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老年糖尿病患者牙周重度破坏后种植研究

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摘要 目的:研究 2 型糖尿病老年患者牙周重度破坏后不同血糖水平对于牙齿种植术后炎症指标、种植体稳定性及菌斑指数的影响,探讨患者血糖控制情况和种植术后效果的关系。**方法:**选取我院 2011 年 1 月至 2013 年 1 月 40 例在牙周重度破坏后行种植体置入的 2 型糖尿病老年患者,按照术后 8 周糖化血红蛋白水平是否 $\geq 7.5\%$ 分为实验组和对照组,分别测定两组患者术后 24 小时血常规,对比其白细胞、中性粒细胞及淋巴细胞水平;同时于术后第 4、8、12 周检测其种植体稳定参数(ISQ);术后 3 个月、6 个月检测其菌斑指数(PLI)。**结果:**术后 24 小时,实验组的白细胞、中性粒细胞及淋巴细胞水平显著高于对照组, $P < 0.01$; 术后第 4、8、12 周的 ISQ 值,实验组显著低于对照组, $P < 0.01$; 术后 3 个月、6 个月的菌斑指数,实验组显著高于对照组, $P < 0.01$ 。**结论:**2 型糖尿病老年患者牙周重度破坏后不同血糖水平与其炎症反应、种植体稳定性及细菌繁殖情况密切相关,控制术前及术后血糖,有利于提高种植体稳定性并降低术后炎症反应,减少细菌繁殖,促进尽早愈合。

关键词:老年糖尿病;种植牙;炎症反应;种植体稳定性;菌斑指数;糖化血红蛋白

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Study on Dental Planting in Elderly Diabetic Patients after Severe Periodontal Destruction

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ABSTRACT Objective: To study the effect of blood glucose levels on dental planting postoperative inflammation index, implant stability and plaque index in elderly patients of type 2 diabetes with severe periodontal damage and to discuss the relations between blood glucose levels and dental implant surgery effect. **Methods:** 40 cases of elderly patients with type 2 diabetes who received dental implant placement because of severe periodontal damage from January 2011 to January 2013 were chosen and were divided into the experimental group and the control group, according to whether glycated hemoglobin level is 7.5% or higher 8 weeks postoperatively. The blood leukocyte, neutrophils and lymphocytes levels of the two groups of patients were measured 24 hours after the operation. Implant stability parameters (ISQ) was tested 4, 8, 12 weeks post operation.; the plaque index (PLI) were tested 3 months and 6 months after the operation. **Results:** 24 hours after the operation, leukocyte, neutrophils and lymphocytes levels of the experimental group were significantly higher than those of the control group, $P < 0.01$; After 4, 8, 12 weeks, ISQ value of the experimental group was significantly lower than that of the control group, $P < 0.01$; After 3 months, 6 months, plaque index of the experimental group was significantly higher than that of control group, $P < 0.01$. **Conclusion:** In elderly patients with type 2 diabetes who had severe periodontal damage and received dental planting, inflammation condition, implant stability and bacteria breeding situation were closely related to blood glucose levels, to ensure the preoperative and postoperative blood glucose control will improve stability of the implant and reduce postoperative inflammation, and bacteria breeding, and promote healing as well.

Key words: Elderly diabetes; Dental implant; The inflammatory response; Implant stability; Plaque index; Glycated hemoglobin

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前言

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糖尿病作为一种慢性代谢性疾病,与自身免疫、遗传和环境、饮食等因素均有关,临床表现主要为因胰岛素作用与分泌障碍导致的慢性高血糖,患者糖耐量降低,同时血糖浓度升高^[1-3]。由于糖尿病患者牙周组织因代谢紊乱而营养不良,局部缺血、缺氧,进而容易遭受细菌损害,产生溃疡,最终发展为牙周病,已知糖尿病患者牙周疾病的患病率较非糖尿病患者高出 17%-33%,已经成为糖尿病的第六大并发症^[4-6]。研究显示:糖尿

病老年患者不仅牙周疾病发病率高,且常为难治性或重度牙周病,造成牙周组织重度破坏,治疗效果不理想。国外学者研究发现:在二型糖尿病患者中,血糖水平控制良好者,其慢性牙周炎的严重程度亦较轻。本文主要针对2型糖尿病老年患者牙周重度破坏后不同血糖水平与其炎症反应、种植体稳定性及细菌繁殖情况的关系进行研究探讨,报告如下。

1 资料与方法

1.1 一般资料

采用回顾性分析法,按照术后8周糖化血红蛋白水平是否 $\geq 7.5\%$ 将所有患者分为实验组和对照组,其中实验组患者22例,对照组患者18例。所有患者均符合2型糖尿病的临床诊断:空腹血糖(FDG) ≥ 7.0 mmol/L和/或糖耐量试验(OGTT) ≥ 11.1 mmol/L,且病史超过1年。其骨组织质、量及咬合关系满足种植牙适应证。所有患者均符合重度牙周炎诊断标准:全口牙平均临床附着丧失(clinical attachment loss, CAL) ≥ 2.5 mm,至少3个区有1个或多个邻面位点 CAL ≥ 5 mm,全口缺失牙不超过14颗^[7]。所有患者均排除心血管疾病、肾功能不全及视网膜病变等疾病,同时无吸烟、酗酒等不良嗜好。对于所有患者均维持原有饮食及药物治疗。其中实验组22例,男13例(59.09%),女9例(40.91%),年龄60-78岁,平均年龄(66.1 $\pm$ 3.2)岁;对照组18例,男10例(55.56%),女8例(44.4%),年龄61-79岁,平均年龄(67.8 $\pm$ 2.7)岁,组间一般资料比较差异无统计学意义($P>0.05$),具有可比性。

1.2 治疗方法

所有患者均在术前1日预防性口服阿莫西林(每日三次,

每次0.5g)至术后3日,防止细菌感染。同时术前即开始用复方氯己定漱口,直至术后14天。种植体均采用Osstem SS II长度8.5-13.0 mm,直径4.1 mm种植体。

1.3 疗效评价标准

所有患者均在术后24小时采用自动血液分析仪检查血常规,对比其白细胞、中性粒细胞及淋巴细胞水平;术后8周采用离子交换液相层析法(AC9000)检测糖化血红蛋白(HbA1c)水平;同时于术后第4、8、12周检测其种植体稳定参数(ISQ);术后3个月及6个月检测其菌斑指数(Plaque Index, PLI)。其中ISQ是用于描述种植体在骨内牢固程度的指标,采用Osstell共振频率分析仪检查,每次检测均测量3次后取均值。菌斑指数(PLI)的评价标准为:0分,无菌斑;1分,探针轻划种植体表面,可发现菌斑;2分,肉眼可见菌斑;3分,大量软垢^[8]。

1.4 统计学方法

应用SPSS 17.0软件分析,计量数据采用均数 $\pm$ 标准差($\bar{x} \pm s$)表示,组间比较采用t检验, $P>0.05$,差异无统计学意义, $P<0.05$,差异具有统计学意义, $P<0.01$,差异具有显著性统计学意义。

2 结果

2.1 两组患者术后24小时的白细胞、中性粒细胞及淋巴细胞水平比较

实验组和对照组术后24小时白细胞相比, $P<0.01$;实验组和对照组术后24小时中性粒细胞相比, $P<0.01$;实验组和对照组术后24小时淋巴细胞相比, $P<0.01$ 。见表1。

表1 两组患者术后24小时的白细胞、中性粒细胞及淋巴细胞水平比较($\bar{x} \pm s$)

Table 1 Comparison of leukocyte, neutrophil granulocyte and lymphocyte levels between the two groups of patients 24 hours post operation ($\bar{x} \pm s$)

组别 Groups	例数 Cases	白细胞($\times 10^9/L$) Leukocyte($\times 10^9/L$)	中性粒细胞($\times 10^9/L$) Neutrophile($\times 10^9/L$)	淋巴细胞($\times 10^9/L$) Lymphocyte($\times 10^9/L$)
实验组 Experimental group	22	10.15 $\pm$ 2.32	5.76 $\pm$ 0.97	3.02 $\pm$ 0.55
对照组 Control group	18	6.33 $\pm$ 2.51	3.08 $\pm$ 0.84	1.83 $\pm$ 0.57
t		34.823	35.707	103.057
P		0.001	0.001	0.000

2.2 两组患者术后第4、8、12周检测其种植体稳定参数(ISQ)比较

实验组和对照组术后第4周ISQ比较, $P<0.01$;实验组和对照组术后第8周ISQ比较, $P<0.01$;实验组和对照组术后第12周ISQ比较, $P<0.01$ 。见表2

2.3 两组患者术后3个月、6个月菌斑指数(PLI)比较

实验组和对照组术后3个月PLI比较, $P<0.01$;实验组和对照组术后6个月PLI比较, $P<0.01$ 。见表3。

3 讨论

3.1 糖尿病对于老年患者牙槽骨组织的影响

在糖尿病老年患者的牙槽骨中,骨皮质变薄,破骨细胞活

跃,成骨细胞减少,新骨形成受到抑制,最终导致牙槽骨受到严重破坏,这可能与造骨细胞遭到高血糖抑制分化,同时甲状腺激素对于钙磷代谢调节紊乱,致使骨钙含量下降有关^[9-11]。而对于进行种植体治疗的糖尿病患者来说,种植体周围新骨较非糖尿病患者更加不成熟和有序,常表现为编制骨,影响远期愈合。其原理可能在于:持续高血糖可能导致糖基化终极产物(advanced glycation end products, AGEs)聚集,AGEs通过影响细胞外基质合成、细胞生长和黏附等来影响骨组织在创伤后的愈合过程^[12-14]。

3.2 糖尿病老年患者血糖控制水平与牙周病治疗效果的关系

在2型糖尿病老年患者中,血糖控制良好者其慢性牙周炎发病严重程度和骨吸收危险程度显著低于血糖控制不佳者;而

表 2 两组患者术后第 4、8、12 周检测其种植体稳定参数(ISQ)比较($\bar{x} \pm s$)Table 2 Comparison of implant stability quotient(ISQ) between the two groups of patients at 4, 8, 12 weeks post operation ($\bar{x} \pm s$)

组别 Groups	例数 Cases	第 4 周 4 weeks	第 8 周 8 weeks	第 12 周 12 weeks
实验组 Experimental group	22	54.52 $\pm$ 1.24	60.01 $\pm$ 1.49	61.19 $\pm$ 1.57
对照组 Control group	18	57.48 $\pm$ 1.27	61.13 $\pm$ 1.52	62.08 $\pm$ 1.52
t		-170.896	-64.663	-30.831
P		0.000	0.000	0.001

表 3 两组患者术后 3 个月、6 个月菌斑指数(PLI)比较($\bar{x} \pm s$)Table 3 Comparison of Plaque Index(PLI) between the two groups of patients at 3, 6 months post operation ($\bar{x} \pm s$)

组别 Groups	例数 Cases	术后 3 个月 3 months postoperative	术后 6 个月 6 months postoperative
实验组 Experimental group	22	1.42 $\pm$ 0.38	1.95 $\pm$ 0.43
对照组 Control group	18	0.97 $\pm$ 0.41	1.06 $\pm$ 0.47
t		25.981	13.911
P		0.001	0.005

血糖控制不佳者更易发生反复发作的、不易控制的牙龈出血、牙龈肿胀、多发性脓肿和牙齿松动、脱落、移位等^[15]。在胡运苑等人研究中发现:空腹血糖浓度与牙周病治疗效果呈反比关系,空腹血糖控制在 7.2 mmol/L 以下水平的患者治疗有效率最高,而空腹血糖超过 11.2 mmol/L 的患者治疗有效率最低,且空腹血糖控制情况是影响糖尿病合并牙周病患者治疗有效性的独立风险因素之一^[16]。

糖尿病并发牙周病老年患者的牙周组织往往受到严重炎症破坏,同时牙槽骨已经严重损伤,普通药物治疗难以发挥疗效。近年来牙种植技术的成功率和稳定性得以提高,成为了糖尿病并发牙周病患者的有效治疗手段^[17,18]。但对于糖尿病患者来说,常常由于周围骨吸收和附着丧失增高,造成种植体保留率下降。可能与糖尿病患者因血糖控制不佳,免疫功能下降,加重机体对于种植治疗的创伤反应,导致自然牙本身存在的感染因素持续存在,同时传导至种植体,进而延长创伤反应持续时间,影响愈合修复有关。同时分子生物学研究显示:高血糖会抑制成骨细胞分化的基因标志物 Dlx5 和 Cbfa1 表达,与骨组织损伤后反应和愈合能力直接相关。在本文研究中,血糖控制较差的实验组患者,其术后 24 小时血常规炎症指标显著高于对照组,且术后 4、8、12 周种植体稳定性均不及血糖控制较好的对照组,与上述原理是一致的。同时由于实验组患者血糖控制不佳,导致口腔卫生条件较差,致使菌斑术后持续存在,进一步成为术后慢性牙周炎的始动和必要条件。

3.3 糖尿病老年患者合并牙周病的治疗思路探讨

由于老年患者血糖水平与牙周健康密切相关,故而在牙周种植治疗之前,首先要控制患者血糖水平,否则难以达到治疗效果,且容易造成术后感染。对于血糖已经得到较好控制的患

者,术中需严格执行无菌操作,在植入种植体的同时,予以洁治、刮治和祛除口腔内细菌病灶等治疗,避免残留感染因素。术后应定期复查,注意控制血糖水平及植入种植体稳定性,患者自身要注意口腔卫生,牙周病严重者可预防性使用抗生素及复发氯己定漱口水,以提高种植体存活率^[19,20]。

在本次研究中,我们发现:2 型糖尿病老年患者牙周重度破坏后不同血糖水平与其炎症反应、种植体稳定性及细菌繁殖情况密切相关,提示我们今后对于牙周重度破坏的 2 型糖尿病患者进行种植牙治疗时,需注重术前血糖控制和术后血糖监测,及时调整降糖药物,以促进种植体稳定性及创伤尽早愈合,避免牙周进一步破坏。

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