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牙周超声治疗仪联合头孢克洛治疗牙周炎的临床研究*

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摘要 目的:研究牙周超声治疗仪联合头孢克洛治疗牙周炎患者的临床效果。方法:选择2016年1月~2018年6月我院收治的70例牙周炎患者,共有患牙103颗,将其随机分为两组。对照组采用牙周超声治疗仪治疗,观察组在牙周超声治疗后联合口服头孢克洛,每次0.25 g,每8 h给药1次。比较两组治疗前后的咬合指标(咬合创伤指数(TOI)和咬合时间(OT))、牙周指标(附着水平(AL)、探诊深度(PD)、临床附着丧失(CAL)和出血指数(BI))、血清炎性指标(白细胞介素-1 β (IL-1 β)和肿瘤坏死因子- α (TNF- α))水平的改变情况。结果:治疗后,观察组的有效率明显高于对照组(91.43% vs. 74.28%, $P < 0.05$);两组治疗后的TOI、OT、AL、PD、CAL、BI、血清IL-1 β 和TNF- α 水平均较治疗前明显降低($P < 0.05$),且观察组以上指标均明显低于对照组($P < 0.05$)。结论:牙周超声治疗仪联合头孢克洛治疗牙周炎患者的疗效,明显优于单用牙周超声治疗仪治疗,其可有效改善患者的牙周状况和咬合指标,并且能减轻炎症反应。

关键词: 牙周超声治疗仪; 头孢克洛; 牙周炎; 白细胞介素-1 β ; 肿瘤坏死因子- α

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A Clinical Study on the Periodontal Ultrasound Therapy Combined with Cefaclor in the Treatment of Periodontitis*

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ABSTRACT Objective: To investigate the effect of periodontal ultrasound therapy combined with cefaclor in the treatment of periodontitis. **Methods:** 70 cases of patients with periodontitis who were treated in our hospital from January 2016 to June 2018 were selected and randomly divided into two groups. The control group was treated with periodontal ultrasound therapy instrument. The observation group was treated with oral cefaclor after periodontal ultrasound treatment, 0.25 g each time, once every 8 hours. The occlusal index (TOI) and occlusal time (OT), periodontal index (AL), probing depth (PD), clinical attachment loss (CAL), hemorrhagic index (BI), serum inflammatory index (IL-1 β) and tumor necrosis factor- α (TNF- α) were compared between the two groups before and after treatment. **Results:** After treatment, the effective rate of observation group was significantly higher than that of the control group (91.43% vs. 74.28%, $P < 0.05$), the levels of TOI, OT, AL, PD, CAL, BI, serum IL-1 β and TNF- α in both groups were significantly lower than those before treatment ($P < 0.05$), and the above indexes in the observation group were significantly lower than those in the control group ($P < 0.05$). **Conclusion:** The curative effect of periodontal ultrasound therapy combined with cefaclor in the treatment of periodontitis is obviously better than that of periodontal ultrasound therapy alone. It can effectively improve the periodontal condition and occlusal index of patients, and relieve the inflammatory response.

Key words: Periodontal ultrasound therapeutic instrument; Cefaclor; Periodontitis; IL-1 β ; TNF- α

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前言

牙周炎是牙骨质、牙龈、牙槽骨以及牙周韧带等牙齿支持组织由于炎症所引发的一种口腔疾病,会对患者的全口牙或者一组牙造成侵犯,易形成牙齿松动、牙周袋和牙周溢脓等临床症状。大多数牙周炎患者伴有牙龈出血和口臭等现象,影响其

咀嚼功能。牙周炎也是造成牙齿丧失的主要原因,对患者的生活质量和身心健康极为不利^[1-3]。促进牙周组织再生,形成新的牙骨质、牙周韧带以及牙槽骨,恢复对牙齿的支持效果是临床治疗牙周炎的最终目的。

因牙周炎的病因复杂,目前尚无确切有效的治疗手段,常以局部治疗为主。采取牙周超声治疗仪实施龈上洁治术是临床

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上去除牙石的常用手段,但是此疗法会产生显著的疼痛和较大的噪音,患者的治疗依从性较差,且极易导致牙周病反复发作^[45]。牙周炎的发生与某些特殊致病菌具有明显的相关性,因此采取抗感染药物消除或抑制某些特殊致病菌已成为治疗牙周炎的有效方法^[6]。头孢克洛能抑制细菌细胞壁的合成,具有广谱的抗菌作用。本研究将牙周超声治疗仪和头孢克洛联合使用,探讨了其对牙周炎的临床疗效。

1 资料与方法

1.1 一般资料

选择 2016 年 1 月~2018 年 6 月我院收治的 70 例牙周炎患者(患牙 103 颗),纳入标准:牙周袋大于 4 mm,牙龈探诊出血、炎症和脓液渗出,凝血指标和功能正常,X 线检查发现牙槽骨吸收超过根长的 1/3,均知情同意。排除标准:合并精神疾病、自身免疫性疾病、恶性肿瘤患者,对头孢克洛过敏患者,近 1 个月内使用过抗生素、性激素、避孕药、抗感染药物和非甾体类药物等。采用抽签法将患者随机分为两组,观察组 35 例(患牙 51 颗),男 19 例,女 16 例;年龄 28~75 岁,平均(38.24±14.26)岁;慢性牙周炎 20 例,牙周脓肿 9 例,侵袭性牙周炎 6 例。对照组 35 例(患牙 52 颗),男 20 例,女 15 例;年龄 28~76 岁,平均(39.44±15.29)岁;慢性牙周炎 19 例,牙周脓肿 9 例,侵袭性牙周炎 7 例。两组的年龄、性别和牙周炎类型等基线资料差异均无统计学意义,具有可比性($P>0.05$)。

1.2 治疗方法

两组在进行牙周超声治疗前均给予口腔知识宣教,内容包括刷牙的正确方法和牙周炎相关的注意事项,嘱患者每天采用浓度为 0.12% 的氯己定溶液(批号:国药准字 H11022189,生产厂家:北京麦迪海药业有限责任公司,规格:250 mL)漱口,每次 20 mL,含漱约 15 min。使用碘酊(批号:国药准字 H23020508,生产厂家:哈尔滨仁皇药业股份有限公司东方红分厂,规格:2%)涂擦患者的患牙、牙龈以及牙周等部位的黏膜,采取深圳市邦沃科技有限公司生产的 DU-11A 牙周超声治疗仪实施龈上洁治术。采取牙周探针开展探查,当菌斑、牙石和变质牙骨质被清除以及恢复平整即可。观察组在牙周超声治疗后联合口服头孢克洛(批号:国药准字 H10940052,生产厂家:华润双鹤药业

股份有限公司,规格:0.25 g),每次 0.25 g,每 8 h 给药 1 次,共给药治疗 7 d。

1.3 观察指标

疗效标准:①痊愈:患者的龈沟出血指数、牙龈指数和探诊深度等牙周检查结果均恢复正常;②显效:患者的探诊深度降低幅度小于 1 mm,龈沟出血指数、牙龈指数降低幅度大于 1;③无效:各项牙周检测指标均无任何的改善。

咬合指标:比较两组治疗前后的咬合创伤指数(OTI)和咬合时间(OT)。其中,OTI=牙周膜间隙增宽+功能性牙齿动度增加。OT 指的是患者在咬合的过程中,从咬合创伤牙位牙尖的接触起始到出现最大的牙尖交错位需要的时间。

牙周指标:比较两组治疗前后的附着水平(AL)、探诊深度(PD)、临床附着丧失(CAL)和出血指数(BI)。其中,AL 指的是釉牙骨质界到结合上皮冠方之间的距离。PD 指的是龈缘到牙周袋底之间的距离。CAL 指的是釉牙骨质界到牙周袋底之间的距离。出血指数的具体评估方法如下:采取钝头探针慢慢探入患牙的袋底或者龈沟,将探针取出 30 s 后,仔细观察是否发生出血和出血的程度。评分标准:①5 分:表示自动出血。②4 分:表示出血溢满,且溢出患牙的龈沟。③3 分:表示探诊后顺着牙龈缘出血,并且呈线状。④2 分:表示探诊后仅出现点状的出血。⑤1 分:表示牙龈的颜色出现炎症性改变,探诊后并未发生出血。⑥0 分:表示牙龈比较健康,未发生出血以及炎症。

炎症指标:两组治疗前后抽取 3 mL 静脉血,用 ELISA 法检测血清白细胞介素-1 β (IL-1 β)和肿瘤坏死因子- α (TNF- α)水平,试剂盒分别购自上海炉鼎生物科技有限公司以及上海研谨生物科技有限公司。

1.4 统计学分析

采用 SPSS19.0 对数据进行统计学分析,计量资料的组间对比采用 t 检验,计数资料的组间比较用 χ^2 检验,以 $P<0.05$ 为差异有统计学意义。

2 结果

2.1 两组临床疗效的对比

治疗后,观察组的有效率明显高于对照组(91.43% vs. 74.28%, $P<0.05$)。

表 1 两组临床疗效比较[例(%)]

Table 1 Comparison of the clinical effect between two groups [n(%)]

Groups	n	Cure	Valid	Invalid	The total effect rate
Observation group	35	19	13	3	91.43*
Control group	35	15	11	9	74.28

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

2.2 两组治疗前后咬合指标对比

治疗后,两组 TOI 和 OT 均较治疗前明显降低($P<0.05$),且观察组 TOI 和 OT 明显低于对照组($P<0.05$)。

2.3 两组治疗前后牙周指标的对比

治疗后,两组 AL、PD、CAL 和 BI 均较治疗前明显降低($P<0.05$),且观察组 AL、PD、CAL 和 BI 明显低于对照组($P<0.05$)。

2.4 两组治疗前后血清 IL-1 β 和 TNF- α 水平的对比

治疗后,两组血清 IL-1 β 和 TNF- α 水平均较治疗前明显降低($P<0.05$),且观察组血清 IL-1 β 和 TNF- α 水平明显低于对照组($P<0.05$)。

3 讨论

牙周炎是由吸烟、细菌和创伤性牙合等多因素诱发的疾病,如未及时治疗会导致牙齿脱落和牙龈红肿^[7,8]。由于牙结石

和牙菌斑的长期存在,导致牙周炎患者牙龈下滋生各种的有害细菌,丧失上皮附着,形成牙周袋,最终引发牙齿松动脱落。非附着性龈下菌斑会加快牙槽骨的破坏速度,而牙周炎的发生与非附着性龈下菌斑之间具有紧密的相关性^[9-11]。非附着性龈下

菌斑包含的主要优势菌是革兰阴性厌氧菌,因而有效去除厌氧菌,进而明显抑制菌斑的生成是临床上治疗牙周炎和牙龈炎患者的重要步骤^[12-14]。目前,临床上治疗因厌氧菌导致的口腔牙周疾病的药物剂型和品种较多,其治疗效果存在极大的差异。

表 2 两组治疗前后的咬合指标的比较($\bar{x} \pm s$)Table 2 Comparison of the occlusion index between two groups before and after treatment($\bar{x} \pm s$)

Groups	n		OT(s)	TOI (%)
Observation group	35	Before treatment	1.34± 0.35	7.46± 0.93
		After treatment	0.79± 0.24* [#]	6.31± 0.82* [#]
Control group	35	Before treatment	1.33± 0.32	7.45± 0.94
		After treatment	0.99± 0.26 [#]	6.93± 0.87 [#]

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

表 3 两组治疗前后的牙周指标比较($\bar{x} \pm s$)Table 3 Comparison of the periodontal index between two groups before and after treatment($\bar{x} \pm s$)

Groups	n		AL (mm)	PD (mm)	PLI	CAL(mm)
Observation group	35	Before treatment	4.96 ± 1.37	5.43 ± 1.16	1.62 ± 0.43	6.82 ± 1.23
		After treatment	3.74± 0.95* [#]	3.92± 0.97* [#]	0.81± 0.32* [#]	5.49± 0.76* [#]
Control group	35	Before treatment	4.95 ± 1.34	5.44 ± 1.13	1.64 ± 0.45	6.83 ± 0.19
		After treatment	4.26± 1.04 [#]	4.28± 1.26 [#]	1.19± 0.37 [#]	5.83± 0.84 [#]

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

表 4 两组治疗前后血清 IL-1 β 和 TNF- α 水平比较($\bar{x} \pm s$)Table 4 Comparison of the serum IL-1 β and TNF- α levels between two groups before and after treatment($\bar{x} \pm s$)

Groups	n		IL - 1 β (μ g/L)	TNF- α (pg/mL)
Observation group	35	Before treatment	8.63± 1.72	43.27± 10.26
		After treatment	5.36± 1.34* [#]	35.89± 7.26* [#]
Control group	35	Before treatment	8.64± 1.69	44.15± 10.38
		After treatment	7.13± 1.24 [#]	27.43± 6.59 [#]

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

牙菌斑微生物是牙周炎和牙龈炎患者的始动因子。相关的临床研究表明牙周疾病的主要致病菌是厌氧菌,常见的包括具核梭杆菌、福赛拟杆菌、牙龈卟啉单胞菌以及中间普氏菌等^[15,16]。头孢克洛对肺炎球菌以及金黄色葡萄球菌的抗菌效果比头孢羟氨苄强 2~4 倍,对 A 组溶血性链球菌、产青霉素酶金黄色葡萄球菌、表皮葡萄球菌以及草绿色链球菌的抗菌效果与头孢羟氨苄大致相同,对大肠埃希菌、奇异变形杆菌、肺炎克雷伯菌、志贺菌属以及沙门菌属等的抗菌效果均强于头孢羟氨苄^[17-21]。本研究结果显示牙周超声治疗仪联合头孢克洛对牙周炎的疗效明显优于单用牙周超声治疗仪,可有效改善牙周状况和咬合指标。分析其原因为,牙周超声治疗仪可以有效去除牙龈下的结石,使根面恢复平整,并且将牙龈下附着的矿化沉积物上的病原体去除,有效消除牙周袋,头孢克洛可以对多种革兰阴性菌以及革兰阳性菌发挥较强的杀灭效果。两种治疗方法联合使用可以发挥协同作用,有效改善牙周状况和咬合指标,缓解牙周炎的进程,有效控制牙周炎的发展。

IL-1 β 在炎症反应的急性期会急剧升高,且具有极强的特异性和敏感性,能刺激造血细胞、B 细胞以及 T 细胞发生增殖、分化,在细胞外基质的代谢和分解过程中具有重要的作用^[22-25]。TNF- α 可以通过抑制牙周膜中纤维细胞碱性磷酸酶的活性,对牙周膜中纤维细胞的转化过程进行明显的抑制,从而破坏牙骨的吸收。TNF- α 还可以激活破骨细胞,使牙周组织遭到破坏,造成牙周炎^[26-30]。本研究结果显示牙周超声治疗仪联合头孢克洛治疗的患者血清 IL-1 β 和 TNF- α 水平明显低于单用牙周超声治疗仪治疗,表明牙周超声治疗仪联合头孢克洛有助于消除牙周炎患者的牙龈炎症,减轻牙龈疼痛,提高牙周炎患者的远期恢复效果。

综上所述,牙周超声治疗仪联合头孢克洛治疗牙周炎患者的疗效,慢性优于单用牙周超声治疗仪治疗,其可有效改善患者的牙周状况和咬合指标,并且能减轻炎症反应。

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