

实验研究

颈椎通治疗颈椎病机理的实验研究

广州军区第 157 中心医院 (510510)

赵聚凯 陈庆平 晏 荣 陈德钊 程洁奎 迟 文

摘要 本文采用具有活血化瘀作用之颈椎通胶囊进行大鼠血液流变学(A), 兔离体主动脉(B), 兔颈内动脉(C), 犬椎动脉(D), 大鼠肠系膜活体微循环(E)实验。结果表明: 颈椎通胶囊具有降低大鼠血液粘度, 直接舒张兔离体血管, 显著增加兔颈内动脉与犬椎动脉血流量, 明显改善大鼠肠系膜微循环等作用。其中颈椎通对B、C、D的作用优于颈复康, 对E的作用与复方丹参相似。

关键词 颈椎通胶囊 颈椎病 活血化瘀

我们对颈椎病的临床研究发现该病与血瘀密切相关, 并采用活血化瘀中药颈椎通胶囊(简称颈椎通)治疗各型颈椎病取得显著疗效^[1,2]。为了探讨其作用机理而进行本实验。

材料与方 法

1. 对大鼠血液流变学实验: 取 40 只 SD 大鼠, 体重 180~200g, 雌雄各半, 随机分成四组, 其中三个实验组, 一个对照组。实验组分别给予颈椎通(本院药厂生产, 由川芎、当归、生地、桃仁、葛根、黄芪等组成, 每 g 含原生药 10.9g) 0.39g/kg, 0.98g/kg, 1.56g/kg。对照组给予常水 10ml/kg。每日 1 次灌服, 连续给药 20 天后去眼球取血, 进行血液流变学 8 项指标检测。

2. 对兔离体主动脉的舒张作用: 取家兔 10 只, 雄性, 体重 2~3kg。处死取胸主动脉, 剔除血管外结缔组织, 剪成约 1.5cm 的血管段备用。按离体血管段容积法^[3]进行实验, 分别加入颈椎通(0.67mg/ml)、颈复康(0.67mg/ml)、罂粟碱(0.2mg/ml), 观察液面变化并记录, 液面上升表示血管收缩(+), 液面下降表示舒张(-), 每种药物实验 10 次。

3. 对兔颈内动脉血流量的作用: 取新西兰白兔 30 只, 雌雄各半, 体重 2~2.5kg 随机分成 6 组, 分别给予生理盐水(5ml/kg)、罂粟碱(0.6mg/kg)、颈复康(1.96g/kg)、颈椎通(0.23g/kg、0.45g/kg、0.93g/kg)。动物麻醉后, 手术分离颈总动脉所有颅外分支并结扎, 仅保留颈内动脉, 连接于 MFV-1200 流量计, 稳定 30 分钟, 静脉注射被试药物, 给药量均为 5ml/kg, 给药前 10 分钟与给药后 10 分钟测量血流量, 计算其增加值^[4]。

4. 对犬椎动脉血流量的作用: 取犬 20 条, 雌雄兼有, 体重 10~15kg, 分成 5 组, 分别给予生理盐水(5ml/kg)、罂粟碱(2.7mg/kg)、颈复康(0.9g/kg)、颈椎

通(0.113g/kg、0.225g/kg)除采用椎动脉测试外, 其它方法均同 3。

5. 对大鼠肠系膜活体标本微循环作用: 取 SD 大鼠 40 只, 雌雄各半, 体重 180~200g, 随机分成 4 组, A 组为正常对照组, B 组为复方丹参片组(0.52g/kg, 配成 5.2% 溶液), C 组为模型组^[5], D 组为颈椎通组(1.46g/kg)。A 组静注生理盐水 10ml/kg, B、D 组小肠给药 20 分钟后与 C 组均注射 10% 高分子右旋糖酐 10ml/kg。动物麻醉后, 分离颈总动脉与颈外动脉, 用聚乙烯管分别进行颈总动脉和颈外动脉插管, 将颈总动脉连接血压换能器以 SJ-42 型多导生理记录仪监测血压^[6], 按 Zweifach 法制备大鼠肠系膜活体微循环标本, 用 37℃ 恒温平衡克氏液不断地均匀滴注标本上, 用 CD-11 型彩色显微电视录像装置观察记录, 在监测器屏幕上测定给药前后细动脉(A₃)和细静脉(V₃)的口径及血流速度的变化, 并用生理记录仪同步记录血压的变化, 同时观察血细胞流态的变化, 以判断微循环的情况。

结 果

1. 对大鼠血液流变学实验: 全血粘度高切: 对照组与颈椎通低、中、高剂量组分别为 10.82±1.98、9.67±1.13、9.04±1.58、8.54±1.60mpas。低剂量组与对照组比较, P<0.01。全血粘度低切则分别为 16.22±2.31、13.51±2.51、13.66±2.54、12.25±1.91mpas, 中剂量组与对照组比较, P<0.01; 高剂量组与对照组比较, P<0.001。说明颈椎通有降低全血粘度作用。血液流变学的其它 6 项指标均无明显变化。

2. 对兔离体主动脉的舒张作用: 颈椎通(0.67mg/ml)与同剂量颈复康比较, 舒张血管的变化分别为-3.05±1.5mm、-1.3±0.6mm, 前者优于后者(P<0.05); 与罂粟碱(0.2mg/ml)血管舒张值 2.9±1.2mm

比较, 二者差异不显著 ($P > 0.05$)。表明颈椎通有直接舒张兔离体主动脉的作用。

3. 对兔颈内动脉血流量的影响: 从表 1 可见, 增加血流量高峰值, 颈椎通中, 高剂量分别为 $24.4 \pm 8.5 \text{ ml/min}$ 、 $26.6 \pm 10.2 \text{ ml/min}$, 比颈复康 $10.0 \pm 7.7 \text{ ml/min}$

为优 ($P < 0.01$), 颈椎通高剂量与罂粟碱相似 ($P > 0.05$), 颈椎通增加血流量的峰值在 20~30 分钟, 药效作用与药量呈良好依赖关系。表明颈椎通有显著增加兔颈内动脉血流量作用。

表 1 颈椎通对兔颈内动脉血流量的影响 (组 $n=5$, $\bar{x} \pm s$)

组别	剂量	给药前血流量	给药后血流量增加值 (ml/min)					
			10min	20min	30min	40min	50min	60min
生理盐水	5ml/kg	19.8±4.2	3.6±4.7	3.2±6.0	0.4±6.3	-1.8±7.7	-1.2±10.0	-2.6±7.2
罂粟碱	6.6mg/kg	20.4±2.5	7.4±3.3**	19.4±1.3**	21.4±4.2**	31.8±14.9	20.0±8.1**	10.6±4.1**
颈复康	1.96g/kg	23.0±6.2	6.7±2.5**	8.2±7.6**	10.0±7.7*	9.75±8.8	8.25±8.1	6.29±6.8
颈椎通(低)	0.23g/kg	23.4±6.1	10.2±5.8*	13.6±13.4*	12.8±11.5*	13.8±15.2	9.6±9.5	6.6±7.7
颈椎通(中)	0.45g/kg	19.0±3.0	20.0±3.2**	23.6±9.9**	24.4±8.5**	20.0±4.2**	12.8±6.2**	4.65±3.6**
颈椎通(高)	0.93g/kg	19.6±5.3	11.8±4.9**	30.4±9.9**	26.6±10.2**	18.0±9.2	12.2±8.8**	10.22±4.7**

注: 与生理盐水比较 * $P < 0.05$ ** $P < 0.01$

表 2 颈椎通对犬椎动脉血流量的影响 (组 $n=5$, $\bar{x} \pm s$)

组别	剂量	给药前血流量	给药后血流量增加值 (ml/min)					
			10min	20min	30min	40min	50min	60min
生理盐水	5ml/kg	31.0±15.5	1.4±1.1	3.2±0.8	4.2±2.1	3.2±3.8	0.4±0.5	1.5±2.1
罂粟碱	2.7mg/kg	31.2±16.2	19.2±18.1	15.0±12.9*	18.5±14.5	9.6±9.2	9.8±1.0	7.0±6.3
颈复康	0.90g/kg	34.0±16.2	15.8±6.4**	12.6±6.1**	12.6±6.1**	12.0±8.3*	13.0±8.4*	10.8±10.6
颈椎通(低)	0.113g/kg	27.4±8.4	18.4±16.5*	15.4±6.4	8.6±5.2*	10.8±15.3	12.6±16.7	13.6±12.5
颈椎通(高)	0.225g/kg	24.6±9.0	16.6±7.5**	22.0±8.5**	22.8±11.6**	24.4±13.8	25.4±13.8**	25.2±11.2**

注: 与生理盐水比较 * $P < 0.05$ ** $P < 0.01$

表 3 颈椎通对大鼠肠系膜活动微循环的影响 ($\bar{x} \pm s$)

组别	剂量	A 口径 (μm)		V 口径 (μm)		A 血压 (mmHg)	
		30min	60min	30min	60min	30min	60min
		正常对照组 (A)	盐水 10ml/kg	-0.17±0.30	-0.12±0.23	0.04±0.25	0.09±0.30
复方丹参组 (B)	0.52g/kg	3.27±1.05*	1.25±0.74	2.85±0.91*	1.41±0.76	4.41±1.74*	3.97±1.54
模型组 (C)	10ml/kg	-2.16±0.91	-2.26±0.94	-6.48±3.32	-5.63±3.48	13.16±4.27	12.31±2.91
颈椎通组 (D)	1.46g/kg	3.24±1.40	1.28±1.01	3.58±1.28*	1.28±1.32	4.39±1.92*	5.06±1.86

注: 组间比较 * A/B、D/B、B/C $P < 0.01$; B/D $P > 0.05$

4. 对犬椎动脉血流量的作用: 从表 2 可见, 颈椎通高剂量组增加犬椎动脉血流量达 $22.0 \pm 8.5 \text{ ml/min}$, 比颈复康组 $12.6 \pm 6.4 \text{ ml/min}$ 为优 ($P < 0.01$), 与罂粟碱组 $18.5 \pm 14.5 \text{ ml/min}$ 相似, ($P > 0.05$), 颈椎通增加血流量的高峰值在 30~40 分钟。表明颈椎通有增加犬动脉血流量作用。

或粒流; 颈椎通与复方丹参组无明显变化, A3 仍为线流, V3 以线粒流为主。从表 3 表明颈椎通有明显扩张处于微循环障碍病理状态下的大鼠微血管, 加快血流速度, 从而增加血流量、改善微循环, 其作用强度与复方丹参相当 ($P > 0.05$)。

讨 论

5. 对大鼠肠系膜活体微循环作用: 血流速度与血细胞流态变化: 模型组给予右旋糖酐 45 分钟时, A3 为粗线或粒流, 大量红细胞凝聚, 呈泥砂状, V3 呈粒线

颈椎病与血瘀密切相关, 活血化瘀治疗各型颈椎病取得显著效果^(1,2), 而且这一认识逐步受到人们重视。中医的血瘀, 大体说来与血液性质、血流阻力、血

流量、微血管血流等方面有着密切关系。因此我们从血流流变学、血管、血流量与微循环等方面进行实验研究,据研究结果,初步认为活血化瘀治疗颈椎病大致有以下三个方面的作用:

1. 改善微循环消除局部充血水肿:以往认为颈椎病骨质增生,病则难愈。然而颈椎病骨质增生与临床症状并不平行相关,很多颈椎病患者,经活血化瘀治疗后临床症状消失,多年未复发,但骨质增生改变却不明显。现代医学研究认为横突孔、椎孔、椎间孔都有一定空隙(如神经根本身只占椎间孔 50%左右)有较大的活动范围,一般难以压迫血管、神经、脊髓,只有在骨质增生刺激或其它原因引起的局部充血、水肿,使管腔狭窄,才使上述组织受到压迫而发病。这种充血、水肿就属于中医的血瘀,亦是活血化瘀的着眼点。因此,认为瘀血阻络是本病的主要病机,也是各型颈椎病的共性。本药的显著改善微循环作用,可能通过改善微循环,使充血水肿消除,受压组织松解,有利于疾病痊愈。

2. 改善血液的流变性而有利于血液运行:近年研究表明颈椎病患者血液存在浓聚现象^[1,2],由于血液粘稠,红细胞聚集,血流不畅,颈椎局部与大脑供血都受到障碍。本研究表明颈椎通可使血红细胞聚集减少(全血粘度低切下降),也可改善红细胞变形能力(全血粘度高切下降)从而降低血液粘度,有利于血液运行。

3. 扩张椎动脉及降低血流阻力而增加血流量:现

代研究认为,椎动脉型颈椎病由于骨质刺激以致血管痉挛,影响血供;横突孔周围组织充血水肿,使横突孔相对变小,椎动脉受到压迫;椎间盘变性,椎间距离缩短,椎动脉弯曲等原因引起椎动脉血流量减少而发病。通过临床彩色多普勒对椎动脉检测,发现颈椎通有扩张处于病理状态下的椎动脉,降低阻力,显著增加血流量的作用。而且本组颈椎通通过兔离体血管及体内颈动脉、犬椎动脉的实验结果也证明这一作用。颈椎通可能通过使颈椎病患者血管舒张,阻力降低,椎动脉血流量增加,改善大脑供血,而使颈性眩晕很快消失。

参考文献

1. 赵聚凯,等. 活血化瘀治疗颈椎病. 广东医药, 1993, 14 (1): 30.
2. 赵聚凯,等. 颈椎病与血瘀证的临床研究. 实用中西医结合杂志, 1993, 6 (7): 89.
3. 张佩文. 离体血管段容积法. 见: 徐淑云主编. 药理实验方法学. 第 2 版. 北京: 人民卫生出版社, 1994. 984.
4. 李仪奎主编. 中药药理实验方法学. 上海: 上海科学技术出版社, 1991. 129~132.
5. 上海第一医学院病生教研室. 丹参治疗微循环障碍的实验研究. 中华内科杂志, 1977, 2 (4): 207.
6. 陈奇主编. 中药药理研究方法学. 北京: 人民卫生出版社, 1993. 556

(收稿: 1996-05-15; 修回: 1996-09-23)

蝮蛇抗栓酶致手术切口广泛渗血一例

河北滦平县中医院 (06825) 王春江

宋××,女,62岁,1996年5月2日入院。患者曾于3年前患脑梗塞住院治疗3个月好转出院,遗有左半身感觉运动障碍。近因头痛头晕,胸闷憋气伴心悸来诊,门诊以原发性高血压、冠心病收入心内科。给予降压、扩冠、溶栓等治疗。蝮蛇抗栓酶 0.75g 溶于 0.9% 盐水 300ml,复方丹参注射液 4 支溶于 10%葡萄糖 200ml,每日静滴一次。用药治疗 12 天患者不慎摔倒而致左股骨颈骨折(头下型),由心内科转入骨科治疗。行术前准备,复查血常规正常,出凝血时间正常。血流变报告高粘滞血症Ⅱ级,高凝血症Ⅰ级,其它项目检查大致正常。于 1996 年 5 月 20 日在连续硬膜外麻醉下行左股骨头置换术。术时切口广泛渗血,出血约 1300~

1500ml,术中输入同型血 900ml,术后切口引流血性物 300ml。拔管后针孔渗血致部分切口裂开,给予换药及止血药物治疗。切口近一个月始愈合。

讨论 蝮蛇抗栓酶系从蛇毒中提取的一种具有抗凝作用的酶制剂,具有降低血浆纤维蛋白原、血液粘度、血小板粘附率及血小板聚集功能。具有溶栓、改善微循环的作用。用于治疗脑栓塞,高粘滞血症,血栓静脉炎等疗效较好。本例患者用此药治疗 12 天,由于术前对应用此药物对手术影响未引起重视,致使术中乃致术后出血过多,应该引起注意。

(收稿: 1996-07-19)

Abstract of original Articles

Contracture of Gluteal Muscles *Ou Liangshu, Liu Dechun, Zhang Xuiguang. The Second Affiliated Hospital, Anhui College of Traditional Chinese Medicine, Hefei (230061)*

18 patients with contracture of gluteal muscles were reported in this paper. Among them, unilateral in 6 cases and bilateral in 12 cases; 5 cases without history of intragluteal injection and 13 cases with history of intragluteal injection in different extent. All cases were treated with operation, and only 4 cases occurred keloid after operation. The pathological changes were muscular degeneration, atrophy and fibrosis, resulting in contracture. It was considered that, in addition to injection, there might be a special pathogenic factor for gluteal muscle contracture, similar with that of congenital myogenic torticollis and quadriceps contracture.

Key words Contracture of gluteal muscles
Diagnosis and treatment

(Original article on page 3)

Treatment of Infected Pseudoarthrosis of Long Bone *Yang Qingjiang, Zang Hu, Li Zhutian. The Third Teaching Hospital, N. Bethune University of Medical Sciences, Changchun (130031)*

Infected pseudoarthrosis of long bone in 34 patients had been treated in our hospital from 1985 to 1995. The therapeutic methods used were the control of infection, the staged debridement, the transposition of fasciocutaneous flap, musculocutaneous flap or arterial skin flap, the bone grafting with autogenous ilium, and the rigid external fixation. 32 cases were followed—up for 1.7 years in average. It was found that all of the grafted bones were healed in 4 to 6 months, noosteomyelitis was recurred in any case, and the function of joints was satisfactory. It was considered that this method is an effective, reliable and simple one for treating infected pseudoarthrosis and thus it is a method of first choice in clinic.

Key words Infected pseudoarthrosis
Debridement Skin flap Bone grafting

(Original article on page 5)

The Biomechanical Assay and Clinical Application of Unilateral Polyfunctional External Fixation Frame for Treating Femoral Neck Fracture *Liu Anqing, Wang Kunzheng, Zhang Kaifang, et al. The Second Teaching Hospital of Xi'an Medical University, Xi'an (710004)*

The unilateral polyfunctional external fixation frame, designed for treating femoral neck fracture, was biomechanically assayed with 20 femoral samples from cadavers and applied to treat 128 patients with femoral neck fracture. The clinical data, followed—up for 4 months to 3 years, showed that the fractures were healed within 3 to 9 months in most cases, and nonunion or delayed union in 9 cases (7%) and femoral head necrosis in 19 cases (15%) were happened. The writers considered that a closed steel frame system is formed through fixating the fractured femoral neck and the femoral stem to the external fixation frame with three 4 mm Steinman's pins and screws. The large fixation range improves the ability of fixation and restricts the movement of screw. It converts shearing force into compression force. In addition, closed reduction and percutaneous pinning external fixation are easy to perform and receptive.

Key words Femoral neck fracture Percutaneous pinning external fixation Biomechanics

(Original article on page 7)

Experimental Research on the Mechanism of Jing Zhui Tong for Treating Cervical Spondylopathy *Zhao Jukai, Chen Qingping, Yan Rong, et al. The 157 Military Hospital, Guangzhou (510510)*

Jing Zhui Tong, with the effect of promoting blood circulation and eliminating stasis, has been applied in this experiment to find out the mechanism in treating cervical spondylopathy. This experiment was performed on rats' hemorheology (A), volume of rabbits' isolated aorta (B), blood flow volume of rabbits' internal carotid artery (C) and dogs' vertebral artery (D), and microcirculation of rats' mesentery (E). The effect of Jing Zhui Tong was compared with that of Jing Fu Kang and Fufang Danshen. The results showed that the

effect of Jing Zhui Tong was decreasing rats' blood viscosity, directly dilating rabbits' isolated aorta, obviously increasing blood flow volume of rabbits' internal carotid artery and dogs' vertebral artery, and improving rats' microcirculation of mesentery. The results also showed that the effect of Jing Zhui Tong was superior than that of Jing Fu Kan on (B), (C) and (D) and similar to that of Fufang Danshen on (E).

Key words Jing Zhui Tong capsule Cervical spondylopathy Promoting blood circulation and eliminating stasis

(Original article on page 10)

Effect of Chinese Kidney-tonifying Drug on Bone of Osteoporotic Rat Song Xianwen, Shi Yinyu, Shen Peizhi, et al. Ganquan Hospital of Shanghai Railway University, Shanghai (200065)

The effect of Chinese kidney-tonifying drugs on bones of osteoporotic rats were investigated by detecting bone mineral density (BMD), resistance bending strength (RBS) and bone trabecular volume (BTV). Femal rats were ovariectomized to build the model of osteoporosis, and then treated with Chinese drugs and stilbestrol respectively for 3 months. The results showed that both Chinese drugs and stilbestrol prevented the BMD, RBS and BTV from further declining in osteoporotic rats; but could not raise the BMD, RBS and BTV that had declined. The writers suggested that Chinese drugs with kidney-tonifying action might

prevent and treat rats' osteoporosis.

Key words Osteoporosis Bone Chinese drug Rat

(Original article on page 13)

Diagnosis and Treatment of Disc Space Infection after Lumbar Discectomy.

Ru xuanlian, Zhao Dazheng. Zhejiang Hospital, Hangzhou (310013)

14 patients with disc space infection after lumbar discectomy had been diagnosed and treated from September 1989 to July 1995. The clinical features of this disease were acute serious lumbago 4 to 27 days (9 days in average) after operation, accompanied with abdominal pain, leg pain with radiation, and irregular low fever. The leukocyte count was mildly increased or normal, and the erythrocyte sedimentation rate was obviously elevated. The CT scan and roentgenograms were not helpful in early stage. The MRI could clearly demonstrate the place, range and extent of diskitis and achieved an important value for early diagnosis of diskitis. The needle biopsy culture was helpful to diagnosis, but only with low positive rate. After a definitive diagnosis had been made, the conservative treatment was immediately taken with large doses of broad-spectrum antibiotics and strict bed rest. The therapeutic effect was good after following-up for 22 months.

Key words Diskitis Lumbar discectomy Diagnosis and treatment (Original article on page 15)

1998 年征订启事

《中国医学文摘—中医》双月刊, 16 开本, 64 页, 国内定价每册 4.80 元, 全国各地邮局均可订购, 期刊代号 2-633, 国外读者请向中国图书贸易总公司订购, 代号 BM299, 也可直接向本刊编辑部购买。地址: 北京市东直门内北新仓 18 号中国中医研究院 邮编: 100700 电话: 64014411-3212

《中国函授通讯》双月刊, 每册订价 3.95 元, 全年 23.70 元。邮发代号 8-182, 国外代号 BM1163, 全国各地邮局均可办理 1998 年订阅手续。漏订者, 可与本刊联系。本刊可以试读, 来函即寄。地址: 沈阳市皇姑区崇山东路 79 号, 邮编: 110032。

《江苏中医》(月刊) 请读者到当地邮局办理订阅手续, 国内代号 28-8, 国外代号 M1011, 每期定价 4.00 元。编辑部地址: 南京市汉中路 282 号, 邮政编码: 210029 电话: 025-6617285

《按摩与导引》双月刊, 每册定价 2.80 元。全年 16.80 元。邮发代号: 46-114。欢迎到当地邮局订阅, 国外发行代号: DK44006 本刊地址: 广州市恒福路 60 号。邮编: 510095 联系电话: 020-83582431

《中国临床杂志》(双月刊) 每册定价: 4.00 元, 全年订价: 24.00 元。邮发代号: 26-131, 国内统一刊号: CM34-1134/R, 国际标准刊号: ISSN1005-7331。本刊地址: 合肥市六安路 205 号, 邮编: 230001, 联系电话: 0551-2644214。

《江西中医学院学报》季刊, 每期定价 2.50 元, 全年 4 期共计 10.00 元。欢迎到当地邮电局(所) 订阅, 邮发代号: 44-79。

《江西中医药》双月刊, 期刊代号: 44-5, 每期订价 1.5 元, 请向当地邮局(所) 办理订阅手续。

《山西中医》双月刊, 每册定价 2.50 元, 全年 15.00 元。国内代号 22-30, 国外代号 BM977。全国各地邮局均可订阅, 订阅不便者可由本编辑部代办邮购, 国外读者请向中国图书贸易总公司订购。编辑部地址: 太原市东华门 22 号。邮政编码: 030012

《中医外治杂志》双月刊, 每期订价 2.50 元, 全年 15.00 元, 统一刊号: CN14-1195/R, 邮发代号: 22-126, 国外邮发代号: BM4605, 国外发行: 中国国际图书贸易总公司(北京 399 信箱)。全国各地邮局(所) 均可订阅, 漏订者可直接汇款至我编辑部邮购(另加 20% 邮挂费), 邮编: 048001, 地址: 山西省晋城市南大街周元巷 13 号《中医外治杂志》编辑部。