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前瞻性心电门控320排容积CT对全主动脉和冠状动脉的一站式成像

Prospective ECG-triggered angiography of whole aorta and coronary arteries with 320-MDCT

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作者	单位	E-mail
李宇	首都医科大学附属北京安贞医院医学影像科,北京 100029	
范占明	首都医科大学附属北京安贞医院医学影像科,北京 100029	fanzm120@tom.com
俞婧	首都医科大学附属北京安贞医院医学影像科,北京 100029	
耿冀	首都医科大学附属北京安贞医院医学影像科,北京 100029	
叶红	首都医科大学附属北京安贞医院医学影像科,北京 100029	
张兆琪	首都医科大学附属北京安贞医院医学影像科,北京 100029	

中文摘要：

目的 探讨前瞻性心电门控320排容积CT在高心率患者全主动脉及冠状动脉一站式成像中的可行性。**方法** 对38例急诊疑似主动脉病变且心率＞70次/分的患者(前瞻性心电门控组)行前瞻性心电门控Wide-Volume模式扫描,强制一个心动周期扫描,曝光时间窗预设在40%~50%R-R间期,45%R-R间期重建,并与45例主动脉病变治疗后复查接受全主动脉非心电门控大螺距螺旋扫描的患者(对照组)进行对比。测定主动脉不同部位的强化程度,并对全主动脉、主动脉窦/瓣、冠状动脉图像质量进行评价。记录两组的有效辐射剂量、对比剂用量并进行统计学分析。**结果** 所有患者的主动脉全程平均CT值均＞370 HU。主动脉瓣及主动脉根部:前瞻性心电门控组的图像可诊断率达100%(38/38),明显高于对照组(17/45,37.78%)。冠状动脉:对照组均不能对冠状动脉图像进行评价,前瞻性心电门控组的冠状动脉总节段数为538,图像可诊断率达98.88%。前瞻性心电门控组平均有效辐射剂量为(21.14±6.15)mSv,对照组为(18.00±4.36)mSv,两组间差异无统计学意义(P>0.05)。前瞻性心电门控组的对比剂总量高于对照组(P<0.05)。**结论** 320排容积CT前瞻性心电门控Wide-Volume扫描模式在不增加辐射剂量的基础上可最大限度地减少主动脉根部运动伪影,一次检查可获得全主动脉及冠状动脉的详细信息。

英文摘要：

Objective To investigate the feasibility of using prospective ECG-gating Wide-Volume protocol in angiography of whole aorta and coronary arteries with 320-MDCT. **Methods** A total of 38 patients (prospective ECG-gating group) with suspected acute aortic syndrome (heart rate ＞70 bpm) who underwent aorta angiography with prospective ECG-gating Wide-Volume without heart rate control were enrolled consecutively. The exposure time was set at 40%—50% R-R interval and forced in one heart beat. Forty-five patients with aortic diseases (control group) underwent whole aorta angiography with non-ECG-gated helical scan mode. The imaging quality of whole aorta, aortic sinus (valve) and coronary artery were evaluated for motion artifacts. The radiation dose and contrast medium were recorded, and the statistical analysis was performed. **Results** All CT examinations were performed successfully. The mean CT values of all the patients were more than 370 HU at whole aorta. All of images (38/38, 100%) were acceptable for evaluating the whole aorta and aortic root in prospective ECG-gating group, significantly better than control group (17/45, 37.78%). In prospective ECG-gating group, 98.88% (532/538) of coronary arterial segments were assessable, while all coronary arterial segments could not be evaluated in control group. The mean radiation dose was (21.14±6.15)mSv in prospective ECG-gating group and (18.00±4.36)mSv in control group (P>0.05). The total amount of contrast medium of prospective ECG-gating group was higher than that of control group (P<0.05). **Conclusion** Prospective ECG-gating Wide-Volume protocol in angiography of whole aorta can minimize motion artifacts of aortic root, and provide clinical details about the whole aorta and coronary artery with low radiation exposure.

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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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