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Effects of ischemia and reperfusion on spinal cord unit discharges in rats

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Abstract After of the abdominal aorta (AA) 1 cm above the left renal artery were occluded and reperfused in 86 rats, the gray matter spinal cord blood flow (gSCBF) in the L_2 region was measured with the hydrogen clearance method and the spinal cord unit discharges (SCUDs) were recorded extracellularly with the glass microelectrode to investigate the effects of ischemia and reperfusion on SCUDs. Of the animals, 36 were randomized into three experimental groups according to the time of reperfusion after ischemia, namely, 2 min in groupⅠ, 5 min in groupⅡ and 10 min in groupⅢ. Other 50 without the reperfusion served as the control. It was found that gSCBF in L_2 region in the three experimental groups were decreased to various degrees immediately after the AA was occluded and significantly decreased before the reperfusion started. Of the 86 SCUDs recorded in the 50 animals, 22 (25.58%) disappeared and 33 were significantly increased ($P<0.05$) after AA occlusion and 30 (34.88%) disappeared and 29 were significantly decreased ($P<0.05$) after reperfusion. There were different reactions of SCUDs to ischemia and reperfusion in the three groups reperfused at different time. Our findings suggest that neurons in the spinal cord of rats are remarkably sensitive to ischemia, and even one slight decrease of gSCBF in the L_2 region can cause the remarkable increase of SCUDs of the neurons. When the reperfusion starts, SCUDs of the neurons are gradually decreased with a decrease of their excitability and tolerance.

Key words spinal cord discharge; spinal cord blood flow; ischemia; reperfusion; rat

Wistar大鼠多发性原发性恶性肿瘤模型建立

科研简报

Establishment of the model of multiple primary maligant tumors in Wistar rat

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实验性动物多发性原发性恶性肿瘤模型尚少见文献报道。本实验用出生40~60 d的健康Wistar大鼠90只,雌、雄各半,以大腿外侧皮下注射化学致癌剂二甲基苯蒽(DMBA) 10 mg/100 g动物体重,经24周诱发建立大鼠实验性多发性乳腺癌和纤维肉瘤模型。结果:给予致癌剂后13周,致癌组雌性大鼠可扪及0.3~0.5 cm的乳腺内结节,至第24周14/20只(70%)发生乳腺癌,其中45%为多发性原发性乳腺癌,肿瘤最大径4 cm。参照人体乳腺癌的组织学分类,为乳腺浸润性导管癌、乳腺腺癌和乳腺乳头状腺癌,癌组织呈浸润性生长。有40%发生注射致癌剂部位皮下肿瘤,组织学观察:参照人体肿瘤分类标准,与人体纤维内瘤的组织结构相似。其中35%在实验期间同时发生乳腺癌和注射部位纤维肉瘤。给致癌剂第24周,致癌组雄性大鼠有33.3%发生注射部位纤维肉瘤而大体和显微镜下均未发现乳腺肿瘤。雌、雄性对照组均未见发生肿瘤。该模型的建立对于深入研究恶性肿瘤发生的过程,研究在同一个体相同致癌剂所致组织学完全不同的癌和肉瘤的基因变化,不同癌发生的促进因素对组织学相同和不同的肿瘤发生的影响差异,以及不同肿瘤对某些治疗反应的差别等均有重要的理论和实用意义。

关键词 疾病模型,动物;肿瘤,多发性原发性

中图法分类号 R730.2; R363

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