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## 巨噬细胞MRI检测兔早期腹主动脉粥样硬化斑块

### Macrophages MRI in detecting early atherosclerotic plaques of rabbit abdominal aorta

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中文关键词: [动脉粥样硬化](#) [巨噬细胞](#) [磁共振成像](#) [葡聚糖四氧化三铁纳米颗粒](#) [动物实验](#) [兔](#)

英文关键词: [Arteriosclerosis](#) [Macrophages](#) [Magnetic resonance imaging](#) [Dextran-coated iron oxide nanoparticles](#) [Animal experimentation](#) [Rabbits](#)

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作者	单位	E-mail
<a href="#">李红</a>	<a href="#">广州医科大学附属第二医院CT/MR室, 广东 广州 510260</a>	
<a href="#">谭理连</a>	<a href="#">广州医科大学附属第二医院CT/MR室, 广东 广州 510260</a>	<a href="mailto:liliantan@163.com">liliantan@163.com</a>
<a href="#">李志铭</a>	<a href="#">广州医科大学附属第二医院CT/MR室, 广东 广州 510260</a>	
<a href="#">黄勇</a>	<a href="#">广州医科大学附属第二医院CT/MR室, 广东 广州 510260</a>	

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中文摘要:

目的 观察巨噬细胞MRI在检测兔早期动脉粥样硬化斑块中的应用价值。方法 将10只健康新西兰兔随机均分为模型组及对照组,对模型组通过球囊拉伤联合高脂饲料建立腹主动脉粥样硬化模型,对照组不予任何干预。对两组动物行MR扫描,检测静脉注射葡聚糖四氧化三铁纳米颗粒(DCIONP)对比剂前及注射后45 min、24 h、48 h、72 h、96 h和120 h血管壁信号强度(SI)及信号强度变化值( $\Delta$ SI)。之后处死动物,病理观察动脉粥样硬化斑块。结果 模型组斑块注射DCIONP后45 min SI升至最高,48 h开始低于注射前水平,96 h降至最低;对照组管壁于注射DCIONP后45 min均匀强化,24 h后SI基本恢复至注射前水平,其后SI无明显变化。两组间各时间点 $\Delta$ SI差异均有统计学意义( $P$ 均 $<0.05$ )。病理结果表明血管壁信号衰减区与斑块内铁蓝染区及巨噬细胞分布相符。结论 巨噬细胞MRI可检测兔早期动脉粥样硬化斑块,可能具有潜在临床应用价值。

英文摘要:

**Objective** To explore the value of macrophages MRI in detecting early atherosclerotic plaque of rabbit abdominal aorta. **Methods** Ten New Zealand rabbits were randomly divided into model group ( $n=5$ ) and control group ( $n=5$ ). Atherosclerosis of abdominal aorta was induced by aortic balloon endothelial injury combined with high-fat diets in model group, whereas no intervention was given to rabbits in control group. Before and 45 min, 24 h, 48 h, 72 h, 96 h, 120 h after injection of Dextran-coated iron oxide nanoparticles (DCIONP), the signal intensity (SI) and changes of signal value ( $\Delta$ SI) of plaques were measured. Then all the rabbits were scarified, and atherosclerotic plaques were observed pathologically. **Results** SI of atherosclerotic plaques reached the highest level 45 min after injection of DCIONP, then began to be lower than pre-injection level at 48 h and reduced to the lowest level at 96 h. The vessel wall in control group was homogeneously enhanced 45 min after injection of DCIONP, then returned to pre-injection level at 24 h and then kept invariant. The difference of  $\Delta$ SI was significant between the two groups at each time point (all  $P<0.05$ ). Pathological examinations confirmed that the regions of signal decay on the vessel wall were correlated with blue-stained iron regions and distribution of macrophages in the plaques. **Conclusion** Macrophages MRI can detect early atherosclerotic plaques of rabbit abdominal aorta, and may has potential clinical value.

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地址:北京市海淀区北四环西路21号大猷楼502室 邮政编码:100190 电话:010-82547901/2/3 传真:010-82547903

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