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短期胰岛素泵强化治疗对 2 型糖尿病患者血脂血糖水平的影响

胡田颖¹ 刘向阳² 郭伟¹ 刘张艳¹ 白杨¹

(1 渭南市中心医院内分泌科 陕西 渭南 710004; 2 西京医院内分泌科 陕西 西安 710032)

摘要 目的:探讨短期胰岛素泵强化治疗对 2 型糖尿病患者血脂血糖代谢的影响。**方法:**选取 76 例 2 型糖尿病患者,按给药方式不同分为两组,对照组(38 例)给予门冬胰岛素常规治疗,观察组(38 例)给予胰岛素泵强化治疗,依据两组治疗前后的血糖、血脂指标变化及治疗前、治疗后 1 周、2 周的 ADL 量表评分评价短期胰岛素泵强化治疗对 2 型糖尿病患者血脂血糖代谢的影响。**结果:**治疗后,两组患者的空腹血糖(FPG)、糖化血红蛋白(HbA1c)、总胆固醇(TC)、甘油三酯(TG)、低密度脂蛋白胆固醇(LDL-C)水平均较治疗前显著降低,高密度脂蛋白胆固醇(HDL-C)水平均明显升高,且观察组 FPG、HbA1c、TC、TG、LDL-C 水平均明显低于对照组, HDL-C 水平显著高于对照组($P<0.05$)。治疗后 1 周、2 周,两组 ADL 评分均较治疗前明显提高,且观察组显著高于对照组($P<0.05$)。**结论:**短期胰岛素泵强化治疗能显著改善 2 型糖尿病患者的血糖血脂代谢紊乱,并提高患者的日常生活能力。

关键词:胰岛素泵; 2 型糖尿病; 血脂; 血糖

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Effect of Short-term Insulin Intensive Therapy on the Blood Glucose and Lipid Levels of Patients with Type 2 Diabetes

HU Tian-ying¹, LIU Xiang-yang², GUO Wei¹, LIU Zhang-yan¹, BAI Yang¹

(1 Department of Endocrine, Weinan Central Hospital, Weinan, Shaanxi, 710004, China;

2 Department of Endocrine, Xijing Hospital, Xi'an, Shaanxi, 710032, China)

ABSTRACT Objective: To investigate the effect of short term and intensive insulin pump on the blood lipid and glucose levels of patients with type 2 diabetes. **Methods:** 76 patients with type 2 diabetes were selected and divided into two groups according to different administration. The control group (38 cases) was given routine insulin aspart treatment. The observation group (38 cases) was treated by insulin pump. The blood and lipid indexes and ADL score before treatment, at 1 week and 2 weeks after treatment were compared between two groups. **Results:** After treatment, the levels of FPG, HbA1c, TC, TG and LDL-C were lower than those before treatment and the level of HDL-C was increased in both groups. The levels of FPG, HbA1c, TC, TG, LDL-C of observation group were lower than those of the control group, and the level of HDL-C of observation group was higher than that of control group ($P<0.05$). At 1 week, 2 weeks after treatment, the ADL scores of both groups were significantly improved, and the ADL score of observation group was higher than that of the control group ($P<0.05$). **Conclusion:** Short term intensive insulin pump could significantly improve the blood glucose and lipid metabolism disorders in patients with type 2 diabetes, and improve the ability of daily life.

Key words: Insulin pump; Type 2 diabetes; Blood lipid; Blood glucose

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前言

2 型糖尿病是我国常见的慢性疾病之一,患病人群数量庞大,患者还常合并有糖尿病肾病、心血管疾病、视网膜病变等并发症,严重影响了其生活健康^[1]。随着对糖尿病发病机制研究的不断深入,糖尿病治疗已从传统的阶梯治疗模式发展为新型的治疗模式^[2]。其中,以模拟人体健康胰腺分泌胰岛素的胰岛素泵应用较为广泛,短期胰岛素泵的强化治疗可以较好的控制血糖,改善胰岛细胞功能^[3]。本研究主要探讨了短期胰岛素泵强化治疗对 2 型糖尿病患者血脂血糖水平的影响,以期为其临床应

用提供更多的参考依据。

1 资料与方法

1.1 一般资料

选 2014 年 6 月-2016 年 6 月取渭南市中心医院内分泌科收治的 2 型糖尿病患者 76 例。纳入标准:(1)符合 1999 年世界卫生组织对糖尿病的诊断和分型标准^[4];(2)治疗前 2 周末服用其他降脂药或注射胰岛素;(3)空腹血糖大于等于 11.1 mmol/L,餐后 2 h 血糖大于等于 13.9 mmol/L。排除标准:酮症酸中毒、高渗性非酮症性昏迷、伴有严重循环障碍的高血糖患者。按给药方式不同分为两组,对照组(38 例)给予门冬胰岛素及甘精胰岛素治疗,包括男 24 例,女 14 例,年龄 42~68 岁,平均年龄(54.6 ± 15.8)岁,BMI 指数 21~32 kg/m²,平均(25.6 ± 5.8)kg/m²;观察组(38 例)给予胰岛素泵强化治疗,包括男 21 例,女 17 例,

作者简介:胡田颖(1973-),女,本科,副主任医师,主要研究方向:糖尿病及甲状腺疾病,电话:15319099556,

E-mail: hutianying_1973@medicinepaper.com.cn

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年龄 41~70 岁, 平均年龄 (57.5± 16.4) 岁; BMI 指数 22~34 kg/m², 平均(27.4± 5.3)kg/m²。两组的一般资料上相比差异无统计学意义(P>0.05), 具有可比性。

1.2 给药方法

治疗期间, 两组均按医嘱口服二甲双胍片, 对照组患者皮下注射门冬胰岛素(丹麦诺和诺德公司, 规格: 3 mL: 300 单位, 批准文号: 国药准字 J20150072)治疗, 开始注射第 1 天, 用量以 0.5 U/kg 计算, 于早、中、晚餐前注射, 晚间 10 点皮下注射甘精胰岛素(赛诺菲制药有限公司, 规格: 3 mL: 300 单位, 批准文号: 国药准字 J20140053), 1 天以后依照血糖水平调整胰岛素注射量; 实验组患者采用福尼亚胰岛素泵(珠海福尼亚医疗设备有限公司, 注册证编号 国药食药监械(准)字 2013 第 3540149 号(更))持续泵入门冬胰岛素强化治疗, 开始注射第 1 天, 用量以 0.5 U/kg 计算, 全天用量的 50%为基础用量, 剩余 50%于餐前泵入, 实时检测血糖水平, 以 FPG 小于 7 mmol/L, 2hPG 小于 10 mmol/L 为血糖控制目标, 1 天以后依照血糖水平调整门冬胰岛素注射量; 治疗期间坚持饮食、运动治疗, 两组疗程为 2 周。

1.3 观察指标

(1)血糖和血脂水平: 取患者空腹肘静脉血 5 mL, 1000 r/min

离心 15 min, 分离上清液, -80 ℃冻存待测, 全自动生化分析仪检测患者治疗前, 治疗后空腹血糖 (FPG)、糖化血红蛋白 (HbA1c)、总胆固醇(TC)、甘油三酯(TG)、低密度脂蛋白胆固醇 (LDL-C)、高密度脂蛋白胆固醇(HDL-C)水平; (2)日常生活能力: 采用 ADL 量表对患者日常生活能力进行打分, 满分记为 100 分, 分数越高说明日常生活能力越强。

1.4 统计学分析

所有数据采用 SPSS 17.0 软件进行分析, 计量资料以($\bar{x} \pm s$)表示, 采用 t 检验, 计数资料以%表示, 采用 χ^2 检验, 以 P<0.05 为差异有统计学意义。

2 结果

2.1 两组治疗前后血糖血脂水平的比较

治疗前, 两组 FPG、HbA1c、TC、TG、LDL-C、HDL-C 水平相比差异无统计学意义(P>0.05)。治疗后, 两组 FPG、HbA1c、TC、TG、LDL-C 水平均较治疗前显著降低, HDL-C 水平均明显升高, 且观察组 FPG、HbA1c、TC、TG、LDL-C 水平均明显低于对照组, HDL-C 水平显著高于对照组(P<0.05), 见表 1。

表 1 两组治疗前后血糖和血脂水平的比较

Table 1 Comparison of the blood glucose and lipid levels between two groups before and after treatment

Groups		FPG (mmol/L)	HbA1c (%)	TC(mmol/L)	TG(mmol/L)	LDL-C(mmol/L)	HDL-C(mmol/L)
Observation group	Before treatment	14.29± 1.47	8.38± 1.32	6.96± 1.46	2.47± 0.24	3.86± 0.43	1.08± 0.12
	After treatment	5.13± 0.75**	5.72± 0.64**	4.12± 0.82**	0.82± 0.17**	2.35± 0.67**	1.72± 0.32**
Control group	Before treatment	14.57± 1.51	8.25± 1.28	7.14± 1.33	2.34± 0.24	3.79± 0.82	1.07± 0.16
	After treatment	9.76± 0.46*	7.14± 0.57*	6.56± 1.26*	1.45± 0.27*	3.03± 0.35*	1.26± 0.27*

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

2.2 两组治疗前后日常生活能力评分的比较

治疗前, 两组 ADL 评分相比差异无统计学意义(P>0.05)。

治疗后 1 周、2 周, 两组 ADL 评分均较治疗前明显提高, 且观察组显著高于对照组(P<0.05), 见表 2。

表 2 两组治疗前后日常生活能力评分的比较

Table 2 Comparison of the score of daily life ability between two groups before and after treatment

Groups	n	Before treatment	1 week after treatment	2 weeks after treatment
Observation group	38	47.37± 7.54	61.58± 8.15**	86.24± 11.15**
Control group	38	46.46± 7.67	54.71± 8.47*	74.45± 9.47*

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

3 讨论

随着我国人民生活水平的提高, 人口老龄化趋势不断增加, 2 型糖尿病患者在我国数量也在不断增加, 如何有效控制和预防 2 型糖尿病已成为临床上重点关注的问题^[5-7]。2 型糖尿病患者不但对胰岛素敏感性较差, 还常常合并有血脂代谢紊乱^[8,9], 在长期血糖控制不理想的状态下, 糖化血红蛋白增加、氧自由基产生量过多, 损伤体内血管壁; 脂蛋白数量和质量的异常也加剧血管壁的损伤^[10,11]。血脂异常的表现主要为 TG 升高, HDL-C 降低, LDL-C 及 HDL 粒子数量增加, 餐后脂血症和过多的残粒堆积^[12]。

患者体内血脂血糖代谢紊乱, 究其原因是胰岛 β 细胞功能减退导致的胰岛素分泌不足^[13]。有研究表明持续性高血糖造成

的糖毒性和血清中游离脂肪酸的增加所致脂毒性, 即糖毒性和脂毒性是导致胰岛 β 细胞功能衰减、胰岛素抵抗的重要因素, 主要通过改变胰岛 β 细胞结构, 影响细胞正常生理功能, 使其数量下降, 分泌胰岛素量减少, 降低胰岛素敏感性^[14,15]。因此, 2 型糖尿病的治疗主要以外源性补充胰岛素为主, 以替代内源性胰岛素分泌的不足^[16,17]。研究表明 2~5 周胰岛素强化治疗在有效控制 2 型糖尿病患者血糖水平的同时可以显著改善 2 型糖尿病患者的血脂代谢紊乱^[18]。短期胰岛素泵强化治疗后, 首先最显著的治疗效果为血糖的明显改善, 使体内糖毒性降低, 胰岛 β 细胞功能在一定程度上有所恢复^[19], 进而胰岛素抑制脂肪组织释放大量的脂肪酸, 减少肝脏合成 VLDL、TG 和胆固醇, 从而阻止糖毒性和脂毒性对胰岛 β 细胞功能和胰岛素敏感性的损害^[20]。

本研究中,所有患者治疗后 FPG、HbA_{1c}、TC、TG、LDL-C 水平均较治疗前显著降低,HDL-C 水平均明显升高,且胰岛素泵强化治疗的患者 FPG、HbA_{1c}、TC、TG、LDL-C 水平均低于门冬胰岛素常规治疗的患者,而 HDL-C 水平高于门冬胰岛素常规治疗的患者,说明短期胰岛素泵强化治疗能较好地模仿机体生理性分泌胰岛素,显著降低血糖水平,使血脂水平异常的指标回归正常,有利于控制 2 型糖尿病发展。2 型糖尿病是慢性终身性疾病,常累积全身多个器官,在多个器官并发症作用下,日常生活能力下降。因此,除了常规饮食控制、适度运动外,减轻 2 型糖尿病的症状,有利于提高患者日常生活能力水平。故治疗后 1 周、2 周,两组患者 ADL 评分均明显提高,且胰岛素泵强化治疗的患者高于门冬胰岛素常规治疗的患者。

综上所述,短期胰岛素泵强化治疗能显著改善 2 型糖尿病患者的血糖血脂代谢紊乱,并提高患者的日常生活能力。

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