

Does supplementation of CT and MRI with gallium-67 SPECT improve the differentiation between benign and malignant tumors of the head and neck?

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The objective of our study is to determine whether ^{67}Ga SPECT can supplement CT and/or MRI diagnostic information by visual comparison of the two separate data sets in patients with head and neck tumors. **Methods:** A total of 50 patients with head and neck tumors (benign: 19, malignant: 31) were entered in the study. Three board-certified radiologists who had practical experience in interpreting both head and neck CT/MRI and ^{67}Ga SPECT images, participated as readers. All of the CT and/or MR images of each patient were shown to each reader first, who after they had finished interpreting them were shown the ^{67}Ga SPECT images. They were asked to score each image on a 7-point scale for the likelihood of the presence or absence of malignancy. Histological or cytological evaluation was done in all cases, and the radiologic studies were correlated with these findings. **Results:** Improvement of all three readers' performance was from 70.7% to 83.3% in the mean accuracy and from 0.790 to 0.921 in the mean Az value ($p = 0.033$, 0.163, 0.105 in the Az values) after they were shown the ^{67}Ga SPECT images. **Conclusions:** ^{67}Ga SPECT should substantially increase confidence in the diagnosis of head and neck tumors when CT and/or MRI do not permit differentiation between benign and malignant disease.

Key words: ^{67}Ga SPECT, head and neck neoplasm, magnetic resonance imaging, computed tomography