Patients with Esophageal Cancer (EC) have variable responses to (chemo)radiotherapy. A reliable early prediction of outcomes allows for enhancing treatment efficacy and follow-up monitoring. DCE-MRI can provide information regarding tumor perfusion and permeability and has shown prognostic value in certain tumor types. Our aim was to investigate the potential application of DCE-MRI parameters as predictors for progression-free (PFS) and overall survival (OS) in patients with EC treated with concurrent chemoradiation (CRT).

This study involved fifty-two patients with esophageal cancer and treated with CRT. The patients underwent DCE-MRI before CRT (pre-CRT) in 3 weeks and 3 weeks after starting CRT (post-CRT). The patients were grouped into high and low risk groups according to the cut-off value of best OS and PFS respectively. The correlations between quantitative parameters of DCE-MRI (pre-Ktrans, post-Ktrans and the changes and ratios of parameters (ΔiKtrans, riKtrans), and OS/PFS were calculated and compared between two time frames in two groups, respectively. The K-M method was used to calculate the survival curve, and the log-rank method was used to compare differences in the survival curves.

The level of pre-CRT Ktrans was positively associated with OS (cutoff value = 70.53/min, p = 0.113) and PFS (cutoff value = 70.53/min, p = 0.026). The level of post-CRT Ktrans was impaired associated with OS (cutoff value = 45.60/min, p = 0.001) and PFS (cutoff value = 45.60/min, p = 0.003). The level of riKtrans was impaired associated with OS (cutoff value = 0.374, p = 0.024) and PFS (cutoff value = 0.374, p = 0.040). The level of ΔiKtrans was impaired associated with OS (cutoff value = 4.5/min, p = 0.048) and PFS (cutoff value = 0.595/min, p = 0.056).

This study suggests an important role for DCE-MRI parameter Ktrans as a predictor of outcome in Esophageal Cancer patients treated with CRT.