Implication for target delineation

Pattern of regional recurrence in adenocarcinoma of GEJ:

PV-0119

Individual pts. Innovative treatments should be tested by customizing treatments basing on prognostic factors of individual pts. Innovative treatments should be tested especially in pts with high prCA19.9 value.

PV-0119

Pattern of regional recurrence in adenocarcinoma of GEJ: implication for target delineation

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Purpose or Objective: To investigated the frequency and location of regional recurrence of locally advanced adenocarcinoma of GEJ patients after curative resection and refine the clinical target volume (CTV) delineation of radiotherapy.

Material and Methods: From 2009 to 2013, we retrospectively reviewed 1140 esophagogastric cancer patients treated in our institute. Patients who had curative resection, and were histopathologically diagnosed with locally advanced adenocarcinoma of GEJ (T3/4 or any N+) and confirmed of regional recurrence in follow-up CT images were selected into the analysis. First regional recurrence was recorded and one diagnostic radiologist with specialty of gastrointestinal tract investigated. The frequency and location of regional failure at each node station were analyzed according to Siewert types. Reference CT images were obtained from a healthy volunteer. We then delineated the epicenters of recurrence sites at the equivalent location, based on the same vessels of reference CT images compared with the recurrence CT images on Pinnacle treatment planning system. The combined contour of all recurrence sites was presented on a digitally reconstructed radiograph (DRR) image.

Results: Regional recurrence was identified in 78 patients. The majority of recurrence occurred within 2 years of follow-up (Median, 10.9 months). Of all, 35 (44.9%) patients were regional nodule failure (NF) only, 24 (38%) experienced regional NF simultaneous with distant failure, 11 (14.1%) had NF and confirmed of regional recurrence in follow-up CT images were selected into the analysis. First regional recurrence was recorded and one diagnostic radiologist with specialty of gastrointestinal tract investigated. The frequency and location of regional recurrence at each node station were analyzed according to Siewert types. Reference CT images were obtained from a healthy volunteer. We then delineated the epicenters of recurrence sites at the equivalent location, based on the same vessels of reference CT images compared with the recurrence CT images on Pinnacle treatment planning system. The combined contour of all recurrence sites was presented on a digitally reconstructed radiograph (DRR) image.

Conclusion: The most prevalent nodal recurrence in patients with adenocarcinoma of GEJ after curative resection was along the abdominal aorta, celiac artery and splenic artery. Our findings suggest a modified elective lymphatic nodal target volume for IMRT contours in those patients.

PV-0120

Gastric fundus irradiation increases risk of postoperative anastomotic leakage in esophageal cancer

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Purpose or Objective: Concerns have been raised regarding the toxicity of neoadjuvant chemoradiotherapy (nCRT) for esophageal cancer that could contribute to an increased risk of complications after subsequent esophagectomy such as anastomotic leakage. In this respect, radiation dose to the gastric fundus is of interest as this part of the stomach is used for the esophageogastric anastomosis after esophagectomy. The aim of this study was to determine the influence of neoadjuvant radiation dose to the gastric fundus on the risk of postoperative anastomotic leakage in patients with esophageal cancer undergoing nCRT followed by transthoracic esophagectomy.

Material and Methods: Between 2012 and 2015, 97 consecutive patients with esophageal cancer who underwent nCRT followed by esophagectomy with cervical anastomosis were analyzed. The nCRT regimen consisted of a total radiation dose of 41.4 Gy in 23 fractions of 1.8 Gy in 5 weeks combined with weekly intravenous administration of carboplatin and paclitaxel. The gastric fundus was retrospectively contoured on the pre-treatment planning CT. Within this contour, dose-volume histogram parameters were calculated and univariable and multivariable logistic regression analyses were used to determine their influence on the risk of anastomotic leakage.

Results: In 25 patients (26%) anastomotic leakage occurred. The mean radiation dose to the gastric fundus was significantly higher in patients with versus without anastomotic leakage (median [Interquartile range]: 35.6 Gy [20.2-39.9] versus 24.9 Gy [11.9-35.1], respectively; p=0.047, Table 1). A mean dose above versus below 31.4 Gy was associated with leakage rates of 43% versus 15%, respectively. Two typical examples of dose distributions in relation to the gastric fundus in patients with and without anastomotic leakage are depicted in Figure 1. Adjusted for potential confounders including tumor location, clinical T-stage and radiation modality, the mean radiation dose to the gastric fundus remained significantly and independently associated with an increased risk of anastomotic leakage in multivariable analysis (adjusted odds ratio 1.05 per 1 Gy increase, 95% confidence interval: 1.003-1.10, p=0.047).

Conclusion: The most prevalent nodal recurrence in patients with adenocarcinoma of GEJ after curative resection was along the abdominal aorta, celiac artery and splenic artery. Our findings suggest a modified elective lymphatic nodal target volume for IMRT contours in those patients.