

伤痛一搽灵治疗软组织损伤的实验研究

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摘要 本文通过动物实验性肌肉损伤观察,证实了伤痛一搽灵有减轻肌肉坏死程度,减少疤痕的作用,并通过病理学的半定量分析和血浆纤维蛋白原含量以及损伤肌肉的pH值分析,并探讨了治伤机理。

关键词 伤痛一搽灵 软组织损伤 药理学 实验研究

伤痛一搽灵系根据株洲市运动创伤药物研究所李云医师祖传秘方所制成的外用酊剂。主要由三七、草乌、雪上一支蒿、马钱子和樟脑等中药组成。具有活血镇痛、消炎消肿、舒筋活络之功效,适用于软组织损伤的红肿、疼痛、瘀血等症。对肩周炎、牙周炎等引起的疼痛亦有较好疗效。经北京医科大学医学研究所、国家体委训练局等8个单位进行311例临床观察,对急性软组织损伤总有效率为97.4%。

实验材料

1. 仪器:打击器。自制,由打击棒、套筒、支架和固定线组成,打击棒的头部面积为 1.0cm^2 ,重 1.0kg 。

2. 药品:伤痛一搽灵。由株洲市运动创伤药物研究所提供,批号910325,含生药16.54%,供低剂量组外搽用。将其浓缩至近干,再加65%的乙醇溶解制成含生药49.62%和99.24%的药液,分别供中剂量和高剂量组用。正红花油:依玛打牌,新加坡产。

3. 动物:家兔,体重 $1.8\sim 2.3\text{kg}$,雌雄兼取。

实验方法

1. 取健康家兔45只,随机分成5组(阴性对照组,一搽灵低、中、高剂量组,阳性对照组),每组9只。实验用腿共90条,每组18条。

2. 软组织损伤造模:选择家兔两后肢大腿外侧,距腘窝 $4\sim 7\text{cm}$ 处作好标记,被打击部位固定于木板上,局部剪毛,用自制的打击器

打击一次(用利剪剪断固定线,损伤造模即成)造成局部肌肉损伤,打击动能为 2.5 焦耳^[1]。

3. 损伤造模后的处理:阴性对照(模型)组局部搽65%乙醇;一搽灵共三组,分别搽16.54%(原药液),49.62%(浓缩液),99.24%(浓缩液);阳性对照组搽正红花油。剂量均为每腿 0.4ml ,每日2次。

4. 观察方法:造模后选3、7、14日为观察点,每观察点每组各观察6条腿,并进行下列指标测定。(1)在打击中心部位取肌组织 $1\times 1\times 0.5\text{cm}^3$ 于Bouin液固定石蜡包埋,切片,H.E.染色。切片采用光镜半定量观察法,每高倍视野分成16小格。计算出坏死肌肉和增生的结缔组织所占的格数,算出百分比,再作统计处理。(2)取打击部位肌组织 1.50g ,加pH值为7.0的重蒸馏水 5.0ml ,匀浆后用酸度计测定pH值。(3)家兔心脏取血,草酸钾抗凝,取血浆 0.5ml 按双缩脲试剂显色法^[2]。测定纤维蛋白原含量。

实验结果

1. 造模后各组均无骨折和皮肤破裂,但局部出现肿胀及皮下出血。阴性对照组7天时仍有轻度肿胀,14天时仍有暗紫色瘀血块,并能触及打击处有小硬块。实验组和阳性对照组7天时肿胀已消退,14天时无暗紫色瘀血块及僵硬块,基本恢复正常。2. 损伤后对各组坏死肌组织的观察,结果见表1。3. 对损伤后各组

表 1 伤痛一搽灵对坏死肌组织的作用

实验时间 (天)	模型组	伤痛一搽灵组			红花油组
		低剂量	中剂量	高剂量	
3	39.54 ± 1.32	21.83 ± 1.93***	20.27 ± 2.06***	19.64 ± 2.04***	21.76 ± 1.92***
7	20.27 ± 1.86	14.66 ± 1.68***	13.73 ± 1.24***	13.02 ± 1.73***	14.84 ± 1.93***
14	13.93 ± 1.63	5.75 ± 1.25***	5.20 ± 0.78***	4.92 ± 1.17***	5.63 ± 1.32***
累计坏死减少%	0.00	31.50	34.54	37.58	31.51

与模型组比较: ***P<0.001.

增生结缔组织所占的百分比进行统计处理, 结果见表2。4. 伤痛一搽灵对打击部位肌组织pH值的影响, 结果见表3。5. 伤痛一搽灵对损伤

后血浆中纤维蛋白原含量测定结果提示, 一搽灵与红花油均能明显降低血浆纤维蛋白原含量, P值均小于0.01, 伤痛一搽灵低剂量组

表 2 损伤后增生结缔组织所占百分率统计表

实验时间 (天)	模型组	伤痛一搽灵组			红花油组
		低剂量	中剂量	高剂量	
3	7.94 ± 1.32	4.71 ± 1.13**	4.32 ± 0.97***	3.94 ± 0.67***	4.78 ± 1.18**
7	11.00 ± 1.37	8.22 ± 0.87**	8.01 ± 1.03**	7.58 ± 0.98***	8.68 ± 1.44*
14	7.41 ± 0.74	4.43 ± 0.79***	4.25 ± 0.75***	4.09 ± 0.80***	4.42 ± 0.74***
累计增生减少%	0.00	8.99	9.77	10.74	8.47

与模型组比较: *P<0.05, **P<0.01, ***P<0.001

表 3 伤痛一搽灵对损伤肌肉组织pH值的影响

组别	第三天		第七天		第十四天	
	$\bar{X} \pm SD$	P	$\bar{X} \pm SD$	P	$\bar{X} \pm SD$	P
模型组	6.45 ± 0.176		6.80 ± 0.066		7.20 ± 0.132	
低剂组	6.73 ± 0.086	<0.01	7.00 ± 0.071	<0.001	7.37 ± 0.064	<0.02
中剂组	6.80 ± 0.075	<0.01	7.10 ± 0.142	<0.001	7.41 ± 0.049	<0.01
高剂组	6.84 ± 0.031	<0.001	7.17 ± 0.049	<0.001	7.44 ± 0.049	<0.01
红花油	6.77 ± 0.057	<0.01	7.04 ± 0.099	<0.001	7.36 ± 0.100	<0.05

与正红花油效应相当, 且伤痛一搽灵随着药物浓度的增高, 药效相应增强, 呈正相关关系, 其结果见表4。

小 结

损伤后的家兔局部从外观上看有肿胀、瘀血, 光镜下见肌组织中小血管破裂出血和肌组

表 4 伤痛一搽灵对损伤家兔血浆纤维蛋白原含量的影响

组别	第三天		第七天		第十四天	
	$\bar{X} \pm SD(g/dl)$	P	$\bar{X} \pm SD(g/dl)$	P	$\bar{X} \pm SD(g/dl)$	P
模型组	0.303 ± 0.028		0.269 ± 0.019		0.205 ± 0.012	
低剂量	0.193 ± 0.022	<0.01	0.180 ± 0.007	<0.01	0.151 ± 0.008	<0.01
中剂量	0.175 ± 0.016	<0.01	0.155 ± 0.010	<0.001	0.142 ± 0.013	<0.01
高剂量	0.158 ± 0.022	<0.01	0.138 ± 0.010	<0.001	0.123 ± 0.017	<0.01
红花油	0.188 ± 0.013	<0.01	0.175 ± 0.015	<0.01	0.150 ± 0.016	<0.01

组结构的破坏及变性坏死, 结缔组织增生, 血浆纤维蛋白原增高, 肌肉组织pH值下降^[1,3]。伤痛一搽灵外涂后, 可使损伤家兔肿胀瘀血消

失加快, 使损伤的肌组织修复加快, 减少纤维组织疤痕性修复, 使损伤局部肌组织pH值恢复正常, 并使血浆纤维蛋白原含量降低。其低

剂量(原药液)可与正红花油媲美。本实验已证实它对软组织损伤的良好治疗作用。

(致谢:病理教研室李观林老师等协助实验)

参 考 文 献

1. 朱显华,等.魏氏消瘀膏治疗软组织挫伤的实验研

究.中国中医骨伤科杂志 1989, 5(2):11

2. 湖南医学院第二附属医院检验科.临床生化检验,湖南科学技术出版社, 1983, 349.

3. 王绪明,等.挫伤的造模方法及相关指标观察.中医骨伤科杂志 1987; 3(4):14.

调节固定器与膝功能架的生物力学测试

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摘要 天津医院创伤骨科设计的调节固定器与膝功能架治疗股骨髁间骨折,取得了较好的临床效果。本文报导对该固定器进行临床生物学测试分析,结果表明:外内侧支撑杆的牵引力分别为5.5kg和6.8kg,压垫下压力约为4.5kg,动态测试结果表明:所测试的各部分力值均有约10~20%的波动,符合骨折固定的弹性理论;即相对固定有利于骨折的愈合。

关键词 骨折固定器 股骨髁间骨折 生物力学 实验研究

天津医院创伤骨科设计的调节固定器与膝功能架治疗股骨髁间骨折,取得了较好的临床效果。本文对这一装置进行生物力学测试分析。

材料与方 法

1. 调节固定器的结构:以调节固定器为主体,配合膝功能架和小夹板固定三部分构成组合装置。调节固定器由纵向牵引杆、扣压连接桥、压垫、特制髁部加压螺纹和骨圆针组成。膝功能架由坐架、伸屈活动托板、牵引绳杆等组成。

2. 测试方法:

(1) 测力传感器:①支撑杆传感器:为测试支撑杆的牵引力值,设计一方框式压力传感器安装于支撑杆内。为防止弯矩的影响,通过在传感器和支撑杆接触部位,装一钢珠而形成的万向头结构来克服。②板式传感器:设计制做板式传感器用于测试压垫的压力值。③在扣压连接桥的一侧,将上下两面贴应变片,串联组成全桥电路,可测得扣压连接桥的压力值。

(2) 实验仪器:国产YD-15型动态电阻应变仪和SC16型光线示波器, YJ-16型静态电阻应变仪。

(3) 测试步骤:使用带有传感器的调节固

定器,对一例股骨髁间骨折的成年男性进行临床生物力学实测。首先在复位过程中测得复位力,在治疗期间每周测试一次,至下地练功前。内容包括复位和功能活动下的牵引力和股四头肌收缩力的变化规律。

测试结果

表 1 术中静态测试值 单位(g)

	外侧杆	内侧杆	连接桥	压垫
复位	5563	6770	1478	4447

表 2 膝关节功能锻炼测试值 单位(g)

	外侧杆	内侧杆	连接桥	压垫
第一周	1541	1880	1016	497
第二周	2509	2720	1627	769
第三周	4930	5278	1836	1258
第四周	6783	7250	1587	1780

表 3 股四头肌收缩测试值 单位(g)

	外侧杆	内侧杆	连接桥	压垫
第一周	909	912	1147	227
第二周	1437	1678	1035	465
第三周	2394	2574	1106	874
第四周	3772	4050	1214	1227

Abstracts of Original Articles

Experimental study on prolapsed lumbar intervertebral disc treated by Ban Ti manipulation

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Drew on the experience of Nachemson's method, and mimicing Ban Ti manipulation, the changes of nuclear pressure of the intact fresh cadaver were measured in motion. The results of experiment indicated that there were an increasing tendency of the internuclear pressure during the process of manipulation between L₃₋₄ and L₄₋₅, and a decreasing of the internuclear pressure between L_{5-S₁}. The author realized that the Ban Di manipulation couldn't restore the prolapsed nucleus, but it could probably change the relation between the position of the prolapsed nucleus and the compressed nerve root.

Key words Prolapse of lumbar intervertebral disc Manipulation of bone setting Biomechanics Experimental study

(Original article on page 5)

Experimental study on Shang Tong Yi Cha Ling in treating soft tissue injury

Jiang Meng-liang(蒋孟良)et al

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In this article, observation was made on the animal experimental muscle injury, and proved that Shang Tong Yi Cha Ling bore the effect of alleviation of the degree of muscular necrosis, decreasing the scar. And it explored the mechanism of treating trauma via semi-quantitative analysis of the pathology and plasma fibrinogen contents and pH value of the traumatic muscles.

Key words Shang Tong Yi Cha Ling Soft tissue injury Pharmacology Experimental study

(Original article on page 7)

Biomechanical tests on the adjustment fixator and knee joint functional frame

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Better clinical results had been obtained with the adjustment fixator and knee joint functional frame in treating intercondylar fracture of the femur designed by

the Department of Traumatology, Tianjin Hospital. In this Paper, clinical biomechanical measurements were made, the results indicated that the traction force of the external and internal supporter were 5.5kg and 6.8kg respectively, the pressure force underneath the pressing cushion was about 4.5kg. Results of the motive measurement indicated that the pressure value of all parts bore a fluctuation around 10-20%. It accorded with the theory of elastic fixation of fracture treatment.

Key words Fracture fixator Biomechanics Experimental study

(Original article on page 9)

Prolapsed lumbar intervertebral disc treated with traditional Chinese medicine based on syndrome-differentiation

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In this article, the author applied traditional Chinese medicine with syndrome-differentiation, such as Chinese medication orally as well as external application, combined with pelvic traction in treating 281 cases of prolapsed lumbar intervertebral disc. The results were cured, 96 cases; markedly effective, 178 cases; ineffective, 7 cases; with a total effective rate of 97.4%.

Key words Prolapse of lumbar intervertebral disc traditional Chinese medicinal therapy treated by syndrome-differentiation

(Original article on page 11)

Protrusion of lumbar intervertebral disc and tumor of cauda equina

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There are plenty of similarities among clinical manifestations between tumor of cauda equina and protrusion of lumbar intervertebral disc, so they are easily to be mixed. Through clinical analysis of 17 cases of surgical proved tumor of cauda equina, the author realizes that the ailment has an evident characteristics of waist and leg pain, negative in Laseque's sign, tenderness over the paravertebral space, less than half of them with parasthesia around the saddle area. positive CSF protein content qualitatively, elevation of the protein content quantitatively, a large cup-like defect in the myelography, early X-ray film showed flattening of the pedicle of vertebral arch, rarely there is broadening between the distance within these pedicles. CT scanning and MRI examination can't be relied on. Early operation is recommended.

Key words Tumor of cauda equina Protrusion of lumbar intervertebral disc Differential diagnosis Operative therapy

(Original article on page 28)