

Do short-time SPECT images of bone scintigraphy improve the diagnostic value in the evaluation of solitary lesions in the thoracic spine in patients with extraskelatal malignancies?

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Objective: Single photon emission computed tomography (SPECT) images provide many details of the anatomical structure. Also about bone scintigraphy, there are many reports of the improvement of diagnosis by SPECT images. Although SPECT is useful, it requires much time. So to perform SPECT for all cases is difficult in the clinical situation. Recently, due to technical improvements in gamma cameras, we can get SPECT images in a short time. We examined diagnosis of solitary hot spots of thoracic spine in cancer patients using short-time SPECT. And we considered whether short-time SPECT contributes to the precise diagnosis of the lesion. **Material and Methods:** We performed bone scintigraphy image acquisition and both planar and short-time SPECT of the chest. Short-time SPECT was acquired in 6 minutes. We selected 36 cases with malignancy, whose bone scintigraphy demonstrated a solitary accumulation hot spot in the thoracic spine. Three experienced radiologists in nuclear medicine and 4 beginners diagnosed the images. They interpreted planar, short-time SPECT and maximum intensity projection (MIP) view of the chest of each case. The observers' response data were analyzed with receiver operating characteristic (ROC) curve analysis. **Results:** Of the three types of images, the Az (the area under ROC curve) values of short-time SPECT were the highest in all the observers except for only one beginner. Compared with experienced observers, beginners scored lower Az values of short-time SPECT. MIP images were constructed using SPECT data, but the Az values of MIP images were not higher than those of planar images. As to diagnosis, beginners tended to interpret most of the accumulations as metastatic lesions. **Conclusion:** Short-time SPECT can be helpful to some degree, but to provide greater benefit, the observers require considerable exercise and experience.

Key words: bone metastasis, bone scintigraphy, ^{99m}Tc -HMDP, SPECT, thoracic spine