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双源CT双能量胸部虚拟平扫的应用价值

Application of dual energy virtual non-contrast CT of dual source CT in thorax

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中文摘要:

目的 通过对比胸部常规平扫与双源CT双能量虚拟平扫(VNC),探讨VNC临床应用的可行性。方法 对155例怀疑胸部疾病的患者行常规CT平扫和双能CT增强扫描,后处理得到VNC图像,对VNC和常规平扫平均CT值、SNR、图像质量、病灶显示情况、辐射剂量等方面进行比较。结果 肺动脉干处平均CT值VNC高于常规平扫($P<0.05$),而左心室及脊柱后方肌肉处差异均无统计学意义($P>0.05$)。VNC ROI选在肺动脉干、左心室、脊柱后方肌肉的图像SNR均高于常规平扫($P<0.05$)。VNC图像质量与常规平扫比较差异无统计学意义($P>0.05$)。VNC的病灶显示类似,除部分钙化灶(6/21)及腔静脉旁小淋巴结(3/37)在VNC未见显示外,其余病变均可显示。VNC有效剂量稍高于常规平扫($P<0.05$)。结论 双能量胸部增强扫描一次扫描可获得增强图像VNC图像,VNC图像在不影响图像质量及病灶检出的情况下降低了辐射剂量,具有潜在的临床应用价值。

英文摘要:

Objective To investigate the clinical feasibility of dual energy virtual non-contrast CT (VNC) of dual source CT in the thorax in comparison with conventional plain scan. **Methods** In total of 155 patients suspected with thorax diseases were performed conventional plain scan and dual energy enhanced scan. VNC images were obtained through post-processing. Mean CT values, SNR, image quality, detectability of lesions and radiation dosage were compared between the conventional plain scan and VNC. **Results** In VNC images, mean CT value in pulmonary artery trunk was higher than conventional plain scan ($P<0.05$); while those of the left ventricle and the muscles were not statistically significant (all $P>0.05$). SNR of VNC was higher than that of conventional plain scan ($P<0.05$). The scores of VNC image quality was not statistically different between both methods ($P>0.05$). VNC and conventional plain scan had similar performance for the detection of lesions, except some calcified lesions and small lymph nodes (3/37) near the superior vena cava were not identified in VNC, while the other lesions can be shown. The radiation dosage of VNC were slightly higher than conventional plain scan ($P<0.05$). **Conclusion** Dual energy enhanced scan in the thorax could get enhanced images and VNC images in one scan. VNC images could not affect image quality and detectability of lesions, significantly reduce the radiation dosage, which has a potential clinical value in the thorax.

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