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Changes of nitric oxide and endothelin in the plasma and mesenteric smooth muscle cells in patients with essential hypertension

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Abstract Objective: To explore the role of nitric oxide (NO) and endothelin (ET) in the pathogenesis of essential hypertension (EH). Methods: Eighteen patients undergone abdominal operation including 9 with EH and 9 without EH were selected, the levels of NO and ET in the plasma were measured. The mesenteric artery was then isolated and digested for culture of the vascular smooth muscle cells (VSMCs). The cultured VSMCs were treated with NG-monomethyl-L-arginine (L-NMMA), the inhibitor of NO synthase. Finally, the levels of NO and ET in the supernatant of cultured VSMCs were also measured. Results: The level of NO was significantly lower but that of ET was significantly higher in the plasma and supernatant of cultured VSMCs in patients with EH than in those without EH ($P < 0.01$ and $P < 0.05$~ 0.01). L-NMMA significantly increased ET level in all patients ($P < 0.01$). Conclusion: The higher vascular tone and blood vessel resistance in patients with EH might be due to decrease of NO and increase of ET.

Key words essential hypertension; nitric oxide; endothelin

27例心脏事件老年患者动态血压的改变特点分析

Analysis the ABP characters of 27 cases in aged patients with heart events

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无创性全自动 24 h动态血压监测技术 (ABPM)已较广泛应用于临床,已有报道 ABPM对于预测与血压有关的心血管意外事件优于人工偶测血压[1,2]。但迄今,尚罕见以心脏事件的老年患者动态血压 (ABP)变化规律的报道,尤其是高血压病人心脏事件时血压的变化,以及谷 峰值的变化在心脏事件发作时的情况值得观察总结。因此,我们从 1994年 4月开始,观察了59例住院病人的动态血压和动态心电图,现报道如下。

1 对象和方法

1.1 观察对象

49例受试者均为我院住院病人,年龄 60~ 82岁,男性 28例,女性 21例,其中 27例为有心脏事件发作者,(劳力性心绞痛 17例, Holter(动态心电图)显示有明显 ST段降低), 不稳定性心绞痛 10例 (Holter显示仅运动后 ST段降低), 其余 32例为无心脏事件组,两者均是高血压患者。心脏事件包括: 劳力性心绞

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also determined. **Results:** During OJ, the expression of FcγR and phagocytic function were significantly increased and they were significantly correlated with the concentration of endotoxin in the plasma. **Conclusion:** During OJ, the decrease of phagocytic function of KCs might be due to the decrease of the expression of FcγR and the treatment with bile acid can effectively decrease the concentration of endotoxin in plasma and hence the expression of FcγR and phagocytic function of KCs are enhanced.

Key words: obstructive jaundice; Kupffer cell; Fc receptor, bile acid

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痛、不稳定性绞痛、急性心梗、无症状心肌缺血[4,5]。

1.2 记录方法

使用 Takala TM2421(A and D co)动态血压仪,其测试数据已做精确性和有效性检验[1]。ABP测量袖带固定于右上肢,固定测:6:00~12:00AM每10 min测1次,12:00~14:30每30 min测1次,14:30~22:00每15 min测次,22:00~6:00每1 h测次,均是自动测试,总的测试时间不得少于22 h,总的数据不得少于48组(连续2次不能读数为摒弃病例);同时记录双通道Holter心电图(美国 MAC-15仪)。

1.3 统计学处理

采用 Spmr(第四军医大学)医用统计程序,分别计算平均血压(MBP)、收缩血压(SBP)、舒张血压(DBP)均值,SBP、DBP最高和最低值的均值。用方差分析检验方法进行处理。

2 结果

2.1 无心脏事件老年患者的 ABP波动规律仍存在日间上升,夜间下降趋势,有心脏事件患者则这一规律不明显,在未发作期间 Trough-to-peak-Ratio幅度显著减少,与无心脏事件组相比 $P<0.01$,见表1。

表1 动态血压变化($\bar{x}\pm s$)

BP	收缩压		舒张压	
	有心脏事件组($n=27$)	无心脏事件组($n=32$)	有心脏事件组($n=27$)	无心脏事件组($n=32$)
24 h平均压	181±24*	139±11	95±1*	83±8
白天平均压	189±27*	140±12	110±13*	86±9
白天最高	224±37*	165±20	140±24*	91±6
白天最低	156±18*	114±15	89±7*	76±5
夜间平均压	167±22*	136±10	92±11*	90±2
夜间最高	179±19*	152±16	98±13*	108±12
夜间最低	137±15*	102±11	87±6*	71±4

*:$P<0.01$与无心脏事件组比较

2.2 ABP的 DBP在有心脏事件的老年患者发作期呈上升趋势($P<0.05$),心绞痛缓解后4 h~5 h DBP渐降至置。见表2。

表2 平均血压与 ST改变值($\bar{x}\pm s$)

血压	心脏事件组	无心脏事件组
SBP mmHg	180.5±13.3*	158.2±16.9
DBP mmHg	95.1±18.7*	83±14
ST-mm	3.7±0.5*	0.4±0.02

*:$P<0.01$与无心脏事件组比较

2.3 无症状心肌缺血多发生于夜间血压(尤其是 DBP)持续增高的患者(以男性多见,6/19女/男)。心源性猝死仅发生2例,ECG示持续的ST段水平降低,猝死时为心脏静止1例,室颤1例。

3 讨论

观测了解 ABP在老年高血压患者发生心脏事件时的变化规律,并采取相应措施,有助于更好地控制高血压和减少在上午或凌晨发生的心源性猝死或心梗。观察结果提示:老年高血压患者 ABP波动规律可能与循环中较高浓度的儿茶酚胺类[3]缩血管物质有关,但是在发生心脏事件后,DBP上升的机理尚不明确,可以肯定的是无症状心肌缺血多发生在夜间,尤其是DBP较高的老年男性患者。我们认为夜间更有效地使用血管扩张剂应引起足够的重视。我们的观测研究还在进行中,有待更多资料积累。

关键词 心脏事件;老年;动态血压
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