

糖尿病视网膜病变患者的心电图改变与临床分析

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Electrocardiogram changes in diabetic retinopathy patients and its clinical analysis

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Abstract

• AIM: To investigate the clinical value and law of electrocardiogram (ECG) changes in type 2 diabetes mellitus patients with diabetic retinopathy (DR).

• METHODS: The study was based on 113 patients with type 2 diabetes mellitus in the ophthalmology department of our hospital between June 2009 and March 2011, who were diagnosed with DR. A retrospective analysis were made on the clinical data of ECG, triglyceride, cholesterol and glycosylated hemoglobin.

• RESULTS: ST segment and T-wave abnormalities in ECGs were the major abnormalities. 25 cases (61.0%) in non-proliferative DR and 59 cases (81.9%) in proliferative DR had ECG abnormality. The difference was significant. Cases percentage in proliferation stage of DR patients with abnormal ECG was significantly higher than those of normal ECG group. Compared with normal ECG group, abnormal ECG group is also associated with higher average glycosylated hemoglobin. The difference was statistically significant ($P < 0.01$). The difference of triglyceride and cholesterol levels between abnormal and normal ECG groups was not significant.

• CONCLUSION: As a severe complication in eyes, DR is associated with cardiovascular system diseases and the poor glycemia control.

• KEYWORDS: diabetic retinopathy; electrocardiogram

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摘要

目的:探讨2型糖尿病患者伴糖尿病视网膜病变(diabetic

retinopathy, DR)的心电图改变规律及临床意义。

方法:总结2009-06/2011-03在我院眼科住院的113例DR患者的心电图和血脂、糖化血红蛋白水平等资料,并对其进行回顾性分析。

结果:DR患者心电图的异常表现以ST-T改变为多见。非增殖期心电图异常25例(61.0%),增殖期59例(81.9%),组间差异显著。在心电图异常的DR患者中处于增殖期的病例比例明显高于心电图正常组。与心电图正常组相比,心电图异常组也伴有糖化血红蛋白平均水平的升高,差异具有显著统计学意义($P < 0.01$)。心电图的异常组与正常组间甘油三酯和胆固醇水平差异不显著。

结论:DR作为糖尿病严重眼部并发症多伴心血管系统病变的发生和血糖控制不良的情况。

关键词:糖尿病视网膜病变;心电图

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0 引言

糖尿病已成为威胁人类健康的最重要疾病之一,它的并发症包括心血管、肾脏、眼等器官的微血管病变。糖尿病视网膜病变(diabetic retinopathy, DR)是糖尿病患者的眼部主要并发症,是目前主要的致盲性眼病。糖尿病患者心血管病变在心电图上的反映,关系到糖尿病对心脏的影响和预后,而引起临床的高度重视^[1]。因此,有必要进一步了解DR患者的心电图改变规律,以分析糖尿病患者眼部并发症与心血管并发症之间的关系,现将近3a收治的113例DR患者心电图异常资料进行了回顾性临床分析。

1 对象和方法

1.1 对象 DR患者113例,2型糖尿病,其中男51例,女62例,年龄35~89岁,病程5~39a。

1.2 方法 入院后常规行12导联心电图检查,同时行血脂(甘油三酯、胆固醇)、糖化血红蛋白等血液检测。DR患者分为非增殖期41例和增殖期72例。

2 结果

2.1 心电图结果 心电图正常者30例;异常者83例,其中心律失常(窦性心动过缓、窦性心动过速、房早、室早、传导阻滞)46例,ST-T改变(ST段抬高或下移、T波低平、倒置或双相)65例,Q-T间期延长10例,病理性Q波,符合陈旧性急性心肌梗死心电图诊断标准5例。83例异常心电图其中出现两种以上改变有28例。心电图的异常率:非增殖期DR为61.0%,增殖期为81.9%,组间差异具有统计学意义(表1)。

2.2 血液检测结果 非增殖期患者中平均甘油三酯、胆固醇平均水平高于正常值,血脂异常比率为73.2%,糖化血红蛋白异常者占70.7%。增殖期患者中血脂异常比率与非增殖期相近;糖化血红蛋白异常比率明显增加,为90.3%,统计学分析差异具有显著意义(表1)。心电图异常DR患者的甘油三酯、胆固醇和糖化血红蛋白平均水平

表1 糖尿病视网膜病变分期与心电图、血脂、糖化血红蛋白的关系

指标	DR 分期		
	非增殖期	增殖期	合计
病例	41	72	113
心电图异常例数	25	59 ^b	84
心电图异常比率(%)	61.0	81.9	74.34
甘油三酯平均水平($\bar{x} \pm s$, mmol/L)	5.45 ± 4.13	5.61 ± 3.21	5.35 ± 4.14
胆固醇平均水平($\bar{x} \pm s$, mmol/L)	5.44 ± 3.28	5.98 ± 2.17	5.69 ± 3.23
血脂异常比率(%)	73.17	75	74.34
糖化血红蛋白平均水平($\bar{x} \pm s$)	7.51 ± 3.78	12.60 ± 4.23 ^b	9.34 ± 5.29
糖化血红蛋白异常比率(%)	70.7	90.3	81.42

^b $P < 0.01$ vs非增殖期。

表2 心电图异常与血脂、糖化血红蛋白的关系

指标	心电图表现	
	正常者	异常者
病例	29	84
NPDR(例)	19	22
PDR(例)	10	62
甘油三酯平均水平($\bar{x} \pm s$, mmol/L)	5.37 ± 2.04	5.77 ± 1.40
胆固醇平均水平($\bar{x} \pm s$, mmol/L)	6.17 ± 3.56	6.31 ± 3.27
糖化血红蛋白平均水平($\bar{x} \pm s$)	6.56 ± 3.92	11.74 ± 5.22

明显超出正常值,分别为 5.77 ± 1.40mmol/L, 6.31 ± 3.27mmol/L, 11.74 ± 5.22, 与心电图正常的 DR 患者相比,血脂水平无明显增高,差异不显著($P > 0.05$);糖化血红蛋白水平的差异具有统计学意义($t = 8.727, P < 0.01$, 表2)。

3 讨论

DR 患者多为 DM 发病 10a 以上,常合并心血管系统、肾脏、周围神经等病变。心血管系统表现为冠状动脉硬化,以弥漫性多发型为多见,冠状动脉常有 2~3 支病变。本组资料提示,心电图以 ST-T 改变为主;增殖期的 DR 患者中心电图异常率较非增殖期明显增高,同时也伴有血脂水平和糖化血红蛋白水平的增高,糖化血红蛋白的差异具有统计学意义,而血脂的变化无显著意义。另外,在心电图异常的 DR 患者中处于增殖期的病例比例明显高于心电图正常组;心电图异常组也伴有糖化血红蛋白水平的升高,甘油三酯、胆固醇的变化无统计学意义。糖化血红蛋白的增高表明患者近 3mo 的血糖控制水平不良,高血糖尤其是波动性高血糖,可以通过损害血管内皮细胞功能^[2],修饰 LDL 等多种途径参与或传导动脉粥样硬化的发生^[3,4]。高糖诱导的微血管和神经组织损伤机制包括:多元醇通路^[5,6]、高级聚糖化终产物的聚集(AGEs 通路)^[7,9]、蛋白激酶 C 的活化(PKC 通路)^[10,11]和氨基己糖通路^[12]。当血糖增高时,使各种生长因子进入心肌间质,导致间质中成纤维细胞增生,胶原合成增加。同时,高血糖还可导致血浆黏度增高,高血脂促使动脉粥样硬化,均可使心肌细胞缺血缺氧,最终促进心肌肥厚,加重心脏损害。在视网膜内出现视网膜周细胞的凋亡^[13],血管内皮细胞的增殖,VEGF,CTGF^[14]等因子的产生,使新生血管形成、纤维增殖。

本研究表明,在 2 型糖尿病患者中,DR 作为严重眼部并发症多伴有心血管系统病变的发生,常合并糖化血红蛋白水平的异常。心电图改变通常是两种以上的表现,这可能是由于多支冠脉病变并存,也可能与心脏及其他器官的

微血管的病变、植物神经功能紊乱等原因有关。这就提示,面对 DR 患者应注意心血管系统的并发症,并将控制血糖波动、调整血脂水平作为全身治疗的一部分,使患者得到一个全面的综合的治疗,控制 DR 的进一步发展,减少因 DR 所致的视力低下。

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