

耳穴电针对家兔胃肠电活动的双相调整作用

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内容提要 采用胃体、胃窦、十二指肠和结肠浆膜下埋藏铂丝电极法，同步记录胃肠电活动，观察耳穴电针对家兔胃肠生理功能的影响。结果表明，耳针对胃肠道有兴奋和抑制的双相效应，该效应在不同个体和同一个体胃肠道不同部位同时存在。认为针刺对胃肠道功能活动具有不同生理节段、机能状态选择性的双相调整作用。对手针与电针，穴位与非穴位的针刺效应也作了讨论。

耳针治疗消化系统疾病已有较多的报道^(1~5)，有人通过家兔实验性胃溃疡耳廓皮肤电阻变化⁽⁶⁾及实验性阑尾炎后耳廓出现着染点观察⁽⁷⁾，肯定了耳廓与消化器官的特定联系，但是关于耳针对胃肠道不同功能区或段的影响范围与程度尚缺乏深入研究。本工作旨在以胃肠电活动为客观指标，观察(1)耳针对胃体、胃窦、十二指肠和结肠功能活动的效应；(2)耳针是否有与体针一样的双相调整作用及其在正常生理状态下的表现。

材料与方法

成年家兔24只，体重1.7~2.2kg，雌雄不拘。

实验准备：动物禁食14~18h，耳缘静脉注射巴比妥钠(20mg/kg)麻醉，仰卧位，腹正中切口4cm，暴露胃肠，在胃体、胃窦、十二指肠和升结肠四个部位浆膜下各埋藏一对直径1mm的环形铂丝电极，参考电极(直径0.7cm圆形银—氯化银电极)置于切口皮下，关腹。采用双极引导连接RM-85多导生理记录仪(日本Nihon Kohden)，放大器参数选择：时间常数2s，高频滤波15Hz，走纸速度0.75mm/s，连续记录30min，实验条件稳定后开始观察。

观察分组：(1)电针耳穴组(n=17)：取穴耳轮脚消失处周围，相当于胃、十二指肠穴区，用苏州华佗牌不锈钢耳针，斜刺，接北航57-8型电脉冲医疗刺激仪，选取电压10~20V，频率15~20Hz，连续脉冲波宽0.5ms，持续刺激5min。(2)电针非耳穴组(n=11)：取耳尖内侧约0.5cm处，电针方法同上。(3)手针耳穴组(n=12)：取穴同电针耳穴组，针刺操作传统的捻转平补平泻法，持续5min，每一实验动物进行1~3项系列观察不等。

资料收集与处理：分别选取三组针刺前与针刺后

5min内胃肠电计算下列参数：(1)平均频率(F)：3分钟内平均频率(次/min)。(2)平均幅值(V)：3分钟内平均振幅(μV /次)。(3)活动指数(AI)：3分钟内胃电基本电节律的总频率与总幅值之乘积(次 $\cdot \mu V$ /3min)，以综合分析胃肠道活动的意义。(4)反应面积(RA)：以积分法计算3分钟内胃肠电的波峰与波谷对零位线所占的总面积(mm^2 /3min)。

统计学处理：先将针刺前后胃肠电变化大于5%者列为增强，下降5%者定为抑制，介于两者间为基本稳定。电针效应以针前针后同体比较t检验法分析增强与抑制的显著性。电针非耳穴组及手针耳穴组同电针耳穴组以针刺后增强或抑制的百分数计算。

结 果

一、电针耳穴组、非耳穴组及手针耳穴组的效应都呈现双相性变化，即胃肠电活动增强或抑制，见图1。

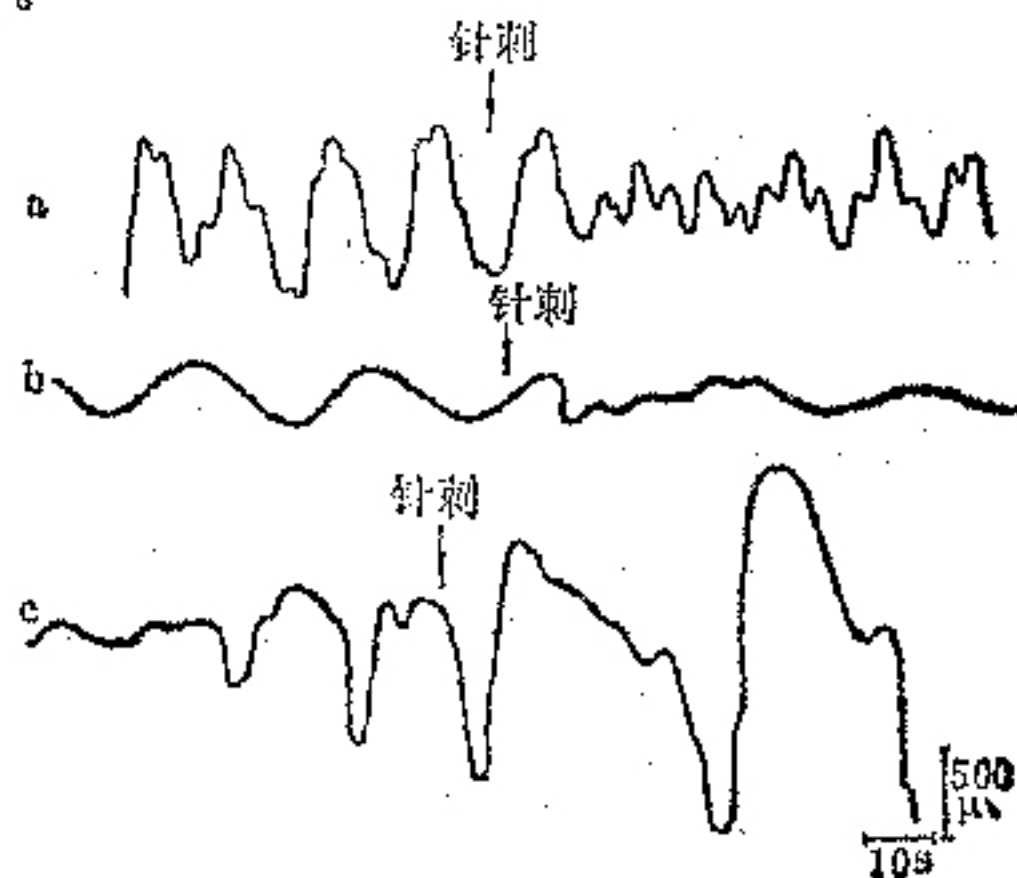


图1 耳针后家兔胃体部电活动双相变化

二、同一个体的胃体、胃窦、十二指肠和结肠，耳针效应增强或抑制多不同步，多数只有1~2个部

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位明显。耳针的作用除幅值外，其他指标以抑制的倾向性大些，但是同一个体的胃体、胃窦、十二指肠和结肠的电活动或增强，或减弱，或基本稳定，互不一致同时存在的现象并不少见，详见表1。

表1 电针耳穴对胃肠不同部位双相调整作用

		频率	幅值	AI	RA
		例 (%)	例 (%)	例 (%)	例 (%)
胃体 n=17	增强	3 17.65	11 64.71	5 29.41	6 35.29
	抑制	10 58.88	5 29.41	9 52.94	7 41.18
	稳定	4 23.53	1 5.88	3 17.65	3 17.65
胃窦 n=17	增强	5 29.41	6 35.29	5 29.41	6 35.29
	抑制	7 41.18	7 41.18	7 41.18	8 47.06
	稳定	5 29.41	4 23.53	5 29.41	6 35.29
十二指肠 n=17	增强	4 23.53	10 58.88	7 41.18	4 23.53
	抑制	8 47.06	4 23.53	10 58.88	7 41.18
	稳定	5 29.41	3 17.65	—	6 35.29
结肠 n=16	增强	5 31.25	6 37.50	5 31.25	9 56.25
	抑制	8 50.00	6 37.50	10 62.50	3 18.75
	稳定	3 18.75	4 25.00	1 6.25	4 25.00

三、电针耳穴前后胃体、胃窦、十二指肠和结肠电变化，每个部位无论是增强或抑制，在频率、幅值、活动指数和反应面积四项指标中，除胃窦、十二指肠各有两项无显著性差异外，其他皆有二项或四项变化有显著或非常显著的统计学意义，见表2。

四、手针耳穴后胃肠电也出现增强或抑制效应，

但是手针与电针耳穴与非穴三者相比，针刺效应在频率方面基本相近。在幅值方面穴与非穴，手针与电针除十二指肠、胃体差异有统计学意义外，其余差异多不明显，见图2、3。

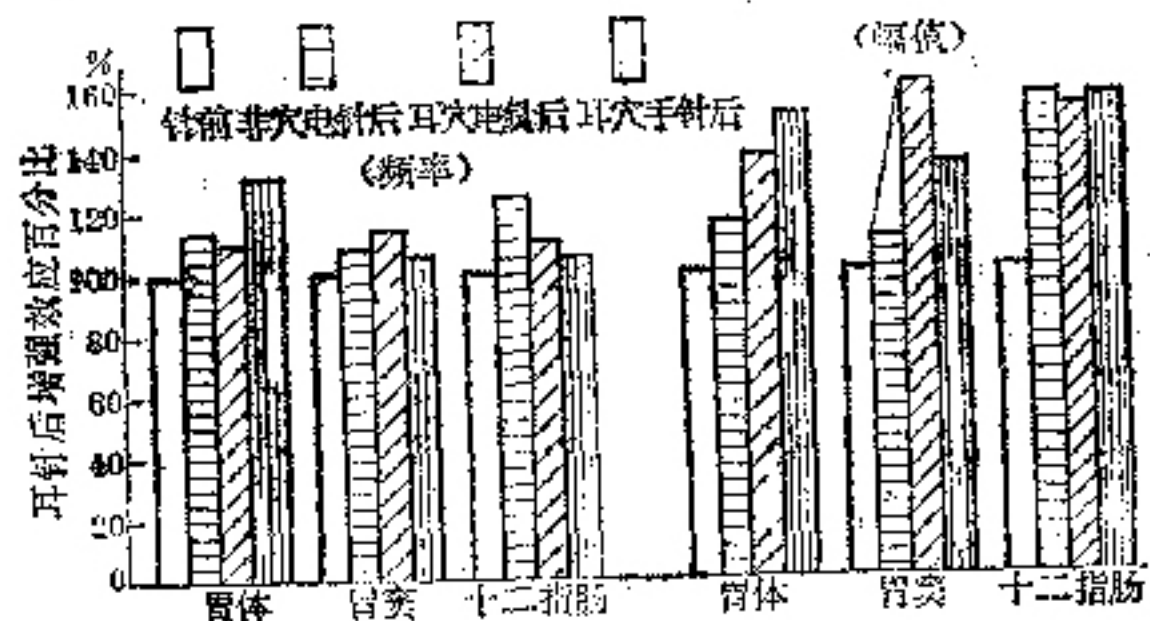


图2 耳针对家兔胃肠电增强效应

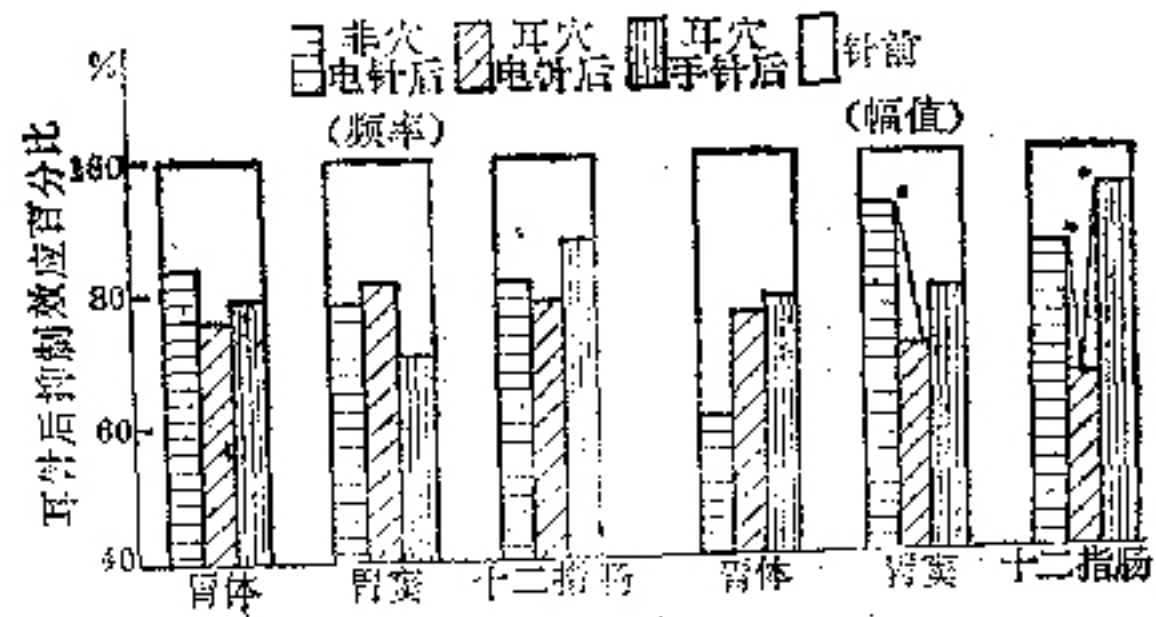


图3 耳针对家兔胃肠电的抑制效应

表2 电针耳穴对胃体、胃窦、十二指肠、结肠双相调整电参数同体比较 (M±SD)

		抑制效应				增强效应			
		频率	幅值	AI	RA	频率	幅值	AI	RA
		(次/min)	(μV/次)	(fv/3min)	(mm²/3min)	(次/min)	(fv/3min)	(μV/次)	(mm²/3min)
胃体 (n=17)	针前	5.14 ±2.12	589.80 ±505	67615 ±39467	297.85 ±169	4.33 ±0.58	921.82 ±1186	34600 ±33221	370.10 ±223
	针后	4.02 ±1.37*	430.20 ±381	38548 ±22988*	241.71 ±106Δ	4.89 ±0.69*	1283.72 ±1487Δ	41519 ±34338*	514.28 ±293
胃窦 (n=17)	针前	5.85 ±1.13	2390.14 ±1650	55417 ±69009	618.33 ±134	4.40 ±1.01	777.16 ±271	53423 ±22598	406.88 ±114
	针后	4.81 ±1.26Δ	1768.42 ±1303*	35396 ±24319Δ	408.33 ±148*	5.13 ±1.16*	1248.33 ±665*	68907 ±32592	597.75 ±307
十二指肠 (n=17)	针前	4.28 ±1.49	3166.75 ±2271	46431 ±29015	587.50 ±101	3.88 ±0.51	940.00 ±926	150126 ±10292	327.85 ±128
	针后	3.33 ±1.01*	2074.25 ±2102	27346 ±15358*	406.25 ±112Δ	5.70 ±3.15*	1426.80 ±1398	180123 ±17895	475.00 ±172Δ
结肠 (n=16)	针前	6.51 ±1.21	1271.33 ±1352	98969 ±27895	502.77 ±210	5.97 ±1.51	824.33 ±483	57740 ±11216	475.00 ±25
	针后	5.67 ±1.01	796.66 ±699	63096 ±17898*	397.77 ±221Δ	7.62 ±1.49*	1089.16 ±620*	64354 ±4249Δ	633.33 ±57Δ

电针前后比较 *P<0.05, ΔP<0.01

讨 论

一、据报告⁽⁸⁾，电针家兔“足三里”后，其胃电基础节律振幅升高者9只，振幅降低者8只。有人⁽⁹⁾电针猫“足三里”及刺激延脑内侧网状结构也看到胃电有兴奋(胃电幅值增高频率加快)和抑制(胃电幅值降低频率减慢)两种变化。本实验电耳针对家兔胃肠电的影响，不仅进一步验证了耳针具有体针及刺激中枢对胃电活动的双相调整作用，而且发现其对十二指肠和结肠电活动也有双相调整作用，这对耳针的临床与机理研究及一般针刺效应探讨都有一定参考价值。

二、本实验除了分析针刺前后的胃肠电频率与幅值外，还采用综合分析胃肠电的活动指数⁽¹⁰⁾，及用积分法计算胃肠电的反应面积。能较全面地分析针刺效应，肯定结果意义。

三、耳针对胃肠电的影响，经频率、幅值、活动指数和反应面积多项分析，其增强或抑制变化都具有统计学意义。在正常生理情况下为何出现增强与抑制两种效应？有人⁽¹¹⁾研究胃排空活动发现消化道活动有时间节律性，是否消化道各段都有各自的节律性，有待进一步研究。如是事实，胃肠不同部位对针刺的反应有兴奋、抑制、不明显很可能同其机能活动有关。

四、电针非耳穴点也有一定的针刺效应，但多项指标统计并无差异，这说明穴位的相对特异性是存在的。取穴不准效果差道理就在于此。电针耳穴与手针耳穴效果基本相近，在胃窦和十二指肠电反应略有差异，归因于手针与电针刺刺激量的不同。由此启示，要

获得较佳的针刺效应，选择适当的刺激量，是十分必要的。

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云南白药糊剂作牙髓盖髓剂的应用体会

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临床资料 全组共73例，前牙14例，后牙59例；深龋去龋后牙髓暴露48例，去龋后髓壁透红25例。均为恒牙深龋，有冷热激发痛和食物嵌入痛，无自发病史。检查：深龋近髓，去龋后牙髓暴露在1mm(直径)以内，少量渗血，血色鲜红，或去龋后髓壁透红，无叩痛。X线片显示根尖周无明显病变。

治疗方法 腐质全部去净，牙髓暴露点用温热生理盐水充分冲洗，然后吸干，用丁香油小棉球消毒。以云南白药糊剂(云南白药加蒸馏水调制而成)盖于穿髓点，丁香油氧化锌封料暂时充填，观察一周无症状即作永久充填。间接盖髓者则于盖髓后直接永久充填。

结 果 经半年以上患者自诉无症状，临床检查无叩痛，活力正常(冷热诊试验及电活力试验)，X线

片显示根尖无明显病变，年轻恒牙牙根继续形成者为成功；治疗后出现症状或症状不消失者为失败。结果：直接盖髓48例，间接盖髓25例，成功69例，失败4例。成功率为94.5%。

体 会 云南白药有止血镇痛，消炎散肿，活血化瘀及防腐生肌等功效，将其糊剂作牙髓盖髓剂应用，手术成功率高，配制与操作简便，药源充足，是一种较好的活髓保存剂。分析4例失败的主要原因是：(1)充填脱落造成牙髓再感染。(2)操作不当，表现为充填时对穿髓孔压力过大，引起牙髓局部机械性创伤。这些通过正确、熟练掌握该盖髓剂的使用方法，是能够避免的。

Clinical Observation on 107 Thromboangiitis Obliterans Patients Treated by TCM-WM Therapy

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107 cases of thromboangiitis obliterans (TAO) were treated by TCM-WM therapy. The therapeutic principles of TCM are to benefit Qi(气), vitalize blood, permeate wetness and dredge channels, for which the fundamental prescription is Radix Astragali, Radix Salvia Miltiorrhizae, Radix Angelicae Sinensis, *Ligusticum wallichii*, Flos Carthami, Radix Paeoniae Rubra, Semen Persicae, Radix Achyranthis Bidentatae, Poria, *Polyporus umbellatus* and *Glycyrrhiza*. The herbs are to be modified according to the different patterns of blood-stasis complicated with cold accumulation, wet-heat, heat-toxic and Qi-deficiency. The TCM anesthesia, anidous, fibrinolysis drugs and anti-TAO No. 1~III should be applied at option in accordance with the patient's condition. The external drug of clearing heat, drawing toxics, eliminating spoiled tissues and growing muscles are to be applied simultaneously. Of 107 cases, male 106, female 1; in-patients 56 and out-patients 51; the age ranged from 22~58 (average 38) were all treated in Ruijin Hospital. The course of treatment was the shortest 4 months and longest 27 years, with an average of 7 years and 5 months. Stage I, 21 cases; II, 37; and III, 49 cases. States of disease were stabilized 19, remittent 53 and progressing 35 cases. The changes of symptoms and signs were observed before and after treatment. The plethysmogram and hemorrheology were also examined in a part of patients. The latest effects on 107 cases indicated that the marked effective rate was 71.03%, effective 19.63% with a total effective rate 90.66%. The objective parameters were obviously improved ($P < 0.05 \sim 0.01$).

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Protective Effect of Dahuang Zhechong Pill(大黄廕虫丸) on Experimental Hepatic Injury

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27 rats were divided into three groups at random. Group 1, chronic hepatic injury model were given Dahuang Zhechong Pill (DZP) per os. Group 2, chronic hepatic injury model were given tap water. Group 3, normal rats, were only given tap water per os. By ninth week, all rats were sacrificed. The decrease of LDH_s, SGPT and γ -globulin, the increase of albumin and remarkable reduction of hepatic collagen were found in Group 1. The results indicated that DZP has protective effect on chronic hepatic injury. The other 30 rats were made acute hepatic injury models and studied with the above-mentioned way. The results indicated that DZP has no significant protective effect on acute hepatic injury.

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Double Phasic Modulatory Effects of Auricular Point Electroacupuncture on Gastrointestinal Electric Activity in Rabbits

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The present investigation was undertaken with electrophysiological methods to evaluate the effects of ear-acupuncture on gastrointestinal tract. 24 rabbits weight 1.7~2.2kg were used. By applying dipolar leads of platinum, gastrointestinal electric activity on corpus, antrum, duodenum and colon were simultaneously recorded in animals. Ear-acupuncture effects were observed respectively with electric or manual acupuncture. Results: (1) Most of the rabbits' gastrointestinal electric activities (64.71~94.12%) display excitatory or inhibitory effects. The inhibitory effect was dominative, for example, the motility index (frequency $\times$ amplitude/3 min) on corpus, antrum, duodenum and colon was excitatory for 29.41~41.18%, and inhibitory 41.18~60.25%. The other subjects, after needling ear-point, were a few change or unchange on gastrointestinal activity. Their differences were significant ($P < 0.05 \sim 0.01$). (2) The acupuncture effects were different in each individual and each segments of digestive tract. It was suggested that the modulatory effects of ear-acupuncture on functional activity of digestive tract were selected according to different functional conditions and physiologic segments. Furthermore, effects of electric and manual needles, acupoint and nonacupoint were some different, too. It seems that acupunctral effects possess quantitative and qualitative differences in excitation and specificity of acupoint.

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