

# 电针联合三七消肿止痛散外敷 在全膝关节置换术后快速康复中的应用

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**摘要 目的:**探讨电针联合三七消肿止痛散外敷在全膝关节置换术后快速康复中的应用价值。**方法:**2015 年 6 月至 2016 年 6 月, 选择接受单侧全膝关节置换术的膝关节炎患者 60 例, 随机分为观察组和对照组, 每组 30 例。对照组单纯进行基础治疗, 包括血栓通注射液静脉滴注、迈之灵片口服、低分子肝素钙注射液皮下注射; 观察组在此基础上采用电针联合三七消肿止痛散外敷治疗。分别于术前、术后第 7 天、术后第 14 天测量 2 组患者患膝关节活动度, 采用疼痛视觉模拟评分 (visual analogue score, VAS) 评价患膝疼痛情况; 分别于术前、术后第 14 天采用美国特种外科医院 (hospital for special surgery, HSS) 膝关节评分评价患膝关节功能恢复情况; 并观察并发症发生情况。**结果:**2 组患者术后切口均甲级愈合。手术前后不同时间点膝关节活动度的差异有统计学意义, 即存在时间效应 ( $F=365.649, P=0.000$ ); 2 组患者膝关节活动度总体比较, 组间差异有统计学意义, 即存在分组效应 ( $F=28.432, P=0.000$ ); 术前、术后第 14 天, 2 组患者膝关节活动度的组间差异无统计学意义 ( $87.167^{\circ} \pm 3.601^{\circ}, 88.600^{\circ} \pm 5.512^{\circ}, t=-2.959, P=0.238; 119.833^{\circ} \pm 6.497^{\circ}, 119.000^{\circ} \pm 6.214^{\circ}, t=0.258, P=0.614$ ); 术后第 7 天, 观察组膝关节活动度大于对照组 ( $107.700^{\circ} \pm 7.474^{\circ}, 95.667^{\circ} \pm 7.858^{\circ}, t=36.933, P=0.000$ ); 时间因素与分组因素存在交互效应 ( $F=14.018, P=0.000$ )。手术前后不同时间点膝关节 VAS 评分的差异有统计学意义, 即存在时间效应 ( $F=644.220, P=0.000$ ); 2 组患者膝关节 VAS 评分总体比较, 组间差异有统计学意义, 存在分组效应 ( $F=18.625, P=0.000$ ); 术前、术后第 14 天 2 组患者膝关节 VAS 评分的组间差异无统计学意义 [(8.433  $\pm$  1.278) 分, (8.067  $\pm$  1.172) 分,  $t=1.158, P=0.252$ ; (1.467  $\pm$  1.008) 分, (1.400  $\pm$  0.894) 分,  $t=0.271, P=0.787$ ]; 术后第 7 天, 观察组 VAS 评分低于对照组 [(4.700  $\pm$  1.207) 分, (6.633  $\pm$  1.066) 分,  $t=6.573, P=0.000$ ]; 时间因素与分组因素存在交互效应 ( $F=13.644, P=0.000$ )。术前 2 组患者膝关节 HSS 评分比较, 组间差异无统计学意义 [(42.733  $\pm$  8.525) 分, (42.333  $\pm$  9.087) 分;  $t=0.176, P=0.861$ ]。术后第 14 天, 2 组患者膝关节 HSS 评分均较术前提提高 [86.967  $\pm$  4.979) 分, (42.733  $\pm$  8.525) 分,  $t=-24.050, P=0.000$ ; (86.333  $\pm$  5.403) 分, (42.333  $\pm$  9.087) 分,  $t=-23.433, P=0.000$ ]; 但组间比较, 差异无统计学意义 [(86.967  $\pm$  4.979) 分, (86.333  $\pm$  5.403) 分;  $t=0.472, P=0.639$ ]。术后 2 组各并发肌间静脉血栓 1 例, 经患肢抬高制动和低分子肝素钙注射液皮下注射处理后血栓消失。均无感染、关节脱位、假体松动等并发症发生。2 组患者并发症发生率比较, 组间差异无统计学意义 ( $\chi^2=0.000, P=1.000$ )。**结论:**膝关节炎全膝关节置换术后, 在活血、抗凝、消肿等药物治疗的基础上采用电针联合三七消肿止痛散外敷治疗, 可更快地减轻患膝疼痛和恢复膝关节活动度, 安全可靠。

**关键词** 关节成形术, 置换, 膝; 骨关节炎, 膝; 电针; 针刺镇痛; 中药外敷; 三七消肿止痛散; 康复

## Application of electroacupuncture combined with external application of Sanqi Xiaozhong Zhitong San (三七消肿止痛散) in rapid rehabilitation after total knee arthroplasty

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**ABSTRACT Objective:** To explore the applied value of electroacupuncture combined with external application of Sanqi Xiaozhong Zhitong San (三七消肿止痛散, SQXZZTS) in rapid rehabilitation after total knee arthroplasty (TKA). **Methods:** Sixty patients with knee osteoarthritis (KOA) who were treated with unilateral TKA were selected from June 2015 to June 2016 and randomly divided into observation group and control group, 30 cases in each group. All patients were treated with intravenous drip of Xueshuan tong (血栓通) injection, oral application of Aescufen forte tablets and subcutaneous injection of low-molecular-weight heparins calcium injection (LMWHC). Moreover,

the patients in observation group were treated with electroacupuncture combined with external application of SQXZZTS. The range of motion (ROM) of knee was measured and the knee pain was evaluated by using visual analogic score (VAS) before the surgery and at 7 and 14 days after the surgery respectively. The knee joint function recovery was also evaluated by using Hospital for Special Surgery (HSS) scores before the surgery and at 14 days after the surgery respectively. Furthermore, the complications were recorded. **Results:** All patients got primary healing in the operative incisions. There was statistical difference in the ROM of knee between different timepoints before and after the surgery, in other words, there was time effect ( $F = 365.649, P = 0.000$ ). There was statistical difference in the ROM of knee between the 2 groups in general, in other words, there was group effect ( $F = 28.432, P = 0.000$ ). There was no statistical difference in the ROM of knee between the 2 groups before the surgery and at 14 days after the surgery respectively ( $87.167 \pm 3.601$  vs  $88.600 \pm 5.512$  degrees,  $t = -2.959, P = 0.238$ ;  $119.833 \pm 6.497$  vs  $119.000 \pm 6.214$  degrees,  $t = 0.058, P = 0.614$ ). The ROM of knee was greater in observation group compared to control group at 7 days after the surgery ( $107.700 \pm 7.474$  vs  $95.667 \pm 7.858$  degrees,  $t = 36.933, P = 0.000$ ). There was interaction between time factor and group factor ( $F = 14.018, P = 0.000$ ). There was statistical difference in the knee VAS scores between different timepoints before and after the surgery, in other words, there was time effect ( $F = 644.220, P = 0.000$ ). There was statistical difference in the knee VAS scores between the 2 groups in general, in other words, there was group effect ( $F = 18.625, P = 0.000$ ). There was no statistical difference in the knee VAS scores between the 2 groups before the surgery and at 14 days after the surgery respectively ( $8.433 \pm 1.278$  vs  $8.067 \pm 1.172$  points,  $t = 1.158, P = 0.252$ ;  $1.467 \pm 1.008$  vs  $1.400 \pm 0.894$  points,  $t = 0.271, P = 0.787$ ). The knee VAS scores were lower in observation group compared to control group at 7 days after the surgery ( $4.700 \pm 1.207$  vs  $6.633 \pm 1.066$  points,  $t = 6.573, P = 0.000$ ). There was interaction between time factor and group factor ( $F = 13.644, P = 0.000$ ). There was no statistical difference in the knee HSS scores between the 2 groups before the surgery ( $42.733 \pm 8.525$  vs  $42.333 \pm 9.087$  points,  $t = 0.176, P = 0.861$ ). The knee HSS scores increased in both of the 2 groups at 14 days after the surgery ( $86.967 \pm 4.979$  vs  $42.733 \pm 8.525$  points,  $t = -24.050, P = 0.000$ ;  $86.333 \pm 5.403$  vs  $42.333 \pm 9.087$  points,  $t = -23.433, P = 0.000$ ), while there was no statistical difference in the knee HSS scores between the 2 groups ( $86.967 \pm 4.979$  vs  $86.333 \pm 5.403$  points,  $t = 0.472, P = 0.639$ ). The intermuscular venous thrombosis was found in both of the 2 groups after the surgery, 1 case in each group. The thrombus disappeared after treating with raising and braking the affected limbs and subcutaneous injection of LMWHC. No complications such as infection, joint dislocation, prosthesis loosening occurred. There was no statistical difference in complication incidences between the 2 groups ( $\chi^2 = 0.000, P = 1.000$ ). **Conclusion:** On the basis of treatment with activating blood drug, anticoagulation drug and detumescence drug, application of electroacupuncture combined with external application of SQXZZTS can alleviate the knee pain and restore the knee ROM more quickly after TKA for treatment of KOA, and it is safe and reliable.

**Key words** arthroplasty, replacement, knee; osteoarthritis, knee; electroacupuncture; acupuncture analgesia; external applications (TCD); Sanqi Xiaozhong Zhitong San; rehabilitation

全膝关节置换术 (total knee arthroplasty, TKA) 是治疗膝骨关节炎的终极治疗措施, 但术后膝关节疼痛、肿胀会影响关节功能恢复<sup>[1]</sup>。快速康复理念的兴起, 使多模式镇痛、患者自控镇痛在 TKA 围手术期得到了广泛应用<sup>[2-4]</sup>。但这些方法多应用非甾体抗炎药物及阿片类药物, 增加了患者围手术期发生恶心、呕吐、呼吸抑制的风险。2015 年 6 月至 2016 年 6 月, 笔者对 60 例单侧 TKA 术后膝骨关节炎患者, 分别采用常规基础治疗和在此基础上进行电针联合三七消肿止痛散外敷治疗, 并对 2 种方法的疗效和安全性进行了比较, 现报告如下。

## 1 临床资料

**1.1 一般资料** 在河南省郑州市骨科医院接受单侧 TKA 的膝骨关节炎患 60 例, 年龄 56 ~ 82 岁, 中位数

65 岁; 左侧 26 例, 右侧 34 例。试验方案经河南省郑州市骨科医院医学伦理委员会审查通过。

**1.2 纳入标准** ①单侧 TKA 术后; ②手术采用相同麻醉方式, 由同一组医师完成; ③所用假体为同一生产厂家的同类假体; ④对本试验方案知情同意并签署知情同意书。

**1.3 排除标准** ①术后切口有明显渗出者; ②有三七类药物过敏史者。

## 2 方法

**2.1 分组方法** 60 例患者按就诊顺序采用随机数字表随机分为观察组和对照组, 每组 30 例。

**2.2 治疗方法** 对照组单纯进行基础治疗; 观察组在此基础上采用电针治疗和三七消肿止痛散外敷。

**2.2.1 基础治疗** 血栓通注射液 300 mg, 静脉滴注,

每日 1 次,共用 7 d;迈之灵片 150 mg,口服,每日 2 次,共用 14 d;低分子肝素钙注射液 4100 单位,皮下注射,每日 1 次,共用 14 d。

**2.2.2 电针治疗** 电针刺激同侧血海、阴陵泉、三阴交、地机等穴,刺激强度以患者有麻刺感为宜,每次 20 min,每日 3 次,共治疗 14 d。

**2.2.3 三七消肿止痛散外敷** 三七消肿止痛散(药物组成:三七 10 g、当归 12 g、红花 10 g、川芎 5 g、龙骨 5 g、儿茶 10 g、续断 10 g、土鳖虫 5 g、自然铜 10 g、炉甘石 10 g、川牛膝 10 g、木瓜 5 g)蛋清调成糊状敷于远离切口的膝关节周围,绷带固定,每日换药 1 次,共敷 7 d。

**2.3 疗效评价方法** 分别于术前、术后第 7 天、术后第 14 天测量 2 组患者患膝关节活动度,并采用疼痛

视觉模拟评分(visual analoguc score, VAS)<sup>[5]123</sup>评价患者膝关节疼痛情况;分别于术前、术后第 14 天,采用美国特种外科医院(hospital for special surgery, HSS)膝关节评分<sup>[5]177-178</sup>评价膝关节功能恢复情况。

**2.4 数据统计学方法** 采用 SPSS 21.0 统计软件处理数据,2 组患者性别的组间比较采用  $\chi^2$  检验;年龄、体质量指数、膝关节 HSS 评分的组间比较及手术前后膝关节 HSS 评分的组内比较采用  $t$  检验;2 组患者膝关节活动度及 VAS 评分的比较采用重复测量资料的方差分析;2 组患者并发症发生率的比较采用连续校正  $\chi^2$  检验。检验水准  $\alpha = 0.05$ 。

### 3 结果

**3.1 分组结果** 2 组患者基线资料比较,差异无统计学意义(表 1),具有可比性。

表 1 2 组单侧全膝关节置换术后患者基线资料比较

组别	例数	性别(例)		年龄( $\bar{x} \pm s$ , 岁)	体质量指数( $\bar{x} \pm s$ , $\text{kg} \cdot \text{m}^{-2}$ )
		男	女		
观察组	30	9	21	64.53 $\pm$ 6.83	25.077 $\pm$ 3.164
对照组	30	8	22	61.10 $\pm$ 9.54	25.310 $\pm$ 2.802
检验统计量		$\chi^2 = 0.082$		$t = 1.603$	$t = -0.302$
P 值		0.774		0.114	0.763

**3.2 疗效评价结果** 2 组患者术后切口均甲级愈合。手术前后不同时间点间膝关节活动度的差异有统计学意义,即存在时间效应;2 组患者膝关节活动度总体比较,组间差异有统计学意义,即存在分组效应;术前、术后第 14 天,2 组患者膝关节活动度的组间差异无统计学意义;术后第 7 天,观察组膝关节活动度大于对照组,差异有统计学意义;时间因素与分组因素存在交互效应(表 2)。手术前后不同时间点间膝关节 VAS 评分的差异有统计学意义,即存在时间效应;2 组患者膝关节 VAS 评分总体比较,组间差异有统计学意义,存在分组效应;术前、术后第 14 天,2

组患者膝关节 VAS 评分的组间差异无统计学意义;术后第 7 天,观察组膝关节 VAS 评分低于对照组,差异有统计学意义;时间因素与分组因素存在交互效应(表 3)。术前 2 组患者膝关节 HSS 评分比较,组间差异无统计学意义;术后第 14 天,2 组患者膝关节 HSS 评分均较术前提高,差异有统计学意义;但组间比较差异无统计学意义(表 4)。术后 2 组各并发肌间静脉血栓 1 例,经患肢抬高制动和低分子肝素钙注射液皮下注射处理后血栓消失。均无感染、关节脱位、假体松动等并发症发生。2 组患者间并发症发生率比较,差异无统计学意义( $\chi^2 = 0.000, P = 1.000$ )。

表 2 2 组单侧全膝关节置换术后患者膝关节活动度比较

组别	例数	膝关节活动度( $\bar{x} \pm s, ^\circ$ )				F 值	P 值
		术前	术后第 7 天	术后第 14 天	合计		
观察组	30	87.167 $\pm$ 3.601	107.700 $\pm$ 7.474	119.833 $\pm$ 6.497	106.800 $\pm$ 14.140	176.116	0.000
对照组	30	88.600 $\pm$ 5.512	95.667 $\pm$ 7.857	119.000 $\pm$ 6.214	99.900 $\pm$ 16.391	201.006	0.000
合计	60	87.884 $\pm$ 4.397	101.683 $\pm$ 9.727	119.417 $\pm$ 6.317	102.900 $\pm$ 15.484	365.649 <sup>1)</sup>	0.000 <sup>1)</sup>
t 值		-2.959	36.933	0.258	28.432 <sup>1)</sup>	(F = 14.018, P = 0.000) <sup>2)</sup>	
P 值		0.238	0.000	0.614	0.000 <sup>1)</sup>		

1) 主效应的 F 值和 P 值;2) 交互效应的 F 值和 P 值

表 3 2 组单侧全膝关节置换术后患者膝关节疼痛视觉模拟评分比较

组别	例数	膝关节疼痛视觉模拟评分( $\bar{x} \pm s$ , 分)				F 值	P 值
		术前	术后第 7 天	术后第 14 天	合计		
观察组	30	8.433 ± 1.278	4.700 ± 1.207	1.467 ± 1.008	5.511 ± 3.170	308.630	0.000
对照组	30	8.067 ± 1.172	6.633 ± 1.066	1.400 ± 0.894	4.722 ± 2.945	348.424	0.000
合计	60	8.250 ± 1.229	5.667 ± 1.492	1.433 ± 0.945	5.117 ± 3.077	644.220 <sup>1)</sup>	0.000 <sup>1)</sup>
t 值		1.158	6.573	0.271	18.625 <sup>1)</sup>	(F = 13.644, P = 0.000) <sup>2)</sup>	
P 值		0.252	0.000	0.787	0.000 <sup>1)</sup>		

1) 主效应的 F 值和 P 值; 2) 交互效应的 F 值和 P 值

表 4 2 组单侧全膝关节置换术后患者患膝关节功能评分比较  $\bar{x} \pm s$ , 分

组别	例数	术前	术后第 14 天	t 值	P 值
观察组	30	42.733 ± 8.525	86.967 ± 4.979	-24.050	0.000
对照组	30	42.333 ± 9.087	86.333 ± 5.403	-23.433	0.000
t 值		0.176	0.472		
P 值		0.861	0.639		

## 4 讨 论

对于晚期膝骨性关节炎患者,治疗的目的是缓解疼痛、矫正畸形、重建关节功能,TKA 作为治疗膝骨关节炎的终极治疗方案,可重建一个稳定、无痛、有功能的膝关节<sup>[6-7]</sup>。且随着手术技术的进步和人们认知程度的提高,TKA 手术的例数也逐年增加<sup>[8]</sup>。

快速康复外科理念认为对接受外科手术治疗的患者应考虑包括术前教育、围手术期处理、手术操作方法、麻醉实施方案等的多方面因素,以降低术后应激反应,达到快速康复的目的。TKA 术后疼痛管理是快速康复的重要组成部分,可减少术后并发症,有利于患者的康复<sup>[9]</sup>。TKA 围手术期的镇痛方案很多。关节腔周围注射含有激素的“鸡尾酒”,能促进术后疼痛缓解、改善膝关节功能<sup>[10]</sup>。但 Yadeau 等<sup>[11]</sup>认为股神经阻滞联合硬膜外自控镇痛较膝关节腔周围注射“鸡尾酒”更能缓解术后疼痛、改善患膝功能。无论是关节腔周围注射还是股神经阻滞,虽然可达到镇痛的效果,但因为非甾体类抗炎药和阿片类药物的应用,可增加患者发生恶心、呕吐及呼吸抑制等不良反应的风险。

TKA 术后膝关节局部经络受损,瘀阻经络,中医证属气滞血瘀。电针局部取穴,可疏通局部经气,且电针可通过刺激脑啡肽类物质的释放,达到中枢镇痛的效果<sup>[12]</sup>。三七消肿止痛散方中三七止血、散瘀、定痛,有显著的消肿、止痛、抗炎功效<sup>[13-15]</sup>;当归、红花、川芎、川牛膝具有活血行气、化瘀止痛、通利关节的功效;龙骨、儿茶、续断具有活血止痛、止血生肌、收湿敛疮的功效;土鳖虫、自然铜具有散瘀止痛的功效;炉甘

石具有收湿止痒敛疮的功效;木瓜具有舒筋活络的功效;全方共用具有活血通络,行气止痛,祛风除湿之效。

本研究结果表明,膝骨关节炎全膝关节置换术后,在进行活血、抗凝、消肿等药物治疗的基础上采用电针联合三七消肿止痛散外敷治疗,可更快地减轻患膝疼痛和恢复膝关节活动度,安全可靠。

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