

doi: 10.13241/j.cnki.pmb.2020.10.037

微波治疗对痔瘁术后患者预后及血清 NGF、PGE2、NPY 水平的影响 *

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摘要 目的:探讨微波治疗对痔瘁术后患者的预后及血清神经生长因子(NGF)、前列腺素 E2(PGE2)、神经肽 Y(NPY)水平的影响。**方法:**选择我院 2016 年 6 月至 2018 年 7 月接诊的 120 例痔瘁术后患者,通过随机数表法分为对照组和观察组,每组 60 例。对照组给予常规治疗,观察组患者给予微波治疗。两组患者均连续治疗 1 周。比较两组治疗前后 T 淋巴细胞亚群、凝血功能、血清炎症因子、NGF、PGE2、NPY 水平的变化情况、预后及并发症的发生情况。**结果:**治疗后,观察组 CD_3^+ 、 CD_8^+ 均高于对照组, CD_4^+/CD_8^+ 低于对照组($P<0.05$);观察组凝血酶原时间(PT)、活化部分凝血活酶时间(APTT)均长于对照组,纤维蛋白原(FIB)低于对照组($P<0.05$);观察组血清 CRP、TNF- α 和 PCT 水平均明显优于对照组($P<0.05$),血清 NGF、PGE2、NPY 水平均低于对照组($P<0.05$);观察组患者治疗后第 3 天和 5 天肛门水肿评分和创面愈合时间均少于对照组,创面愈合率高于对照组($P<0.05$);观察组术后并发症的总发生率明显低于对照组($P<0.05$)。**结论:**微波治疗痔瘁术后患者能有效改善患者免疫功能,减轻炎症反应,降低血清 NGF、PGE2、NPY 水平,有利于促进患者恢复,且安全性高。

关键词:痔瘁切除术;微波治疗;炎症;神经生长因子;前列腺素 E2;神经肽 Y

中图分类号:R657.16; R266 文献标识码:A 文章编号:1673-6273(2020)10-1966-04

Effect of Microwave Therapy on the Prognosis and Serum NGF, PGE2, NPY Levels of Patients after Hemorrhoidectomy*

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ABSTRACT Objective: To study The effect of microwave therapy on the inflammation, prognosis and serum nerve growth factor (NGF), prostaglandin E2 (PGE2), and neuropeptide Y (NPY) levels of patients after hemorrhoidectomy. **Methods:** A total of 120 postoperative patients with hemorrhoidal fistula admitted in our hospital from June 2016 to July 2018 were selected and divided into a control group and an observation group by a random number table method, with 60 patients in each group. the control group was given conventional treatment, and the observation group was given microwave treatment. Patients in both groups were treated continuously for 1 week. The changes of T lymphocyte subsets, coagulation function, serum inflammatory factors, NGF, PGE2, NPY levels, prognosis and complications of the two groups were compared before and after treatment. **Results:** After treatment, the levels of serum CD_3^+ and CD_8^+ in the observation group were higher than those in the control group, and the levels of CD_4^+/CD_8^+ in the observation group were lower than those in the control group ($P<0.05$); the prothrombin time (PT) and activated partial thromboplastin time (APTT) in the observation group were longer than those in the control group, while the fibrinogen (FIB) were lower than those in the control group ($P<0.05$); the levels of CRP, TNF- α and PCT in the observation group were significantly higher than those in the control group ($P<0.05$); the levels of serum NGF, PGE2 and NPY in the observation group were lower than those in the control group ($P<0.05$); the score of anal edema and the time of wound healing in the observation group were lower than those in the control group on the 3rd and 5th day after treatment, and the wound healing rate was higher than that in the control group ($P<0.05$); the total incidence of postoperative complications in the observation group was significantly lower than that in the control group ($P<0.05$). **Conclusion:** Microwave treatment can effectively improve the immune function, reduce inflammatory response, serum NGF, PGE2, and NPY levels of patients with hemorrhoidal fistula. It can promote the recovery of patients with high safety.

Key words: Hemorrhoid fistula resection; Microwave treatment; Inflammation; Nerve growth factor; Prostaglandin E2; And neuropeptide Y

Chinese Library Classification(CLC): R657.16; R266 **Document code:** A

Article ID: 1673-6273(2020)10-1966-04

* 基金项目:秦皇岛市科学技术研究与发展计划项目(201602A241)

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(收稿日期:2019-11-28 接受日期:2019-12-23)

前言

痔疮属于肛周组织多发病,主要特点是在肛周皮肤有外口,在直肠肛隐窝处有内口,外口与内口之间有肛瘘的瘘管,若得不到及时有效的治疗,极易出现引起多个破溃口流脓产生交叉感染,最后形成复杂性肛瘘,严重影响患者排便、坐卧、生活质量等^[1,2]。目前,临床对于该病常采用瘘管切除术后单纯的消炎治疗。由于患者的饮食结构和对病菌的抵抗力不同,一部分患者出现疼痛红肿改善缓慢,延长了创面愈合时间,增加了患者的痛苦^[3,4]。

微波治疗是通过微波治疗仪产生阻尼作用产生一种非接触的微波热疗方式,通过微波中消耗的能量转化为热量达到治疗目的,其疗效原高于其他热敷措施,在临床耳、鼻、喉科疾病治疗中均有显著的临床效果^[5,6]。欧美医疗机构的报道证实T淋巴细胞亚群紊乱引起的炎症反应及创面凝血功能异常等在痔疮的发生、发展起重要作用^[7,8]。本研究主要探讨了微波治疗对痔疮术后患者创面炎症、预后、血清神经生长因子(NGF)、前列腺素E2(PGE2)、神经肽Y(NPY)水平的影响,报道如下。

1 资料与方法

1.1 一般资料

选择我院2016年6月至2018年7月接诊的120例痔疮术后患者,纳入标准^[9,10]:①符合痔疮诊断标准,在肛门周围发现单个或多个外瘘口,并不断有少量脓性、血性、黏液性分泌物排出,有时肛门口潮湿、瘙痒或形成溃疡。瘘管位置低者,自外口向肛门方向可触及索条样瘘管,通过瘘管造影发现有窦道存在即可作出诊断;②签署知情同意书。排除标准:①胃肠道疾病;②合并严重内分泌系统和造血系统疾病、重要肾脏器官功能障碍;③身体营养不良;④精神状态异常。通过随机数表法将患者分为对照组和观察组,每组60例。观察组男性33例,女性27例,平均年龄为(30.74±3.19)岁;平均病程为(3.14±2.54)年,平均BMI为(22.68±2.21 kg)/m²;对照组男性35例,女性25例,平均年龄为(31.02±2.85)岁;平均病程为(3.20±2.48)年,平均BMI为(23.70±1.96)kg/m²。所有受试者均知情同意此次研究,两组患者的一般资料比较无显著差异($P>0.05$),具有可比性。

1.2 方法

观察组给予术后基础的杀菌、消炎、防感染的常规治疗;观察组在此基础上增加切口创面的微波治疗。在痔疮术后的第2天在手术切口的创面部位进行微波治疗(仪器型号为:Carnation-22,厂家:深圳普门科技股份有限公司),辐射器与术后创面保持1~2 cm的距离,治疗仪输出功率设置为15-30 W,在

创面伤口处覆盖无菌纱布,以患者能感到局部温热舒适为标准,一天2次,每次时长为20 min,每天按此步骤进行覆盖无菌纱布的操作,至创面切口拆线为止,两组患者均连续治疗1周。

1.3 观察指标

① T淋巴细胞亚群:治疗前后,在患者空腹状态下采集静脉血5 mL,加入无抗凝剂的干燥管中,静止的放置在室温环境下1 h,采用使用转速为3500 r/min的速度进行血清的离心,提取上层清液储存于零下20℃的冰箱中保存备检,用免疫比浊法检测外周血T淋巴细胞亚群中CD₃⁺、CD₈⁺、CD₄⁺/CD₈⁺;②凝血功能:将治疗前、治疗后采集的待检血液,用Stago全自动血液凝固分析仪进行检测凝血酶原时间(PT)、活化部分凝血活酶时间(APTT)和纤维蛋白原(FIB);③血清炎症因子:对两组患者在第二日清晨空腹状态下抽取静脉血5 mL,静置20 min后,按3000 r/min的速度离心离心20 min,提取血清清液,检测血清C反应蛋白(CRP)、肿瘤坏死因子-α(TNF-α)、降钙素原(PCT)指标水平,CRP和TNF-α均采用酶联免疫吸附法(ELISA)测定,PCT采用武汉明德生物研发生产的QMT8000 PCT分析仪,检测方式使用发光免疫法(ILMA)进行测定,均采用南京中科拜尔医学技术有限公司提供的试剂盒进行酶联免疫吸附法(ELISA)测定指标的水平;④血清神经生长因子(NGF)、前列腺素E2(PGE2)、神经肽Y(NPY):在治疗前后将待检的血清上层分离,采用酶联免疫吸附法(ELISA)测定血清NGF、PGE2、NPY的指标水平,试剂盒由南京中科拜尔医学技术有限公司提供;⑤预后情况:预后包括术后第3天和5天患者肛门水肿评分和创面愈合时间及创面愈合率,其中水肿评分按照创面水肿的直径大小划分为无水腫、轻度水肿、中度水肿、重度水肿进行评分,依次分数依次为0分、1分、2分、3分;创面愈合时间为术后是第1天到创面完全愈合的时间为准;创面愈合率=(术后第3、5天创面的面积÷术后第一天的原始面积)×100%,测量面积的工具为软尺;⑥记录两组患者术后并发症的发生情况。

1.4 统计学分析

以spss18.0软件包处理,正态分布计量资料用均数±标准差($\bar{x} \pm s$)表示,组间比较使用独立样本t检验,组内比较使用配对样本t检验,计数资料以率表示,组间比较采用 χ^2 检验,以 $P<0.05$ 表示差异具有统计学意义。

2 结果

2.1 两组治疗前后T淋巴细胞亚群比较

治疗后,观察组CD₃⁺、CD₈⁺均高于对照组,CD₄⁺/CD₈⁺低于对照组,差异均有统计学意义($P<0.05$),见表1。

表1 两组治疗前后T淋巴细胞亚群比较($\bar{x} \pm s$)

Table 1 Comparison of the T-lymphocyte subsets between two groups before and after treatment($\bar{x} \pm s$)

Groups		CD ₃ ⁺ (%)	CD ₈ ⁺ (%)	CD ₄ ⁺ /CD ₈ ⁺
Observation group(n=60)	Before treatment	46.96±4.40	33.48±2.30	1.41±0.31
	After treatment	60.45±5.63**	45.06±4.16**	1.03±0.14**
Control group(n=60)	Before treatment	47.07±4.19	33.51±2.24	1.38±0.33
	After treatment	54.18±5.04*	38.20±3.35*	1.19±0.17*

Note: Compared with before treatment, * $P<0.05$; Compared with the control group, ** $P<0.05$.

2.2 两组治疗前后凝血功能比较

组,差异均有统计学意义($P<0.05$),见表 2。

治疗后, 观察组 PT、APTT 均长于对照组, FIB 低于对照

表 2 两组治疗前后凝血功能比较($\bar{x} \pm s$)

Table 2 Comparison of coagulation function between two groups before and after treatment($\bar{x} \pm s$)

Groups		PT(s)	APTT(s)	FIB(g/L)
Observation group(n=60)	Before treatment	10.27± 1.73	29.18± 3.53	3.62± 0.74
	After treatment	12.27± 0.48 [#]	38.52± 2.16 [#]	2.23± 0.36 [#]
Control group(n=60)	Before treatment	10.22± 1.82	29.24± 3.29	3.64± 0.72
	After treatment	11.69± 0.59 [*]	33.75± 2.08 [*]	2.80± 0.53 [*]

Note: Compared with before treatment, ^{*} $P<0.05$; Compared with the control group, [#] $P<0.05$.

2.3 两组治疗前后血清炎性因子水平的比较

显优于对照组,差异均有统计学意义($P<0.05$),见表 3。

治疗后, 观察组观察组血清 CRP、TNF- α 和 PCT 水平均明

表 3 两组治疗前后血清炎性因子情况比较($\bar{x} \pm s$)

Table 3 Comparison of serum inflammatory factors between the two groups before and after treatment($\bar{x} \pm s$)

Groups		CRP(ng/mL)	TNF- α (pg/L)	PCT(ng/L)
Observation group(n=60)	Before treatment	9.26± 0.72	110.52± 6.58	9.50± 0.73
	After treatment	3.60± 0.58 [#]	72.44± 3.10 [#]	3.28± 0.36 [#]
Control group(n=60)	Before treatment	9.18± 0.54	114.07± 7.63	9.63± 0.92
	After treatment	5.09± 0.43 [*]	86.29± 3.85 [*]	4.54± 0.68 [*]

Note: Compared with before treatment, ^{*} $P<0.05$; Compared with the control group, [#] $P<0.05$.

2.4 两组治疗前后血清 NGF、PGE2、NPY 水平的比较

组,差异均有统计学意义($P<0.05$),见表 4。

治疗后, 观察组血清 NGF、PGE2、NPY 水平均低于对照

表 4 两组治疗前后血清 NGF、PGE2、NPY 的比较($\bar{x} \pm s$)

Table 4 Comparison of serum NGF, PGE2 and NPY between the two groups before and after treatment($\bar{x} \pm s$)

Groups		NGF(pg/L)	PGE2(ng/L)	NPY(ng/L)
Observation group(n=60)	Before treatment	254.39± 9.50	149.26± 8.75	126.28± 14.05
	After treatment	277.62± 15.18 [#]	171.04± 16.03 [#]	150.36± 18.19 [#]
Control group(n=60)	Before treatment	252.81± 10.44	148.98± 7.72	125.80± 12.73
	After treatment	290.35± 14.72 [*]	192.36± 19.00 [*]	179.14± 17.55 [*]

Note: Compared with before treatment, ^{*} $P<0.05$; Compared with the control group, [#] $P<0.05$.

2.5 两组预后情况的比较

合时间均少于对照组,创面愈合率高于对照组,差异均有统计

学意义($P<0.05$),见表 5。

表 5 两组预后情况的比较($\bar{x} \pm s$)

Table 5 Comparison of prognosis between the two groups($\bar{x} \pm s$)

Groups		Anal edema score (score)	Wound healing time (d)	Wound healing rate (%)
Observation group(n=60)	Day 3 after treatment	10.27± 1.73	29.18± 3.53	3.62± 0.74
	Day5 after treatment	11.69± 0.59 [#]	33.75± 2.08 [#]	2.80± 0.53 [#]
Control group(n=60)	Day 3 after treatment	10.22± 1.82	29.24± 3.29	3.64± 0.72
	Day 5 after treatment	12.27± 0.48 [#]	38.52± 2.16 [#]	2.23± 0.36 [#]

Note: Compared with the control group, [#] $P<0.05$.

2.6 两组术后并发症发生情况的比较

术后, 观察组患者出现 2 例(3.33%)创面局部发热, 对照组

患者共出现 8 例 (13.33%) 创面局部红肿、疼痛、发热、化脓, 每种 2 例, 观察组并发症的总发生率明显低于对照组 ($P < 0.05$)。

3 讨论

痔瘻是肛管直肠与肛门周围皮肤相通的感染性管道, 其内口位于齿线附近, 外口位于肛门周围皮肤, 属于肛肠科常见的慢性感染性的疾病之一, 临床研究显示该病多由早期由肛周脓肿发展而来, 主要表现是肛门周围有一个小口子, 患者会反复肿痛, 且肛周皮肤深层的组织受到细菌感染后, 会出现程度不等的炎症^[11,12]。而炎症反应发展到一定程度, 会导致炎性组织的细胞坏死, 其中肛周坏死组织里面大量的血液中坏死的白细胞和被杀灭的细菌形成混合物, 呈现白色的脓液, 从而交叉感染, 加重患者的病情^[13,14]。多研究表明痔瘻患者存在着明显的 T 淋巴细胞活化状态, 此过程可加速创面伤口的血小管发生免疫炎症反应, 出现免疫激活、内皮细胞活化、通透性增加、血栓前状态等一系列病理改变, 而积极调节炎症因子的表达在阻碍病情进展中极为关键^[15,16]。

临床上对于痔瘻的治疗多采取手术进行切除治疗, 主要通过切开患者瘻管仅损伤部分内括约肌, 外括约肌皮下部及浅部, 不会引起术后肛门失禁^[17]。一般在低位腰麻下, 用探针由外口插入, 通透瘻管的内口穿出, 沿探针方向切开瘻管, 将腐烂肉芽组织切除干净^[18,19]。由于肛门日常生活行、坐、卧的活动度较大, 且伴有被排便所携带的细菌感染的风险, 术后创面的愈合显得尤为重要。微波治疗仪产生微波的热效应通过将受损组织细胞的内外细胞液中多种带电离子, 在微波产生的电磁波和磁场的共同作用下高速运动产生动能, 其动能转化为热能, 从而进行杀菌, 消炎的作用^[20,21]。随着临床医学者对微波治疗的不断研究, 研究表明微波治疗对炎症反应可产生抑制效果, 适用于一些皮肤组织的炎症治疗^[22,23], 且微波治疗可降低腹部外科手术伤口感染率、促进术后伤口预后的恢复^[24]。

本研究结果显示采用微波联合治疗的患者创面细胞组织 T 淋巴细胞亚群和凝血功能指标水平的调节方面均优于常规治疗的患者, 通过分析是微波治疗产生的局部高温能可扩张创面局部的毛细血管扩张, 缓解血管的血液的流变阻力, 促进创面血流的增加, 继而创面组织的血管通透性增强, 改善凝血功能, 而在积极的调节凝血功能后, 对血管的免疫激活也有抑制作用, 缓解 T 淋巴细胞的活化状态^[25,26]。此外, 接受微波治疗后患者的炎症因子和血清 NGF、PGE2、NPY 均低于对照组的传统常规治疗, 通过分析是由于微波治疗使创面细胞内外离子失衡, PH 值降低, 从而使创面组织中溶酶体活性变强, 并生成新的溶酶体, 发挥分解细胞内的细菌物质、增强患者创面抗菌的作用^[27,28]。微波治疗的患者的预后情况和术后并发症均优于对照组, 体现出微波治疗的明显优势, 原因可能是由于患者创面通过微波治疗后, 增强了炎性产物的分解和排泄, 从而改善创面组织的消肿和营养吸收, 增强皮肤组织细胞的再生能力^[29,30]。考虑参与该方案研究的样本量较少、住院观治疗的时间较短等因素, 因此对于该研究方案发热结论有待联合多中心进一步长期的探讨。

综上所述, 微波治疗痔瘻术后患者能有效改善患者免疫功能, 减轻炎症反应, 降低血清 NGF、PGE2、NPY 水平, 有利于促

进患者恢复, 且安全性高。

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