磁共振时间分辨力增强血管造影对糖尿病膝以下动脉病变的诊断

Assessment of contrast-enhanced time-resolved MR angiography in diagnosing infrapopliteal artery disease in patients with diabetes mellitus

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中文摘要：

　　目的 比较下肢动脉标准三段法3D增强磁共振血管造影(CE-MRA)与小腿及足踝部时间分辨力3D动态增强动脉造影(TR-MRA)对糖尿病足患者下肢动脉狭窄阻性病变的诊断能力。**方法** 应用3.0T MR扫描仪对连续检查的29例2型糖尿病并发糖尿病足的患者进行扫描。先对患侧小腿及足踝部行矢状位3D TR-MRA,再行标准自动移床三段法3D CE-MRA从腹主动脉下段扫描至足部,对患侧小腿及足踝部的CE-MRA及TR-MRA两种图像进行评价。将膝以下动脉划分为12节段,对每节段动脉成像质量及小腿静脉污染程度进行3分法评价,应用秩和检验及配对t检验对两种不同成像方法所得评分进行比较。**结果** 对29条患肢小腿及足踝部动脉血管共348个节段进行了评分。TR-MRA对病变动脉的累计评分为33.17±3.63,显著大于三段法CE-MRA的27.34±4.47($P<0.001$),且CE-MRA对于远段动脉诊断能力呈下降趋势。TR-MRA图像均不受静脉污染影响,平均得分为1.10±0.31,而CE-MRA有13条肢体因静脉污染而影响诊断,平均得分为2.17±0.85,差异有统计学意义($P<0.001$)。**结论** 在CE-MRA明确判断膝以上动脉病变程度的基础上,结合动态TR-MRA,可以避免静脉污染而全面观察小腿及足踝部细小动脉病变。

英文摘要：

　　Objective To compare the diagnostic value of time-resolved three-dimensional magnetic resonance angiography (TR-MRA) and standard bolus chase three-dimensional contrast-enhanced MRA (CE-MRA) in assessing lower extremity arteries stenostic diseases of diabetic foot patients. **Methods** Twenty-nine consecutive patients (29 legs) were scanned with 3.0T MR system. Firstly, time-resolved TR-MRA images of the diseased calves and feet were obtained with parallel imaging. Secondly, standard bolus chase 3D CE-MRA was performed from the abdomen and pelvis station to the calf-foot station. The lower extremity arteries were interpreted respectively by two radiologists. The calf-foot arterial trees were divided into 12 segments. Imaging quality and the degree of venous contamination were assessed. Wilcoxon's rank sum test and paired t-test were used to compare the two techniques. **Results** Totally 348 arterial segments of the diseased calves and feet were scored. The sum of average score for TR-MRA was 33.17±3.63, higher than that for CE-MRA 27.34±4.47 ($P<0.001$). The diagnostic capabilities of CE-MRA for distal arteries decreased. The score of venous contamination in TR-MRA images was 1.10±0.31, lower than that in CE-MRA images (2.17±0.85, $P<0.001$). **Conclusion** Based on definitely judging the degree of arterial diseases above knee, small arterial diseases of calf and foot can be observed comprehensively with combination of TR-MRA and CE-MRA.

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