IMAGING

Radiation response does not correlate with PET-CT

Local control rates for head and neck squamous-cell carcinoma (HNSCC) are still relatively low despite advances in primary radiotherapy. Postradiation CT has high sensitivity but low specificity for assessing radiation response. Studies have suggested that functional imaging could improve the accuracy of radiation response assessment for HNSCC. Moeller and colleagues prospectively compared the accuracy of radiation response assessment by fluorodeoxyglucose (FDG)-PET-CT and contrast-enhanced CT, in order to identify the patients most likely to benefit from the addition of functional imaging to assessment of radiotherapy response.

Between November 2005 and May 2007, a total of 98 patients with locally advanced cancer of the oropharynx, larynx or hypopharynx were enrolled and treated

with primary radiotherapy. Patients underwent FDG-PET-CT and contrast-enhanced CT, 8 weeks after completion of treatment. Imaging accuracy between both modalities was compared after functional and anatomic imaging response had been correlated with clinical response. Analyses of the results revealed that for patients at high-risk for treatment failure, which included those with human papillomavirus (HPV) negative disease, FDG-PET-CT outperformed CT alone in

assessment of clinical response. Low-risk patients had no such benefit from FDG-PET-CT.

The authors conclude that, “Our data confirm that FDG-PET-CT imaging provides little value over conventional CT imaging for assessment of radiation response in unselected patients with locally advanced head and neck cancer.”

Patients with highest risk disease might benefit from FDG-PET-CT, particularly those with HPV-negative tumors. Further investigation is required to elucidate the optimum timing of FDG-PET-CT after radiotherapy.

Mandy Aujla

Original article Moeller, B. J. *et al.* Prospective risk-adjusted [18F] Fluorodeoxyglucose positron emission tomography and computed tomography assessment of radiation response in head and neck cancer. *J. Clin. Oncol.* 27, 2509–2515 (2009).