

# 两种治则对实验性骨折成纤维细胞影响的观察

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**摘要:** 本文介绍运用益气化痰和益气化痰补肾两种不同的治则对SD大鼠骨折模型进行治疗, 并对骨折断端的成纤维细胞通过电子显微镜作观察。结果表明: 益气化痰法具有增强机体免疫吞噬机能和改善微循环的作用, 同时也改善了细胞的营养状况, 而益气化痰补肾法使成纤维细胞的变化对于骨折修复更为有利。因此, 中医临床对于骨折治疗采用分期辨证施治, 具有其物质基础。

**关键词:** 中医治则 骨折 实验研究

成纤维细胞在骨折修复过程中可形成胶原和骨组织, 故对于骨折愈合具有重要作用。我们运用益气化痰补肾和益气化痰两种不同的治则, 对SD大鼠骨折模型进行治疗, 并对骨折断端的成纤维细胞通过电子显微镜作观察。现将结果报告如下。

### 材料与方 法

实验动物为雌性SD大鼠 (上海医科大学动物中心提供), 体重 $350 \pm 5g$ 。动物在20%乌来糖腹腔麻醉下, 前肢脱毛, 消毒后切皮, 分离皮肤、肌肉等, 暴露桡骨下1/3处, 予以剪断。造模工作由一人操作完成。造模后动物单笼饲养。90只大鼠随机分为益气化痰补肾组、益气化痰组和空白对照组。益气化痰补肾组用药: 黄芪、川芎、鹿角片。益气化痰组用药: 黄芪、川芎。将黄芪、川芎、鹿角片按3:1.5:2比例配合。分别浓煎后拌入动物饲料, 压制、烘干成

型。按成人每公斤体重用药量的50倍, 经换算后给动物喂服。根据实验骨折修复病理过程特点, 确定0~36天的观察区间, 其中定12天、20天和36天3个观察点。

电子显微镜标本制作: 动物处死后, 立即取骨折断端组织, 并置于低温2%戊二醛固定, 迅速用剃须刀分中心部及边周部修整为 $0.8mm^2$ 的组织块, 在4℃状态下, 先用2%戊二醛固定液预固定, 二小时后缓冲液充分漂洗, 再用1%醋酸溶液后固定。用递增浓度的酒精和丙酮脱水后, 浸润包埋于环氧树脂618包埋液中。用LKD-4800A型超薄切片机切片, 然后用醋酸铀和枸橼酸铅进行染色。在日立500型电镜下进行观察 (照片见封二)。

### 观察结果

#### 形态学统计

#### 形 态 学 统 计

天数	细胞内容	空白对照组	益气化痰组	益气化痰补肾组
12天	核质比	1:1	1:2.8	1:2
	内质网表面积	以空白对照组为参照	2倍	1.8
	线粒体数量	以空白对照组为参照	2.8倍	2.5倍
	线粒体体积	以空白对照组为参照	无差异	显著大、板层嵴丰富, 板层表面积增加
20天	核质比	1:2.5	1:0.7	1:0.5
	内质网池	两治疗组非常显著大于空白对照组		益气化痰补肾显著大于益气化痰组
	细胞器数量	空白对照组 >	益气化痰组 >	益气化痰补肾组
	钙 团	无	均有排出现象	
36天		细胞分化落后于治疗组	骨陷窝均已形成, 细胞外胶元上有钙团沉积, 益气化痰补肾组较明显	

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### 讨 论

益气化痰法能促进骨折修复,对成纤维细胞的分化具有积极影响。在此基础上,我们同时运用益气化痰补肾和益气化痰两种方法,观察对SD大鼠骨折部位的成纤维细胞的影响,可看到这两种治则的不同作用。

成纤维细胞在骨折以后,先后出现于骨折部位的骨外膜、断端及骨内膜。纤维骨痂主要由成纤维细胞所产生,当纤维骨痂充分形成、两断端间初步固定后,成纤维细胞则发生不同变化:即大部分发生变性、死亡,然后为骨组织替代;另一部分可直接演变成骨细胞,并在周围形成骨陷窝。我们看到:12天时两个治疗组的成纤维细胞的分化均较空白对照组明显,表现为细胞核内染色质的集聚,同时细胞内的细胞器也较为发达。益气化痰补肾组的糙面内质网明显膨大,线粒体也非常肥大。这说明了治疗组的细胞正处于蛋白质合成的旺盛阶段,这就为合成胶原纤维提供了丰富的原材料。胶原纤维形成骨前基质,钙盐沉积于上,可形成骨样组织。

随着成纤维细胞的进一步分化,至20天时,两治疗组的细胞均呈“固缩”现象,该现象说明了此时的成纤维细胞已经由量变向质变的转化。与益气化痰不同的是,益气化痰补肾

组细胞的电子密度增加更为明显,并有钙团排出的现象。作为空白对照组,均未见此现象。钙盐不断地沉积于胶原纤维之上时,能使骨样组织转变成骨组织。36天时,治疗组的细胞被包围形成骨陷窝,益气化痰补肾组的细胞周围见有成片的大块钙团沉积,但益气化痰组未见此现象。此期的空白对照组的细胞分化形态已远落后于治疗组。

一般认为,影响骨折修复的因素,在局部与血运、吞噬作用和细胞的营养状况有关。益气化痰的黄芪与川芎分别具有增强机体免疫吞噬机能和改善微循环的作用,同时也间接地改善了细胞的营养状况。当加入具有补益肝肾的鹿角之后,使成纤维细胞的变化对于骨折修复似乎更为有利。这与鹿角所含有与骨组织基本成份相同的胶质和大量的钙、磷等物质,能直接补充和改善细胞的营养状况有一定的关系。

对于骨折修复的实验研究,至今已有多种治则及方法见诸报道。中医临床认为对于骨折治疗应采用分期辨证施治。我们用同种动物,在相同条件下,施以两种治则,所表现出来的成纤维细胞的变化,说明不同治则对骨折修复的不同作用是具有其物质基础的。

(本文承蒙柴本甫先生指导,在此深表感谢)

### 书 讯

1.《全国股骨头无菌性坏死学术研讨会论文集汇编》(内部资料),本书汇集了参加1992年在北京召开的“全国股骨头无菌性坏死学术研讨会”各位专家、学者的学术论文近250篇。内容包括有关股骨头无菌性坏死的病因病理、实验研究,中西医诊治现状及临床经验等。所收文章均以全文刊载。实用性强,对诊治该病具有一定的参考价值。全书为16开,共332页,每本成本费49.5元,(包括邮寄费)。2.《小针刀疗法》,朱汉章著。本书论述了小针刀治疗慢性软组织损伤和骨折畸形愈合等疾病。单价:每本5.80元(包括邮寄费)。3.《腰痛的最新疗法》,宋一同编著。本书收集治疗腰椎骨质增生、椎间盘突出症、腰肌劳损等各种腰痛病症的经验和方药。单价:3.50元(包括邮寄费)。4.《高等教育自学考试中医专业本科必考课程自学考试大纲》合订本,高教自考委员会编著。单价:3.70元(包括邮寄费)。欲购者,请寄款至:100700北京市东直门内海运仓3号《中国骨伤》编辑部方收,款到即寄书。汇款时请注明所购图书及收件人详细地址、邮编和姓名。

## Abstracts of Original Articles

### Experimental study of ox skin powder on anti-inflammatory action

Wang Shu-yun(王淑云), Li Xiu-lan (李秀兰), Yang Bao-shu(杨宝树) Li Chang-xin (李长信)

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In this paper, via animal experiments, mouse abdominal macrophages were served as an objective parameter and found that ox skin powder could alleviate mouse earlobe inflammation induced by xylol on foreign body macrophagic and digestive function and rats through embedding cotton ball induced hyperplasia of granulosis as a chronic inflammatory action. It was found that anti-inflammatory action of ox skin powder had no significant difference with that of the elephant skin powder.

**Key words** Sheng Ji Xiang Pi Paste, elephant skin, ox skin, antiinflammatory action, experimental study

(Original article on page 5)

### Observation on the influence of fibroblasts in the experimental fracture treated by two therapeutic principles

Chen Jun (陈俊), ShiQi (施杞) et al

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In this article, it is introduced that application of supplement the vital energy eliminating stasis and supplement the vital energy eliminating stasis and invigorating the Kidney two therapeutic principles were treated on SD rats fracture models, and via observation of the fibroblasts on the fractured ends with electron-microscope. The results indicated that the former bears enhancing immunomacrophagic action of the organism and improving micro-circulation as well as improving the nutritional state of the cells, and the later the action was more facilitate in fracture repairing with the fibroblastic changes. So, clinically, in TCM, treatment of fracture of different stages was based on determination of treatment based in the differentiation of symptoms and signs.

**Key words** Traditional Chinese medicinal therapy, fracture, experimental study  
(Original article on page 7)

### Clinical experience in treating mal-healing with closed osteoclasia by prof. Fan Chun-zhou

Fan Jing-bo (樊景博), Zhang Li-guang (张丽光)

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In this article, clinical experience of Prof. Fan Chun-zhou in treating mal-

healing with closed osteoclasia is introduced. Seventy cases with complete data were concluded. The therapeutic results were excellent in 31 cases (44%); good, 29(42%); fair, 7 (10%); ineffective, 3 (4%)

**Key words** Fracture, traditional Chinese medicinal therapy, experimental introduction

(Original article on page 9)

### Development and application of enhanced external fixator in treating intra-articular fracture

Xie Da-zhi (谢大志) et al.

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Thirty-three cases of intraarticular fracture were treated with self-developed enhanced external fixator of intraarticular fracture via a follow-up of 5-9 months, the rate of excellent and good was 94%. It was realized that the instrument had the advantage of new style, broadening in usage, easy to be operated, faster in fracture healing and better restoration of functions.

**Key words** External fixator of fracture, intraarticular fracture, exertion of pressure on cortex

(Original article on page 21)

### Observation on the therapeutic effects of Cervical Huo Xue Tablet in the treatment of cervical spondylosis

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Cervical Huo Xue Tablet has been used in treating various types of cervical spondylosis of more than 10 years. 313 cases had long-term follow-up. Among them, 130 cases(41.5%) were markedly effective; 162 (51.8%), effective; 21(6.7%), ineffective. The rate of markedly effective and effective was 292 cases(93.3%). The results indicated that there were definite therapeutic effectiveness in radicular vertebral, sympathetic and mixed types. The mode of action was mainly alleviation and improvement of the clinical symptoms of cervical spondylosis. There was no prominent improvement of degenerative changes of cervical spine in X-ray films.

**Key words** Cervical spondylosis, traditional Chinese medicinal therapy, Cervical Huo Xue Tablet

(Original article on page 28)