

槐胺碱对清醒大鼠心肌急性梗塞 及再灌注损伤的保护作用

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摘要 用清醒大鼠冠状动脉前降支阻塞造成急性心肌梗死及再灌注损伤模型观察槐胺碱(SA)对梗塞范围及再灌注心律失常的作用。SA 13.3和15mg/kg显著缩小心肌梗塞范围,降低血清LDH含量,减轻清醒大鼠缺血早期心律失常。胺碘酮7.5mg/kg有类似作用。SA 13.3和15mg/kg也可显著缩短再灌注心律失常持续时间,降低室颤的发生率。

关键词 槐胺碱 大鼠 心律失常

槐胺碱(sophoramine, SA)系从豆科槐属植物苦豆子 *Sophora alopecuroides* L. 中提取的一种生物碱。具有抗多种实验性心律失常作用^[1,2],也有减慢心率,增加冠脉流量作用^[3]。但有关SA对急性心肌缺血及再灌注损伤的作用尚未见报道。本文通过测定清醒大鼠心肌缺血及再灌注损伤不同时期心电图,酶活性改变及缺血区面积观察SA对急性心肌梗死及再灌注损伤的保护作用。

1 实验材料

槐胺碱,宁夏盐池制药厂产品,淡黄色粉剂,临用时加蒸馏水配成所需浓度。盐酸胺碘酮(amiodarone, Ami, 法国Labaz厂)。氯化硝基四氮唑蓝(NBT),上海前进试剂厂,用前以磷酸缓冲液配成0.5%溶液。

2 方法与结果

2.1 SA对清醒大鼠缺血性心律失常的影响:SD封闭群大鼠50只,雄性,体重 $266 \pm SD31g$ 。随机分为5组。参照文献^[4]方法略加改进。乙醚麻醉。经左第4肋间开胸,立即人工呼吸。暴露心脏,在肺动脉圆锥左缘,平左心耳下缘经浅层心肌穿一3/0丝线,丝线两端穿过一条直径2mm的聚乙烯塑料管。其内端对准冠状动脉,外端封闭,吸出胸腔内血液和气体关闭胸腔,待动物自主呼吸恢复后缝合气管。手术后6d将大鼠置于大鼠固定装置内。冠脉阻塞前10min分别恒速静注NS,盐酸胺碘酮7.5mg/kg, SA 10.6、13.3和15mg/kg。连续记录20min内II导联心电图。分析早搏总数,室速及室颤持续时间,按文献^[5]计算心律失常得分。

表1 SA对清醒大鼠缺血性心律失常的影响($\bar{x} \pm SD$)

组别	剂量 (mg/kg)	早搏总数		持续时间(s)		室颤发	心律失常
		对数值	室速	室颤	生率(%)	得分	
生理盐水	—	1.8 ± 0.2	17 ± 15	35 ± 16	60	5.4 ± 1.2	
槐胺碱	10.6	1.2 ± 0.7	$5 \pm 1 \cdot$	$7 \pm 9 \cdot$	20 \cdot	$1.8 \pm 1.3 \cdot$	
	13.3	$0.6 \pm 0.4^{**}$	$3 \pm 1 \cdot$	$3 \pm 4 \cdot$	20 \cdot	$1.9 \pm 1.6 \cdot$	
	15.0	$0.7 \pm 0.3^{**}$	$4 \pm 2 \cdot$	$1 \pm 1^{**}$	10 **	$0.9 \pm 0.1^{**}$	
盐酸胺碘酮	7.5	1.6 ± 0.5	$7 \pm 7 \cdot$	$8 \pm 5 \cdot$	20 \cdot	$2.0 \pm 1.6 \cdot$	

n=10 *P<0.05 **P<0.01

结果显示3个剂量的SA均可缩短室速及室颤的持续时间,降低室颤的发生率,减少心

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律失常得分。SA 13.3和15mg/kg还可显著减少早搏数。盐酸胺碘酮7.5mg/kg对以上各指标的影晌与SA作用相似。

2.2 SA对心肌梗塞范围,血清乳酸脱氢酶的影响:阻断冠脉后6h,取颈动脉血1.0ml,测定血清乳酸脱氢酶(lactate dehydrogenase, LDH)^[6],摘取心脏,将左心室横切成4~5片。用NBT染色。计算梗塞心肌占左室重的百分率(%)。表2可以看到SA 13.3和15mg/kg,胺碘酮7.5mg/kg显著缩小心肌梗塞范围。降低结扎冠脉6h的血清LDH的含量。

2.3 SA对清醒大鼠心肌缺血再灌性心律失常的影响:SD大鼠24只,雄性,体重220±SD36g。手术方法同前。实验模型选用缺血10min。再灌注10min。实验设NS, SA 2个剂量组。药物恒速静注,于再灌前1min开始至再灌后2min结束。结果表明SA可明显降低室速及室颤的发生率,同时显著缩短心律失常的持续时间。提示SA对再灌性心律失常尤其是室颤具有明显的保护作用(表3)。

3 讨论

本文采用清醒大鼠缺血性心律失常模型,心血管系统功能维持正常生理状态,较接近临床情况。SA预防给药可明显减轻缺血早期心律失常,这可能与SA负性自律性,延长有效不应期^[7]。减小不应期离散^[8],使心肌复极均一,从而消除折返有关。SA也可明显降低缺血再灌性心律失常室速及

室颤发生率,显著缩短心律失常的持续时间。提示SA对再灌性心律失常具有明显保护作用。

心肌梗塞范围是影响缺血性心律失常的重要因素^[9]。而血清LDH活性反映心肌缺血损害范围和严重程度^[6]。SA在抗心律失常的同时可缩小心肌梗塞范围,降低血清LDH活性,可能是减轻缺血性心律失常机理之一。

表2 SA对心肌梗塞范围和乳酸脱氢酶(LDH)的影响 ($\bar{x} \pm SD$)

组别	剂量 (mg/kg)	心肌梗塞范 围(%)	LDH ($\mu\text{mol/s}\cdot\text{l}$)
生理盐水	—	36±6	1256±122
槐胺碱	10.6	29±8	1313±187
	13.3	25±4**	982±138**
	15.0	24±4**	758±109**
盐酸胺碘酮	7.5	25±3**	634±168**

n=8~10 *P<0.05 **P<0.01

表3 SA对清醒大鼠缺血——再灌性心律失常的影响 ($\bar{x} \pm SD$)

组别	剂量 (mg/kg)	室性异位 节律	室速	室颤	心律失常 持续时间 (s)
生理盐水	—	6/6	6/6	6/6	141±3*
槐胺碱	13.3	4/6	2/6	1/6*	35±27**
	15.0	2/6	1/6*	0**	30±21*1

n=6 *P<0.05 **P<0.01

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Quantitative Determination of Arteannuin in Liposomes and Dextrans

by TLC-Scanning Method

Cai Meiming

TLC-scanning method for the quantitative determination of arteannuin in liposomes and dextrans was developed. The method is simple, accurate and sensitive. The recoveries were found to be 98.0% and 96.8%.

(Original article on page 353)

Determination of Psoralen and Isopsoralen in Malaytea Scurfpea

(*Psoralea corytifolia*) and Chinese Traditional Patent Medicine by HPLC

Liu Songqin, Ma Weaxiu, Tang Xianzhe, et al

A HPLC method was established for the determination of psoralen and isopsoralen in *Psoralea corytifolia* L. and its preparations. Psoralen and isopsoralen can be separated on μ -Bondapak C₁₈ column with a mobile phase of MeOH-H₂O (6:4) and detected at 245nm. The optimum conditions based on experimental results was to extract the sample by MeOH in an ultrasonicator for 30 min. The method is simple and accurate.

(Original article on page 355)

Oxymatrine's Effects on Lymphocyte's Proliferation

Wang Huixian, Zhang Linghua, Du Shouying, et al

Oxymatrine is an alkaloid from Traditional Chinese Medicine, *Sophora flavescens* Ait. which has many pharmacological effects. We studied the effects of oxymatrine on the proliferation of human tonsillar cells and mouse splenocytes with or without mitogens. The results show that, oxymatrine can augment the proliferation of the human tonsillar cells which show low PHA & tSAC response capacity. On the other hand, oxymatrine can inhibit the proliferation of the human tonsillar cells which show high PHA & SAC responses capacity. The effects of oxymatrine on mouse splenocytes are the same with the latter.

(Original article on page 362)

Protective Effects of Sophoramine on Acute Myocardial Infarction and Reperfusion Injury in Conscious Rats

Jin Ying, Wang Xiaodong, et al

The effects of sophoramine (SA) on myocardial infarction size and ischemia-induced and reperfusion-induced arrhythmia were studied in conscious rats. It was found that pretreatment with SA 13.3 and 15 mg/kg iv reduced significantly infarct size and cardiac LDH release at 6 h after left descending coronary artery ligation as compared with the control. SA 10.6, 13.3 and 15 mg/kg iv decreased markedly the early ischemic arrhythmia in conscious rats. Amiodarone 7.5mg·kg⁻¹ had the same effects on the prevention of ischemic arrhythmia. In reperfusion experiment, it decreased the incidence of ventricular fibrillation and significantly shortened the duration of arrhythmias. These results suggest that SA has protective effects on myocardial ischemia and reperfusion injury.

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