



双源CT冠状动脉成像评价冠状动脉支架通畅性

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Assessment of Coronary Stent Lumen Visibility and Patency by Dual-source Computed Tomographic Angiography

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摘要

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摘要 目的 评价双源CT冠状动脉成像显示冠状动脉支架的图像质量及支架内腔可见性, 探讨双源CT评价冠状动脉支架内再狭窄的准确性。方法 对78例冠状动脉支架植入术后患者的147枚支架行双源CT冠状动脉成像, 扫描与支架植入术的平均间隔是(21.8±22.2)个月。采用5分制计分法评价支架的轴位多平面重建图像及通过支架内腔中心的曲面重建图像质量, 同时测量支架内腔管腔直径。其中30例患者有1个月内的常规冠状动脉造影对照, 两位评价者独立对支架通畅性进行评价, 共60个支架的通畅性得到评价。结果图像平均质量评分为(1.6±0.6)分, 达到优良水平。图像质量与支架直径、支架位置及心率有关。所有支架内腔均为可见, 平均支架内腔可见直径比率为(72.2±12.2)%。支架内腔可见直径比率与支架直径及支架位置有关, 与心率无关。对于有钙化斑块的支架, 钙化部位的支架内腔可见比率明显低于非钙化部位(P<0.001)。与常规冠状动脉造影对照, 双源CT发现了14个支架内再狭窄中的12个, 双源CT诊断冠状动脉支架内再狭窄的敏感性、特异性、阳性预测值和阴性预测值分别为85.7%、95.7%、85.7%和95.7%。支架直径>0.275cm的支架, CTA诊断支架内再狭窄的敏感性、特异性、阳性预测值及阴性预测值均为100%。双源CT和常规冠状动脉造影诊断冠状动脉支架内再狭窄的一致率为93.3%, 该一致性与支架直径和心率相关。结论 双源CT冠状动脉成像可部分显示支架内腔, 图像质量较好, 支架直径和位置对支架内腔的显示及图像质量有明显的影响。双源CT评价直径>0.275cm冠状动脉支架内再狭窄的准确性较高, 可成为冠状动脉支架术后通畅性评价的有效手段。

关键词: X线计算机 体层摄影术 冠心病 支架 再狭窄

Abstract: Objective To assess the in-stent lumen visibility and image quality of coronary stents by dual-source computed tomography (DSCT) coronary angiography, and the diagnostic accuracy of DSCT in the detection of coronary in-stent restenosis. Methods DSCT was performed at 147 stents in 78 patients at an interval of (21.8±22.2) months after coronary stent implantation. Axial multi-planar reconstruction of the stents and curved-planer reconstruction through the median of the stents were evaluated for stent image quality on a 5-point scale, and the stent lumen diameters were detected. Thirty out of these 78 patients underwent conventional coronary angiography within one month after CT angiography. The patency of 60 stents were independently evaluated by two blinded readers. Results Image quality was good to excellent on average score (1.6±0.6). Stent image quality score was correlated with stent diameter, stent location, and heart rate. All stents were assessable in lumen visibility with an average visible lumen diameter percentage of (72.2±12.2)%. Visible lumen diameter percentage was correlated with stent diameter and stent location. For the stents with calcified plaques, the visible lumen diameter percentage at the calcified site was significantly lower than that at the non-calcified site (P<0.001). Compared with the conventional coronary angiography, 12 out of 14 in-stent stenoses were correctly detected. The sensitivity, specificity, positive predictive value, and negative predictive value for the detection of in-stent stenosis was 85.7%, 95.7%, 85.7%, and 95.7%, respectively. For stents whose diameter >0.275cm, the sensitivity, specificity, positive predictive value, and negative predictive value were all 100%. The agreement between CT findings and coronary angiography results was 93.3%, and it was correlated with stent diameter and heart rate. Conclusions Using a DSCT, coronary stent lumen is partially visible and the image quality is high. Stent diameter and location can influence the stent lumen visibility and image quality. DSCT has a high diagnostic accuracy for the detection of in-stent restenosis and may be a valuable modality for the follow-up of coronary artery stent patency."

Keywords: X-ray computed tomography coronary artery disease stent restenosis

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