

实验研究

补阳还五汤对钳伤大鼠坐骨神经轴浆运输的影响*

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摘要 采用辣根过氧化物酶(HRP)逆行标记法显示大鼠坐骨神经钳伤后 4 周时,其 L₄₋₅ 脊髓及脊神经节中 HRP 标记神经元胞体数量的变化。结果表明:补阳还五汤可加速实验大鼠坐骨神经的轴浆运输。在引入 HRP 48 小时,补阳还五汤组标记的胞体数明显多于对照组(P<0.05),其余几组标记的胞体数相近(P>0.05)。提示:本方可加速钳伤神经的轴浆运输,这与其改善损伤局部微循环有关,也可能是临床和实验中,本方促进周围神经再生的作用机理之一。

关键词 坐骨神经 轴浆运输 补阳还五汤

临床和实验资料表明:补阳还五汤对周围神经损伤有治疗作用^[1,2],为探讨本方促神经再生机制,我们以钳伤大鼠坐骨神经为模型,引入 HRP 后,通过观察脊髓和脊神经节中标记的神经元胞体数量的变化,研究并比较本方与单用黄芪或丹参时对轴浆运输的影响,以探讨作用机制。

材料和方法

本实验采用雌性 SD 大鼠 32 只(重约 200g)。用戊巴比妥钠腹腔内注射进行麻醉(40mg/kg 体重)。备皮消毒,剪开其右股后部皮肤,钝性分离肌筋膜,暴露并游离出坐骨神经。用蚊式止血钳,按刘氏方法^[3]钳夹坐骨神经干(于梨状肌下缘 1cm 处),造成宽 1mm 的损伤区。这种钳夹方法以电生理和病理切片证明轴索已全部被夹断,仅神经外膜保持连续。造模后,随机分为 4 组,每组 8 只,即:①对照组,每只大鼠每日以生理盐水 3ml 灌胃一次;②丹参组,每只大鼠每日以含生药 487.5mg/ml 药液 3ml 灌胃;③黄芪组,每只大鼠每日以含生药 1.4g/ml 药液 3ml 灌胃;④补阳还五汤组,每只大鼠每日以含生药 2.45g/ml 药液 3ml 灌胃。实验进行 4 周时,以造模的同样方法,暴露右侧坐骨神经,以微量注射器于腓总神经干内注射 10 μ l 30%HRP (Sigma)。引入 HRP 后 48、72 小时,按 Mesulam 方法灌注固定^[4],先以生理盐水 10ml 灌洗,继之用 2%多聚甲醛加 0.5%戊二醛 0.1M 的磷酸缓冲液(PH7.4)灌注固定。(先取 200ml 快速灌注,再将 300ml 缓慢滴注 30 分钟)。取材:切除椎板,暴露并取出腰骶段脊髓和脊神经节,置于同样固定液内 1 小时后,移入 20%。蔗糖磷酸

缓冲液内过夜。制成 40 μ m 厚的连续冰冻切片,TMB 法显色。贴片后,1%中性红复染,脱水、透明及封片。脊髓前角标记神经元的计数是每隔 10 片取 1 片(脊髓 L₄₋₅ 节段长约 5~6mm,可切 40 μ m 厚切片 125~150 张);脊神经节的切片全部收集。在光镜下统计所有核清晰的 HRP 标记的胞体数。以 t 检验进行统计分析。

结 果

1. 引入 HRP 后 48 小时,补阳还五汤组 L₄ 脊髓前角内标记的神经元胞体数明显多于其他组(P<0.05) L₄ 和 L₅ 脊神经节内标记的神经元胞体数明显多于其它组(P<0.05)见表 1

表 1 ($\bar{X} \pm S$)

组 别	动物数	脊髓前角		脊神经节	
		L ₄	L ₅	L ₄	L ₅
对照组	4	5.5 \pm 1.883	4.5 \pm 2.98	99.15 \pm 8.396	84.6 \pm 3.95
丹参组	4	5.5 \pm 2.441	4.4 \pm 1.142	96.7 \pm 4.72	8.01 \pm 5.41
黄芪组	4	5.46 \pm 1.76	4.96 \pm 1.093	89.8 \pm 5.531	86.3 \pm 2.98
汤药组**	4	7.0 \pm 2.256*	5.7 \pm 1.614	107.0 \pm 9.274*	91.6 \pm 4.23

注: * 示与其他组相比 P<0.05 ** 汤药组即补阳还五汤组。

2. 引入 HRP 后 72 小时,各组 L₄₋₅ 脊神经节和脊髓前角内 HRP 标记胞体数无明显差异(P>0.05)(见表 1)

讨 论

Weiss 提出轴浆流的观点已被许多神经生理学家所承认,由于它的顺向或逆向流动,才能使营养物质运输到轴突的远端,也使一些化学物质进入运动神经元,维持运动神经元、神经肌肉的正常结构、细胞代谢,对

维持雪旺细胞和轴突本身的完整也十分重要^[5]。

表 I ($\bar{X} \pm S$)

组别	动物数	脊髓前角		脊神经节	
		L ₄	L ₅	L ₄	L ₅
对照组	4	3.114±1.02	2.41±0.86	59.43±3.424	41.46±3.081
丹参组	4	2.853±1.14	2.537±0.412	60.055±3.162	40.864±2.837
黄芪组	4	3.084±1.72	2.883±1.21	58.430±1.971	39.97±2.475
汤药组*	4	3.036±1.435	2.57±0.982	61.72±2.15	41.081±1.362

* 汤药组即补阳还五汤组

本实验用辣根过氧化酶(HRP)注入腓总神经干内标记脊髓的前角细胞和脊神经节的胞体数的方法来说明逆向的轴浆流的存在及其量的多少来说明该药对神经再生的作用。实验证明补阳还五汤经引入后 48 小时所标记的胞体数(除 L₅ 前角细胞胞体数)明显多于其他组,这是否可能因为补阳还五汤中的黄芪等药具有较强的提高免疫力,改善微循环、降低血液的粘滞度有关^[6,7]从而调动了轴浆流,满足了其所需要的 ATP、GTP 从而达到神经修复的过程。

引入后 72 小时后脊髓前角细胞和脊神经节的胞体数各位之间无明显差异,但从表 I 与表 II 各组的比较来看均存在着明显的差异,这可能与 HRP 在体内的半衰期有一定的关系,还有待进一步的研究。

从补阳还五汤对钳伤坐骨神经从轴浆运输指标的观察看,本方有促进轴浆运输的作用,从而证明本方对周围神经损伤的再生修复具有治疗作用。但其如何参与轴浆的运输尚有待进一步的研究。

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(收稿:1994-09-01;修回 1995-05017)

经皮穿针内固定治疗盖氏骨折 20 例

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自 1991 年以来,我们应用手法复位,闭合穿针内固定法治疗盖氏骨折 20 例,取得满意疗效,总结如下。

临床资料本组 20 例中,男 15 例,女 5 例;左侧 9 例右侧 11 例;横断 9 例,短斜型 6 例、粉碎型 5 例;伤后至治疗时间最短 1 小时,最长者 4 天,平均 16 小时。

治疗方法采用臂丛麻醉,常规术区皮肤消毒,铺巾患者取坐位,一助手于桡骨茎突尺侧约 0.5~1.0cm 处,摸清桡骨远端,先垂直进针,并缓慢钻,同时逐渐压低针尾,使其顺髓腔进入。用另一等长钢针测量,至断端后,另二助手将患肢置于屈肘 90°,前臂中立位下牵。术者立于患者侧方,用手轻按揉骨折肿胀处,以祛散血肿,摸清骨折断端及移位方向,复位并维持,助手用骨锤将骨圆针徐徐击入,遇到阻力后停,并用等长钢针测量,恰好至桡骨小头处为宜。针尾弄弯置于皮下,然后术者紧扣下尺桡使之复位,并维持,助手用 2.0mm 骨

圆针,由桡骨茎突上约 2.0cm 处稍偏背侧进针,固定下尺桡,针尾弄弯,置于皮下。

治疗结果本组病例全部达到解剖复位,骨性愈合,无针眼感染及骨折移位及成角现象。随访时间最短 3 个月,最长 1.5 年,腕关节功能完全恢复正常者 18 例,另 2 例仅旋后功能稍受限。

讨论我们采用闭合复位经皮穿针内固定治疗 20 例 R 经验是:此处髓腔较大,一般选用 2.5~3.0mm 钢针,而且长度足够,恰好至桡骨小头为宜,而且一定要固定下尺桡,防止关节再度分离及断端不稳定,特别是斜形骨折,有再度移位之倾向,但只要固定下尺桡就可避免此类情况的发生,三周后将此针拔出,上述方法简单可靠,操作方便,病人痛苦小,而且骨折愈合后功能恢复良好等特点。

(收稿:1994-08-04)

Abstract of Original Articles

Influence of Bu Yang Huan Wu Tang (BYHWT) on clamp injured rat sciatic nerve axoplasm transportation

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Horseradish peroxidase retrograde labeling method was selected to demonstrate changes of quantity of HRP labelled neurone cytoplasm of L4-5 spinal cord and ganglion. The results indicated that BYHWT can accelerate transportation of rat sciatic nerve axoplasm. Forty eight hours after introduction of HRP, number of labelled cytoplasm of the neuron in BYHWT group is prominently more ($P < 0.05$) than that of the control group, those of the rest few groups were similar ($P > 0.05$) in number. It suggests that the prescription can accelerate transportation of axoplasm of clamped nerve. It is related with improvement of local micro-circulation. It may be one of the mechanism in promoting regeneration of peripheral nerve injury in clinic and experiment.

Key words Sciatic nerve Transportation of axoplasm Bu Yang Huan Wu Tang

(Original article on page 3)

Anatomical study of upper cervical spine and atlantoepistrophic derangement

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Via observation and analysis of upper cervical vertebrae of three cadavers, we consider: 1) Axis is the stress centre of upper cervical spine, commonly atlantoepistrophic derangement is lateral or rotatory deviation; 2) compression and irritation of posterior branches of upper three cervical nerves are the main causes of cervicogenic headache; and 3) strain of vertebral artery between transverse process of atlas and axis is one of the cause of cervicogenic dizziness.

Key words Atlantoepistrophic derangement Cervical nerve Vertebral artery

(Original article on page 5)

Experimental study on local osteoporosis secondary to rigid plate internal fixation with bone histomorphometry

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Through bone histomorphometrical method, local bone changes of rabbit intact tibia after rigid plate internal fixation was studied. Experimental rabbits were divided into 1, 2, 3, 4 and blank control groups in random, with fixation time in 6, 8, 10 and 12 weeks respectively. Histomorphometrical and tetracycline fluorescence measurement were undertaken in non-decalcified bone tissue sections longitudinally and transversely. The results revealed that there was osteoporosis appeared at 6 weeks in rigid fixating segment. Bone lossing happened at Haver's system, bone absorption revealed after 10 weeks on endosteal surface and enlargement of bone marrow. Osteoporosis and thinning of the cortex on fixating segment, especially under steel plate happened due to negative balance of remodeling process of the two surface of the bone.

Key words Internal fixation Osteoporosis Bone remodeling

(Original article on page 7)

Clinical study on lumbar facet joint syndrome

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Clinical study of pathogenesis, diagnosis and mechanism of manipulative therapy in 124 patients suffered with lumbar facet joint syndrome. The results indicated that the onset of lumbar facet joint syndrome was happened mostly at 25-45 years of age, and they were found mostly at lower segment. Oblique X-ray film and CT scanning is in significance rather than A-P and lateral view film. The manipulative result is evident, rate of excellent and good was 95%. The pathological change was mainly embedding of synovial membrane, but subluxation of joint or interference of joint capsule due to proliferation and stimulating the nerve