13]对患者运动功能进行评价,得分越高表示运动功能越好;采用改良Barthel指数评分(Barthel index score, MBI)^[14]对患者日常生活能力进行评价,分数越高表示日常生活能力越好;采用NIHSS对患者神经功能缺损情况进行评价,分数越高表示神经功能受损越严重。(3)于治疗前、治疗4个疗程后采用上海德安生物医学工程有限公司生产的脑血管功能检测仪检测两组患者的脑部血流供应指标,包括:平均血流量(Qmean, Qm)、外周阻力(Peripheral resistance, Rv)、平均血流速度(Mean velocity, Vm)、动态阻力(Dynamic resistance, DR)。(4)于治疗前、治疗4个疗程后采集患者清晨空腹静脉血4 mL,2800 r/min离心10 min,离心半径6 cm,取上清液置于-20℃低温冰箱中待测。采用酶联免疫吸附法检测血清白介素-6(Interleukin-6, IL-6)、超敏C反应蛋白(High sensitive C reactive protein, hs-CRP)、肿瘤坏死因子- α (Tumor necrosis factor- α , TNF- α)水平,试剂盒均购自武汉华美生物科技有限公司。

1.4 统计学方法

研究数据录入SPSS23.0软件处理,计量资料用($\bar{x} \pm s$)表示,行t检验,计数资料以(%)表示,行卡方检验,检验标准设置为 $\alpha=0.05$ 。

2 结果

2.1 临床疗效比较

治疗4个疗程后研究组总有效率为78.13%(25/32),高于对照组的51.61%(16/31),组间比较差异有统计学意义($P<0.05$),详见表1。

表 1 临床疗效比较[n(%)]

Table 1 Comparison of clinical efficacy between two groups [n (%)]

| Groups | Basic cure | Significant progress | Progress | Invalid | Total effective rate |
|----------------------|------------|----------------------|----------|----------|----------------------|
| Control group(n=31) | 5(16.13) | 11(35.48) | 8(25.81) | 7(22.58) | 16(51.61) |
| Research group(n=32) | 10(31.25) | 15(46.88) | 4(12.50) | 3(9.37) | 25(78.13) |
| χ^2 | | | | | 4.870 |
| P | | | | | 0.027 |

2.2 两组患者 FMA、MBI、NIHSS 比较

两组患者治疗前 FMA、MBI、NIHSS 比较无统计学差异 ($P>0.05$), 两组患者治疗 4 个疗程后 FMA、MBI 均较治疗前升

高, 且研究组高于对照组 ($P<0.05$), NIHSS 低于治疗前, 且研究组较对照组低 ($P<0.05$), 详见表 2。

表 2 两组患者 FMA、MBI、NIHS 比较(分, $\bar{x}\pm s$)

Table 2 Comparison of FMA, MBI and NIHS between two groups(scores, $\bar{x}\pm s$)

| Groups | FMA | | MBI | | NIHSS | |
|----------------------|------------------|---------------------------|------------------|---------------------------|------------------|---------------------------|
| | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment |
| Control group(n=31) | 16.57± 3.52 | 43.27± 3.26* | 33.28± 8.59 | 51.82± 8.48* | 22.14± 4.19 | 17.12± 3.82* |
| Research group(n=32) | 17.19± 4.27 | 69.10± 2.92* | 32.64± 7.62 | 74.28± 9.57* | 21.97± 3.28 | 12.85± 4.26* |
| t | 0.628 | 33.150 | 0.313 | 9.848 | 0.180 | 4.184 |
| P | 0.533 | 0.000 | 0.755 | 0.000 | 0.858 | 0.000 |

Note: Compared with before treatment, * $P<0.05$.

2.3 脑部血流供应指标比较

两组患者治疗前 Qm、Rv、Vm、DR 比较无统计学差异 ($P>0.05$), 两组患者治疗 4 个疗程后 Qm、Vm 均较治疗前升高, 且

研究组高于对照组 ($P<0.05$), Rv、DR 均低于治疗前, 且研究组较对照组降低 ($P<0.05$), 详见表 3。

表 3 脑部血流供应指标比较($\bar{x}\pm s$)

Table 3 Comparison of cerebral blood flow supply index between two groups($\bar{x}\pm s$)

| Groups | Qm(cm ³ /s) | | Rv(kPa.s/m) | | Vm(cm/s) | | DR(kPa) | |
|----------------------|------------------------|---------------------------|------------------|---------------------------|------------------|---------------------------|------------------|---------------------------|
| | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment |
| Control group(n=31) | 6.41± 1.16 | 8.57± 1.23* | 112.49± 28.13 | 91.57± 28.12* | 11.31± 2.16 | 14.68± 3.25* | 49.30± 11.13 | 42.46± 8.11* |
| Research group(n=32) | 6.39± 1.21 | 10.61± 1.37* | 111.47± 31.27 | 73.72± 26.22* | 10.81± 1.97 | 17.40± 3.12* | 48.96± 9.17 | 35.45± 9.15* |
| t | 0.067 | 6.091 | 0.136 | 2.607 | 0.961 | 3.389 | 0.133 | 3.214 |
| P | 0.947 | 0.000 | 0.892 | 0.011 | 0.341 | 0.001 | 0.895 | 0.002 |

Note: Compared with before treatment, * $P<0.05$.

2.4 炎性因子指标比较

治疗前两组患者 hs-CRP、IL-6、TNF- α 水平比较无差异 ($P>0.05$), 两组患者治疗 4 个疗程后 IL-6、TNF- α 、hs-CRP 水平均较治疗前降低, 且研究组低于对照组 ($P<0.05$), 详见表 4。

性因子, 相互作用后进一步加重机体神经功能损伤。此外, 由于血管再通导致血流再灌注, 产生大量活性氧产物, 刺激神经元等缺血细胞释放化学细胞因子, 进一步加重脑细胞损伤^[18,19]。因此通过检测 ACI 患者脑部血流供应情况及炎性因子水平对于判断 ACI 的病情严重程度具有重要的临床意义。临床认为 ACI 治疗的基本原则为积极抗凝以抑制血栓再形成, 使侧支循环的血液供应量快速恢复而减轻脑组织损伤程度, 经多年的临床经验总结, 单纯使用西药治疗仍存在较多缺陷, 如因神经损伤造成肢体出现偏瘫现象, 长此以往, 病侧肌肉功能下降或者萎缩, 严重影响患者生命健康^[20,21]。早期康复训练可促进患者病灶周围神经功能再生以及邻近区域组织细胞重组, 建立新的神经轴

3 讨论

患者发生 ACI 后由于血液供应中断致使相应脑组织能量耗尽, 神经元细胞凋亡, 由此触发机体免疫反应, 引起炎性细胞浸润^[15,16]。近年来, 越来越多的研究发现炎性反应和 ACI 的病理发展过程密切相关, 相关研究结果显示, ACI 后促炎症反应、中枢神经系统胶质细胞活化、外周炎性细胞浸润, 释放多种炎

表 4 炎症因子指标比较($\bar{x} \pm s$)

Table 4 Comparison of inflammatory factor index between two groups($\bar{x} \pm s$)

| Groups | IL-6(pg/mL) | | TNF- α (μ g/mL) | | hs-CRP(mg/L) | |
|----------------------|--------------------|---------------------------|-----------------------------|---------------------------|------------------|---------------------------|
| | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment | Before treatment | 4 courses after treatment |
| Control group(n=31) | 172.12 \pm 28.53 | 149.58 \pm 24.65* | 1.80 \pm 0.32 | 1.59 \pm 0.45* | 29.49 \pm 5.09 | 22.57 \pm 5.16* |
| Research group(n=32) | 171.94 \pm 26.47 | 120.23 \pm 22.54* | 1.78 \pm 0.37 | 1.06 \pm 0.67* | 29.36 \pm 4.08 | 17.19 \pm 4.12* |
| t | 0.026 | 4.935 | 0.229 | 3.674 | 0.112 | 4.581 |
| P | 0.979 | 0.000 | 0.820 | 0.001 | 0.911 | 0.000 |

Note: Compared with before treatment,* $P < 0.05$.

突触联系,进而有利于神经功能恢复^[2]。然而康复理疗在ACI的实际临床效果并不如预期,可能与康复理疗不能较好的改善患者脑部血流供应情况有关^[23]。针灸治疗在我国拥有悠久的历史,以往神经生理学研究曾报道,中医学中的经络以及穴位多游离于神经末梢较为集中之处,故针灸对于改善ACI患者预后具有重要影响^[24]。

本次研究结果表明,研究组治疗4个疗程后总有效率为78.13%,高于对照组的51.61%,可见针灸联合康复理疗治疗ACI患者,效果显著。康复理疗通过使患者进行主动和被动的活动,改善患者的运动功能障碍,同时康复理疗中的物理治疗通过热、电、机械力等物理因素进行治疗,可发挥良好的促进神经再生和活血化瘀之效^[25]。针灸在中医理论的指导下,在体表各处穴位行针刺治疗,可起到散寒温经、调和阴阳、抗御病邪、活络舒筋等作用,达到治疗疾病的目的^[26]。本研究中,两组FMA、MBI、NIHSS均得到显著改善,且研究组改善效果更佳,表明针灸联合康复理疗治疗ACI患者可有效改善患者神经功能、运动功能以及生活质量。廖庆红等学者^[27]研究也表明,针药并用配合早期康复训练能促进ACI患者神经功能恢复。采用针灸治疗ACI可刺激脑皮质运动中枢,改善损伤部位血液供应,恢复神经功能,降低致残率,改善患者生活质量^[28]。同时本次研究结果也表明,两组患者Qm、Vm、Rv、DR均得到显著改善,且研究组改善效果更佳,提示上述联合治疗可有效改善患者脑部血流供应情况,Qm、Vm、Rv、DR的检查是在现代流体力学理论上发展而来的脑血管功能无创性检测技术,可反映受检者脑血管功能情况。《素问·痿论》中有云:“治痿独取阳明”,采用头针和体针针刺该经多处穴位,血管再通时间缩短,从而气血流通关节通利^[29]。有研究亦表明^[30],针灸刺激可促进神经元兴奋,建立新的神经传导通路。此外针灸联合康复理疗治疗可有效改善患者炎症因子水平,这可能是由于针灸联合康复理疗治疗后,患者临床症状缓解,神经功能损伤有所缓解,从而减少炎症细胞浸润。

综上所述,针灸联合康复理疗治疗ACI患者,疗效显著,可有效改善患者脑部血流供应情况、炎症因子水平,其运动功能、神经功能恢复较快,生活质量较高。

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