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Normal cyto-architecture of tunica media of thoracic aorta in rats

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Abstract The features of the integral cyto-architecture of the tunica media of the thoracic aorta of male Wistar rats were observed with optical microscopy. The thoracic aorta was cut open and its wall was flatly paved. The smooth muscle cells were stained with silver and demonstrated quantitatively with the computer figure analysis system. It was found that 3 layers of smooth muscle cells were located between every 2 layers of elastic membrane in the tunica media. All the layers of muscular fibers overlapped each other showing a lattice-like architecture. Circular and spiral arrangements of the smooth muscle cells coexisted in the tunica media. The intersecting angle between the muscular fibers was decreased gradually from the juxta-intimal part to the juxta-adventiatial part in the aortic tunica media. The features of the structure and architecture of the smooth muscle cells of the aorta are favorable to sustain tension and stress and to resist the changes of blood pressure.

Key words thoracic aorta; smooth muscle cell; architecture; rat

海马内注射半胱胺对大鼠海马生长抑素含量、痛阈和主动回避反应的影响

Effect of microinjection of cysteamine into hippocampus on somatostatin content of hippocampus, pain threshold and active avoidance response in rats

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半胱胺(Cysteamine,Cys)为生长抑素(Somatostatin,Som)的耗竭剂,是研究体内内源性 Som 作用的理想工具药[1]。但中枢内微量注射 Cys 降低脑内 Som 的报道很少。已知海马内存在 Som 能神经元[2],为便于探讨其功能,本文观察了海马内微量注射 Cys 对海马内 Som 含量耗竭的时程,以及对痛阈和主动回避反应的影响。

1 材料和方法

1.1 动物和药品

Wistar 大鼠81只,体重208±24 g,雌雄不拘,自由饮水和进食。Cys 为瑞士 Fluka 公司产品,用人工脑脊液配制,并以1 mol·L^{-1}的 NaOH 调至 pH7.0。

1.2 痛阈测定

采用 RTY-1型热痛测试仪(第四军医大学生理教研室生产),大鼠置于玻璃小室内,从室底的玻璃下方,用辐射热照射大鼠左后足底,以自动记录移足的潜伏期为痛阈指标,室温20±1℃。

脑内 Som 含量和主动回避反应的测定,脑内埋置导管、微量注射及其鉴定法与以往报道相内[3~5]。实验数据用 t 检验进行统计学处理。

2 结果

2.1 海马内注射 Cys 对同侧海马内 Som 含量的影响

一侧海马内微量注射 Cys(30 mg·ml^{-1},2 μl)后,与人工脑脊液(ACSF)组比较,1h 时同侧海马内 Som 含量便明显降低,第2天达最低点,并持续到第4天、第6天 Som 已开始恢复,于第8天基本恢复到正常水平(见附表)。

2.2 海马内注射 Cys 对对侧海马内 Som 含量和痛阈的影响

一侧海马内微量注射 Cys(30 mg·ml^{-1},2 μl)后,与 ACSF 组比较,于第2和第4天同侧海马内 Som 含量降至最低点时,测得对侧海马内 Som 含量并无明显变化(见附表),而于第4天海马内 Som 含量显著下降时,痛阈无明显变化($P>0.05$)(见附表)。

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Effects of different types of operation on mitochondrial respirtory function of cirrhotic liver in rats

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Abstract In order to observe the characteristics of cirrhotic portal hypertension and assess the effects of different types of operation on the mitochondrial respiratory function in the cirrhotic liver, several indices of liver functions, hepatic mitochondrial respiratory function, tissue content of adenosine triphosphate, ultrastructural changes of the liver and portosystemic shunt rate were determined respectively in 4 groups of rats with mesocaval shunt (MCS), porto-azygos disconnection (PAD), distal splenocaval shunt (DSCS) and simple cirrhotic liver and in the normal control after the rat model of cirrhotic portal hypertension was established with carbon tetrachloride lethanol injection. It was found that the mitochondrial respiratory function was lowered under cirrhotic state, further decreased after MCS but not significantly affected after DSCS or PAD, which indicates that DSCS and PAD are the surgical procedures of choice to treat cirrhotic portal hypertension.

Key words mitochondria; respiratory function; liver cirrhosis/surgery; rat

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附表　海马内微量注射半胱胺对同侧和对侧海马内生长抑素含量和痛阈的影响（$\bar{x}\pm s$）

	海马内 Som 含量（$pg\cdot g^{-1}$）				痛阈（s）
	动物数	同侧	动物数	对侧	
对照组	7	58.4±5.2	5	57.9±6.3	
ASCF 组	7	54.6±3.4	6	54.4±3.7	28±5
1 h	7	43.9±6.8*			
24 h	5	33.7±4.5*			
d 2	8	9.8±1.6*	8	57.0±5.7	
d 4	5	9.3±0.7*	9	55.1±5.8	32±8
d 6	5	17.9±11.3*			
d 8	6	56.5±5.2			

*：与 ACSF 组比较 $P<0.01$

2.3　海马内注射 Cys 对海马 Som 含量和主动回避反应正确率（AARR）的影响

双侧海马内微量注射 Cys（40 $mg\cdot ml^{-1}$，2 μl）后，于第6天 ACSF 组的 AARR 连续三天达80%以　.Cys 组（双侧海马内 Som 含量显著下降，从49.1±5.0 $pg\cdot g^{-1}$降至29.2±2.6 $pg\cdot g^{-1}$的 AARR 与 ACSF 组比较则明显下降（从84.0%±6.5%降至44.4%±6.0%）。

3　讨论

本实验观察到海马内微量注射半胱胺（30 $mg\cdot ml^{-1}$，2 μl）后1 h，同侧海马内 Som 含量便开始下降，第2和第4天降至最低点，第8天基本恢复到正常水平，而对侧海马内 Som 含量并未受影响。有关资料表明，纹状体内微量注射 Cys 50 μg 6 h 后，同侧纹状体内 Som 含量便降至最低点（约下降了50%），第4天已完全恢复到正常水平[1]，而对侧纹状体内 Som 含量亦可被耗竭[1]。由此看来，Cys 对中枢不同部位 Som 耗竭的时程和特点并不完全相同。鉴于 Cys 除可耗竭 Som 外，还可影响中枢内催产素[6]，因此有关 Cys 的作用机理迄今并未完全阐明。

本文还观察到以 Cys 耗竭一侧海马内 Som，使其中的 Som 含量下降了83.9%后，大鼠的痛阈并无明显变化，而耗竭双侧海马内 Som 下降了41.3%时，AARR 则显著降低，由此可见海马内 Som 与痛阈关系不大，但与学习记忆的 AAR 习得功能有关。这一结果与以往报道[2]是一致的。

关键词　生长抑素；半胱胺；海马；痛阈；主动回避反应
中图法分类号　R338

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