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同机CT图像伪影对骨断层显像衰减校正结果的影响

The influence of integrated-CT artifacts on the attenuation correction results of SPECT/CT bone imaging

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中文关键词: [骨显像](#) [体层摄影术](#),[发射型计算机](#),[单光子](#) [体层摄影术](#),[X线计算机](#) [伪影](#) [衰减校正](#)

英文关键词: [Bone imaging](#) [Tomography, emission-computed, single-photon](#) [Tomography, X-ray computed](#) [Artifact](#) [Attenuation correction](#)

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中文摘要:

目的 评估同机CT图像中的伪影对SPECT/CT骨断层显像衰减校正(AC)图像结果产生的影响。方法 回顾分析78例患者骨断层显像资料,观察CT图像(及CT衰减图)中有无伪影,并对比非衰减校正(NC)图像,计算伪影区累及的局部骨骼放射性计数的变异系数(CV)及差值百分比(PD),进行统计学分析,以判断CT图像中伪影是否对骨断层AC图像结果造成影响。结果 38例同机CT图像产生伪影的病例,相应CT衰减图中均产生了同样形态的伪影信息,包括视野截断伪影、胸腹气体伪影、光子不足伪影等。受到伪影影响的骨断层AC图像中,除了局部骨骼的均匀性(CVAC $17.62\% \pm 4.13\%$, CVNC $11.19\% \pm 3.81\%$; $t=2.13$, $P<0.05$)和放射性计数分布(PDAC $16.98\% \pm 3.31\%$, PDNC $9.84\% \pm 1.62\%$; $t=2.46$, $P<0.05$)均受到影响。结论 同机CT图像中出现的伪影也会在CT衰减图中生成错误的校正信息,必要时应采用NC图像进行对比分析。

英文摘要:

Objective To evaluate the influence of integrated-CT artifacts on attenuation-corrected (AC) images of SPECT bone imaging. **Methods** Imaging documents of 78 patients who underwent SPECT/CT bone imaging were retrospectively analyzed, and the artifacts on CT images and CT attenuation maps were visually studied. Compared with the non-attenuation corrected (NC) images, the coefficient of variation (CV) and percentage difference (PD) of radioactive count of regional bone influenced by CT artifacts were calculated and statistically analyzed to estimate the influence of CT artifacts on AC images of SPECT bone imaging. **Results** The integrated-CT artifacts were found in 38 patients of 78, and appeared the same image findings as those on CT attenuation maps respectively, including truncation artifact, thoraco-abdominal gas artifact, photon starvation artifact, etc. On all the AC images with integrated-CT artifacts, regional bones were influenced not only on uniformity (CVAC $17.62\% \pm 4.13\%$, CVNC $11.19\% \pm 3.81\%$; $t=2.13$, $P<0.05$), but also by the distribution (PDAC $16.98\% \pm 3.31\%$, PDNC $9.84\% \pm 1.62\%$; $t=2.46$, $P<0.05$) of radioactive count. **Conclusion** Artifacts on integrated-CT images can induce false AC information on CT attenuation maps, therefore, a comparative analysis with NC images is recommended if necessary.

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