AbstractID: 9393 Title: A comparison of initial area under curve (IAUC) obtained from DCE-CT and -MR imaging in patients with cervical cancer

Purpose: To compare the $IAUC_{60}$ (initial area under curve taken up to 60 seconds) obtained from DCE-CT and -MR imaging in patients with cervical cancer.

Method and Materials: A group of 40 patients with cervical cancer received a DCE-MRI scan followed by a DCE-CT scan at the time of staging. A radiologist observer identified and contoured the tumours on CT and MR images. At least one slice was identified as the matching slice in the CT and MR images for each patient. $IAUC_{60}$ obtained from tumour region was normalized by $IAUC_{60}$ from muscle region for DCE-CT and -MR data. Correlation study and Bland-Altman analysis were performed to assess the relationship between the normalized $IAUC_{60}$ obtained from the two imaging modalities. Regression analysis was also applied to assess the relationship between the normalized $IAUC_{60}$ and the normalized transfer constant (rK^{trans}) for DCE-CT data.

Results: The regression analysis between the normalized $IAUC_{60}$ and the normalized transfer constant (rK^{trans}) for DCE-CT data resulted in a significant strong correlation ($R = 0.98$, $P<0.0005$). A significant correlation ($R = 0.75$, $P<0.0005$) was found in the correlation analysis of the normalized $IAUC_{60}$ between DCE-CT and -MR imaging. The Bland-Altman plot analysis of the normalized $IAUC_{60}$ resulted in the 95% limit of agreement ranging from –2.68 to 4.75 and mean difference of 1.03. Since the average of the normalized $IAUC_{60}$ measurements from two modalities ranged from 1.81 to 13.73, the degree of agreement was considered to be acceptable for the use of the two modalities interchangeably.

Conclusion: The comparison of the normalized $IAUC_{60}$ showed that both DCE-CT and -MR imaging modalities may be used interchangeably in assessing cervical cancers. The normalized $IAUC_{60}$ may be considered as a reliable quantitative surrogate of the normalized transfer constant for both modalities.

Conflict of Interest (only if applicable):