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论著

胰腺癌大鼠RAD51和MAX的表达

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摘要：

目的：研究SD大鼠胰腺癌和非癌胰腺组织中DNA双链断裂修复蛋白（RAD51）和C-Myc相关因子X（MAX）表达水平及其意义。方法：将90只SD大鼠随机分为模型组、干预组和对照组，将二甲基苯肼蒽（DMBA）直接置入胰腺实质内（模型组+干预组），干预组每周腹腔注射曲古霉素A（TSA）1 μg，模型组和干预组于第3～5个月处死，对照组于第5个月处死；肉眼检查和镜下观察胰腺癌发生情况；RAD51和MAX染色方法均为EnVisionTM免疫组织化学法。结果：模型组3～5个月癌发生率为48.7%（18/37），其中17例为胰腺导管腺癌，1例为纤维肉瘤；干预组3～5个月癌发生率为33.3%(12/36)，其中11例为胰腺导管腺癌，1例为纤维肉瘤；模型组肿块最大径均值大于干预组（P＜0.05）；对照组胰腺和模型组、 干预组2组胰腺外肝、胆、胃、肠、肾及肺等主要脏器均无明显病理改变。模型组+干预组及模型组或干预组胰腺导管腺癌RAD51表达阳性率明显高于其相应组别的非癌胰腺组织（P＜0.01）；但MAX表达阳性率则相反（P＜0.01）；RAD51阳性表达和（或）MAX阴性表达的非癌胰腺组织导管上皮均呈不典型增生；对照组胰腺RAD51均阴性表达而MAX均阳性表达，2例纤维肉瘤RAD51和MAX均阴性表达；RAD51和MAX表达水平与胰腺导管癌分化程度和肿块大小均无明显关系（P＞0.05）。结论：较大剂量DMBA置入胰实质内可在短期获得较高胰腺癌发生率，TSA能抑制胰腺癌的发生和生长；RAD51过表达和（或）MAX失表达可能在DMBA诱导胰腺癌发生发展过程中起重要作用。

关键词： 胰腺肿瘤 Sprague-Dawely大鼠 动物模型 DNA双链断裂修复蛋白 C-Myc相关因子X

Expression of RAD51 and MAX in pancreatic cancer rats

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Abstract:

ObjectiveTo establish a model of pancreatic cancer induced by 7,12-dimethylbenzathracene (DMBA) in SD rats, and to detect the expression levels of RAD51 and Myc-associated factor X (MAX) and their effect on carcinogenesis of rat pancreas. MethodsNinety SD rats were randomly divided into 3 groups: a model group, an intervention group, and a control group. DMBA was directly implanted into the parenchyma of rat pancreas (the model group and the intervention group). Rats in the intervention group were treated with 1 mL trichostatin A (TSA) saline solution (1 μg/mL) via ip weekly. Rats within 3~5 months in the model group and the intervention group were executed and observed by macrograph and under microscope. Meanwhile, the rats in the control group were executed at 5th month. The EnVisionTM immunohistochemistry to assay the expression levels of RAD51 and MAX was used in conventional paraffin-embedded sections from the above pancreatic specimens.ResultsThe incidence of pancreatic cancer in the model group within 3-5 months was 48.7% (18/37), including 17 ductal adenocarcinomas and 1 fibrosarcoma. The incidence of pancreatic cancer in the intervention group within 3-5 months was 33.3%(12/36), including 11 ductal adenocarcinomas and 1 fibrosarcoma. The maximal diameter of mass in the model group was significantly higher than that in the intervention group (P＜0.05). No pathological changes were found in pancreas of the control group and other extra-pancreatic main organs of the model group and the intervention group (such as the liver, biliary tract, gastrointestine tract, kidney, and lung). The positive rate of RAD51 was significantly higher in ductal adenocarcinoma in the model group, the intervention group, and the model group +the intervention group than those in corresponding groups of non-cancerous pancreatic tissues (P＜0.01), but the positive rate of MAX expression was opposite to RAD51 expression(P＜0.01). The positive tissues of RAD51 expression and/or negative tissues of MAX expression in non-cancerous tissues showed atypical-hyperplasia of ductal epitheli. Pacncreas of the control group showed the negative expression of RAD51 and positive expression of MAX. Two cases of fibrosarcoma showed the negative expression of RAD51 and MAX.ConclusionDMBA directly implanted into the parenchyma of pancreas can obtain an ideal pancreatic cancer model with high incidence in a short time. The TSA might have an inhibitive effect on carcinogenesis and growth of rat pancreas. The over-expression of RAD51 and/or lose-expression might have important effect on carcinogenesis induced DMBA in rat pancreas.

Keywords: pancreatic neoplasm;Sprague-Dawely rat;animal model;RAD51;Myc-associated factor X

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