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# CT能谱成像定量评估胃癌分化程度

# Spectral CT imaging in quantitative evaluation on histodifferentiation of gastric cancers

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中文摘要:

目的 探讨宝石CT能谱成像(GSI)定量评估胃癌分化程度的价值。方法 对79例胃镜诊断的胃癌患者于术前行单源双能CT GSI三期增强扫描;通过GSI Viewer分析软件获得碘基图、水基图,应用ROI技术测得病灶的碘、水浓度,并计算标准化后的碘浓度(病灶碘浓度与腹主动脉碘浓度的比值)。采用两独立样本*t*检验进行统计学分析,并与术后病理相对照;同时运用ROC曲线评估其诊断效能。结果 病理证实中高分化腺癌32例,低分化腺癌35例。中高分化腺癌的碘浓度低于低分化腺癌,动脉期分别为(13.88±3.83)(100 μg/ml)和(14.82±6.68)(100 μg/ml),静脉期分别为(18.98±5.26)(100 μg/ml)和(23.43±6.49)(100 μg/ml),实质期分别为(18.28±4.47)(100 μg/ml)和(22.95±5.51)(100 μg/ml)。中高分化腺癌的碘浓度比亦低于低分化腺癌,动脉期分别为0.17±0.07和0.18±0.06,静脉期分别为0.48±0.15和0.61±0.16,实质期分别为0.63±0.15和0.81±0.21。两组间静脉期和实质期碘浓度、碘浓度比的差异均有统计学意义(*P*均<0.05),而动脉期差异无统计学意义(*P*>0.05)。实质期中高分化腺癌、低分化腺癌的碘浓度、碘浓度比ROC曲线下面积分别为0.733和0.760;以碘浓度比>0.757作为诊断阈值(实质期),判断分化程度的敏感度可达65.7%,特异度达84.4%。结论 胃癌病灶内的碘浓度和碘浓度比均与其组织学分化程度相关;GSI图像中的碘浓度、尤其是标化后的碘浓度比能为术前定量评估胃癌分化程度提供新的指标。

英文摘要:

**Objective** To explore the value of gemstone spectral imaging (GSI) with single source dual-energy CT in quantitative evaluation on different differentiation-state of gastric cancers. **Methods** Totally 79 patients with gastric cancer diagnosed by gastroscopy underwent triple-phase enhanced CT scan using single source dual-energy CT by GSI mode. The iodine-based and water-based images were analyzed with GSI Viewer, and iodine and water concentration (IC) of lesions were measured by ROI, and normalized iodine concentration (NIC) was obtained by dividing the iodine concentration of tumor to that of aorta. Data were analyzed statistically by independent-samples *t* test and were correlated with pathological findings. The diagnostic performances were evaluated using ROC analysis. **Results** Pathological results showed that there were 32 well-moderately differentiated and 35 poorly differentiated adenocarcinomas. The IC of well-moderately differentiated adenocarcinoma were lower than that of poorly differentiated adenocarcinoma, i.e.(13.88±3.83) (100 μg/ml) and (14.82±6.68) (100 μg/ml) in artery phase, (18.98±5.26) (100 μg/ml) and (23.43±6.49) (100 μg/ml) in vein phase, (18.28±4.47) (100 μg/ml) and (22.95±5.51) (100 μg/ml) in parenchyma phase, respectively. The NIC of well-moderately differentiated adenocarcinoma was also lower than that of poorly differentiated adenocarcinoma, i.e.0.17±0.07 and 0.18±0.06 in artery phase, 0.48±0.15 and 0.61±0.16 in vein phase, 0.63±0.15 and 0.81±0.21 in parenchyma phase, respectively. Statistical differences of IC and NIC were found between two groups in vein phase and in parenchyma phase (both *P*<0.05), but not in artery phase (*P*>0.05). According to the ROC, area under curve of IC and NIC in parenchyma phase was 0.733 and 0.760, respectively, having certain value for evaluating the different differentiation state of gastric cancer. Taking NIC>0.757 as threshold value in parenchyma phase, the sensitivity and specificity was 65.7% and 84.4%, respectively. **Conclusion** There are correlation between IC and NIC of gastric carcinoma and histological differentiation degrees. IC, especially NIC obtained from GSI can be used as new indexes for evaluation on the differentiation state of gastric carcinoma.

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