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双源CT双能量颅脑CTA虚拟平扫诊断脑膜瘤

Dual energy virtual non-contrast technique of dual-source head CT angiography in diagnosis of meningiomas

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中文关键词: [体层摄影术](#), [X线计算机](#), [脑膜瘤](#), [虚拟平扫](#), [辐射剂量](#), [血管造影术](#)

英文关键词: [Tomography](#), [X-ray computed](#), [Meningioma](#), [Virtual non-contrast](#), [Radiation dosage](#), [Angiography](#)

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中文摘要:

目的 探讨双源CT(DSCT)双能量颅脑CTA虚拟平扫在脑膜瘤术前检查中的临床价值。方法 回顾性分析经手术病理证实的49例脑膜瘤患者的CT图像,包括常规平扫(CNC)及双能量增强图像,经处理得到虚拟平扫(VNC)图和碘图;对比两组平扫病灶平均CT值、SNR、图像质量评分、病灶形态及辐射剂量。应用双能去骨获得颅脑CTA图像,观察肿瘤与周围血管的关系和肿瘤供血动脉。结果 肿瘤组织CNC平均CT值、SNR及评分均高于VNC(P 均 <0.05),VNC图像质量评分均在3分以上,能达到诊断要求;两种平扫显示脑膜瘤的大小、形态、瘤内钙化、坏死及瘤周水肿差异无统计学意义,但VNC显示脑膜瘤钙化不足;双能量CTA的辐射剂量较CNC加增强扫描降低约1.71 mSv(61.07%)。结论 通过一次增强扫描,DSCT双能量颅脑CTA可获得VNC图像、碘图及颅脑CTA图,是一种较好的脑膜瘤术前检查方法。

英文摘要:

Objective To investigate the clinical value of the dual energy virtual non-contrast technique of dual-source head CT angiography (CTA) in preoperative examination of meningioma. **Methods** CT images of 49 patients with pathologically confirmed meningiomas were retrospectively analyzed. Conventional non-contrast (CNC) and dual energy CTA scan were performed, and virtual non-contrast (VNC) and iodine-enhanced images were obtained with postprocessed technology. The mean CT value, signal-to-noise ratio (SNR), image quality, lesions detectability and radiation dose were compared between VNC and CNC images. The supply artery of tumor and relationship between tumor and adjacent intracranial vessel were observed on head CTA image from head bone removal using dual energy technique. **Results** CT value, SNR, and image quality scores of CNC were higher than those of VNC (all $P < 0.05$). The image quality scores of VNC were all above 3, which could meet the diagnostic requirements. There was no statistical difference in the size, shape, intratumoral calcification, necrosis and peritumoral edema of lesions between CNC and VNC images. The ability of VNC to display calcification inside meningioma was somehow limited compared with CNC. The radiation dose of dual energy CTA was 1.71 mSv (61.07%), lower than that of CNC and conventional enhancement scan. **Conclusion** Dual-source CT dual energy technique can obtain VNC, iodine-enhanced and CTA images by single enhanced scan, and is excellent in preoperative examination for meningioma.

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