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论著

99mTc-DTPA-半乳糖人血清白蛋白在不同小鼠肝损伤模型中肝功能显像的应用

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摘要 摘要：目的 明确肝显像剂99mTc-DTPA-半乳糖人血清白蛋白(99mTc-GSA)在3种不同类型肝细胞损伤小鼠模型中不同的摄取和生物分布情况。方法 3种小鼠模型分别为肝硬化、淤胆性肝损伤和肝肿瘤模型。肝硬化模型用腹腔内注射CCl 4完成（每48小时腹腔注射0.4ml 10%CCl 4，共48d）;淤胆性肝损伤模型以结扎胆总管72h建立;肝肿瘤模型用H 22肿瘤细胞株种植肝包膜下10d建立。各模型组小鼠和正常对照组小鼠均以0.1ml（0.37MBq） 99mTc-GSA（2μg）注射尾静脉，5min后断头处死，取出各重要器官或组织（肝脏、心脏、肺脏、肾脏、脾脏、胃、血液、骨骼、肌肉、肠道）称量，测定其放射性计数。同时血清学及肝脏病理学检查验证肝脏损伤。结果 3个模型组和对照组中99mTc-GSA在小鼠肝脏均有显著浓聚（均＞40%ID·g-1），但与对照组（90.05±10.55）%ID·g-1相比，肝损伤模型组的浓聚度均显著下降（P＜0.001)。病理检查结果和建立模型时预期的病变相符;血清肝功能显示肝硬化模型组的损伤[天冬氨酸转氨酶为（235.3±14.7）U/L]轻于淤胆性肝损伤模型以及肝肿瘤模型[天冬氨酸转氨酶分别为（841.3±68.7）和（1060.3±208.3）U/L];但肝硬化模型的浓聚度（72.20±2.13）%ID·g-1较淤胆性肝损伤模型（56.72±5.92）%ID·g-1及肝肿瘤模型(42.80±6.05) %ID·g-1显著增高（P＜0.001）。结论 99mTc-GSA在肝脏有显著浓聚，其浓聚程度与肝功能受损情况呈负相关。99mTc-GSA可能成为临床上反映肝功能的显像剂，如与三维扫描技术相结合，有希望建立评估肝脏区段功能的三维成像系统。

关键词 肝脏显像 去唾液酸糖蛋白受体显像剂 99mTc-DTPA-半乳糖人血清白蛋白 肝损伤模型

分类号

Application of Technetium Galactosyl Human Serum Albumin Diethylenetriamine Pentaacetic Acid Injection on Liver Imaging in Mouse Models with Different Hepatic Injuries

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Abstract ABSTRACT:Objective To identify the uptake and biological distribution of technetium galactosyl human serum albumin diethylenetriamine pentaacetic acid injection (99mTc-GSA) in three mouse models with different degrees of hepatic injuries. Methods Three mouse models including hepatic fibrosis, hepatic cholestasis, and liver cancer were established. Hepatic fibrosis model was established by intraperitoneal injection of carbon tetrachloride, 0.4 ml 10%, every 48 hours for 48 days. Hepatic cholestasis model was set up by ligature of the common bile duct for 72 hours, and liver cancer model by implantation of H 22 tumor cells underneath liver capsule for 10 days. On measurement, each mouse in different models and normal controls was injected with 0.1 ml（0.37MBq） 99mTc-GSA（2 μg）into vena caudalis, and 5 minutes later sacrificed by decapitation. Important organs and tissues including liver, heart, lungs, kidney, spleen, stomach, blood, bones, muscles, and intestines were taken and their different radiocountings were measured. The hepatic injuries were evaluated with serum and pathological examinations. Results 99mTc-GSA was concentrated in the liver in all three models and the control mice（＞40% ID·g-1）. Compared with the control mice （90.05±10.55）%ID·g-1, the density of 99mTc-GSA was significantly lower in the models with hepatic injuries （P＜0.001). The liver function test indicated that the injury in hepatic fibrosis model was less serious than those in the other two models. However, the concentration of 99mTc-GSA in

hepatic fibrosis model [（72.20±2.13）%ID·g-1] was significantly higher than those in the models with cholestasis [（56.72±5.92）%ID·g-1] and liver cancer [(42.80±6.05) %ID·g-1] (P＜0.001). Conclusions 99mTc-GSA may well concentrate in liver and its concentration degree is adversely correlated with hepatic injuries. Therefore 99mTc-GSA may be clinically used as liver imaging agent. When combined with three-dimensional scanning technique, it may facilitate constructing a new three-dimensional imaging method to demonstrate the function of designed liver segments.

Key words liver imaging asialoglycoprotein receptor developer technetium galactosyl human serum albumin diethylenetriamine pentaacetic acid injection hepatic injury model

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