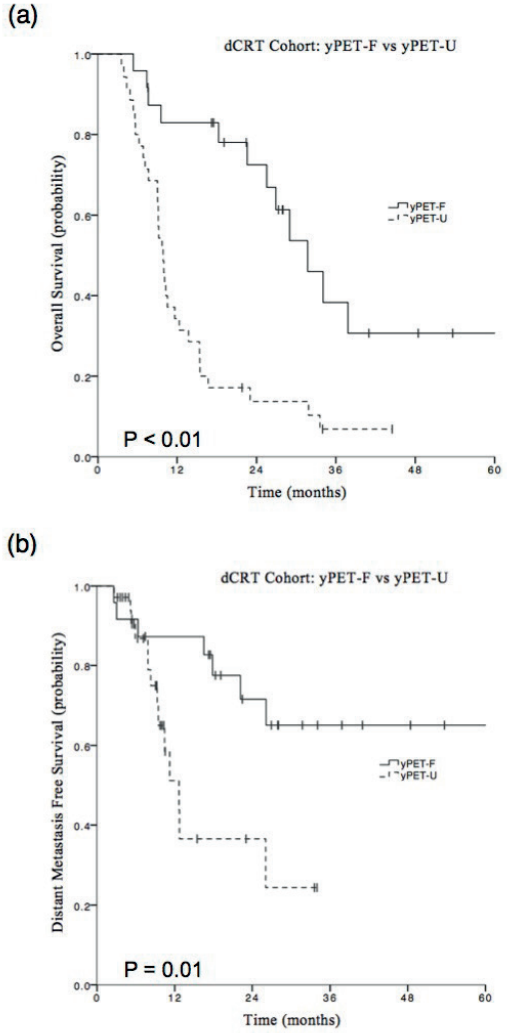


Conclusion

Absence of FDG-avid metastatic lymph node with at least partial response of the primary tumor on PET scan after CRT (i.e. yPET-F group) prognosticate for excellent OS and DMFS in cN+ ESCC patients treated with dCRT. The addition of upfront surgery after initial CRT may not be beneficial in this group of patients. In contrast, upfront surgery improves OS and DMFS for yPET-U group.

PO-0759 pN+ region predicts postoperative recurrence for patients of ESCC after two-field esophagectomy

Y.X. Wang[1], Q. Yang[1], M. He[2], Z. Qi[2], J. Yang[1], X.Y. Qiao[1]
[1]*the 4th hospital of Hebei Medical University, Department of Radiation Oncology, Shijiazhuang, China*
[2]*the 4th hospital of Hebei Medical University, Department of thoracic surgery, Shijiazhuang, China*

Purpose or Objective

The recurrence rate was very high in patients with positive lymph node metastasis (pN+) esophageal squamous cell carcinoma (ESCC) after two-field surgery. This study aimed to retrospectively evaluate the value of pN+ region to predict postoperative recurrence in patients with pN+ thoracic ESCC after radical two-field radical resection.

Material and Methods

329 patients with pN+ thoracic ESCC after two-field R0 resection were enrolled in this study. After surgery, pN+ region was located at upper-abdomen in 116, mediastinum in 119, abdomen plus mediastinum in 94 patients. SPSS 22.0 software was used for stastastic analysis.

Results

Untill the end date of following-up, the total recurrence rates was 72.4% (239/329). The total locoregional recurrence (LR) rates was 58.1% (139/329) and there was 14.6% in the neck, 42.9% in the mediastinum, and 10.0% in the upper abdomen. Multivariate Logistic and COX regression analysis showed that pN+ region was the only independent factor influencing total recurrence and LR ($P < 0.05$). The total recurrence rates and LR rates were 57.8% and 44.0% for patients with pN+ region in upper-abdomen, 77.3% and 62.3% with pN+ region in mediastinum, and 85.1% and 72.3% with pN+ region in upper-abdomen add mediastinum, respectively. Additionally, pN+ region was also the independent factor influencing recurrence in the mediastinum or upper-abdomen ($P < 0.05$), but no factor influencing recurrence in the cervical region ($P > 0.05$). The rate of recurrence in mediastimun and upper-abomen were 27.6% and 12.9% for patients with pN+ region in upper-abdomen, 47.1% and 4.2% with pN+ region in mediastinum, and 56.4% and 13.8% with pN+ region in upper-abdomen plus mediastinum, respectively.

Conclusion

the LR was the main reason of failure in patients with pN+ thoracic ESCC after two-field R0 surgery. pN+ region could predict postoperative total recurrence and LR in these patients, especially for patients with recurrence in the mediastinum or upper-abdomen. The present findings might be used to design the field of postoperative radiotherapy in those patients.

PO-0760 SCOPE trial involvement as driver of oesophageal radiotherapy developments in UK centres

S. Gwynne[1], E. Higgins[1], A. Poon King[1], G. Radhakrishna[2], G. Jones[3], L. Wills[3], T. Crosby[4]
[1]*South West Wales Cancer Centre, Oncology, Swansea, United Kingdom*
[2]*Christie NHS Foundation Trust, Oncology, Manchester, United Kingdom*
[3]*Velindre Cancer Centre, Medical Physics, Cardiff, United Kingdom*
[4]*Velindre Cancer Centre, Oncology, Cardiff, United Kingdom*

Purpose or Objective

The SCOPE trials (SCOPE 1, NeoSCOPE and SCOPE 2) have been the backbone of oesophageal RT trials in the UK. SCOPE 1 and 2 are trials using definitive CRT, the latter looking at the role of dose escalation and NeoSCOPE using NA CRT. It is 8 years since SCOPE 1 opened in 2009 and SCOPE 2 opened in early 2017. Many changes in oesophageal RT techniques have taken place in this time. The SCOPE trials have, in addition to adopting these new techniques, been influential in aiding centres with their implementation. Here we discuss the progress made through the SCOPE trials and include details of a questionnaire sent to participating UK centres to establish the role that trial participation played in RT changes in their centre.

Material and Methods

Questionnaires were sent to 35 centres that had participated in either SCOPE 1 or NeoSCOPE and had expressed interest in SCOPE 2. 24 questionnaires were returned. The results are presented here.

Results

Target volume delineation

100% of centres stated that they had a departmental protocol for TVD based on the relevant SCOPE trial protocol. 4DCT for lower third oesophageal cases was encouraged as part of the NeoSCOPE and SCOPE 2 trials. 42% of centres utilised 4DCT prior to NeoSCOPE/SCOPE 2, increasing to 71% by the time of the survey.

Planning
SCOPE 2 mandated IMRT for both the standard and dose escalated arms, where 3DCRT had been used in SCOPE 1 and NeoSCOPE. 75% of centres stated they used the former pre-trial, although at least 3 centres stated they were only using for upper 1/3 oesophageal cancers. 79% of centres in our survey now use IMRT, including for middle and lower 1/3 tumours. Type B planning algorithms, mandated in the NeoSCOPE trial, were used in 79.9% pre NeoSCOPE and now in 83.3%.
IGRT NeoSCOPE and SCOPE 2 introduced a stomach filling protocol for anatomical reproducibility. 12.5% of centres were doing this pre-trial, which has now risen to 50%. CBCT was mandated for IGRT in the NeoSCOPE trial. 66.7% used this routinely pre NeoSCOPE/SCOPE 2 which has risen to 87.5% in the survey
QA
The 3 SCOPE trials were run alongside a comprehensive RTTQA programme which included review of outlines. 33 % of centres stated that they had not had any form of peer review of their outlining before participation in the SCOPE trials. 88% of centres reported finding this process helpful.
Conclusion
The results of the questionnaires show how participation in national oesophageal RT trials has led to the adoption of newer RT techniques in UK centres, leading to better patient care.

PO-0761 Interobserver GTV delineation variation on MRI versus PET-CT in oesophageal cancer
S. Vollenbrock[1], M.E. Nowee[2], F.E.M. Voncken[2], A.N.T.J. Kotte[3], L. Goense[4], P.S.N. Van Rossum[3], A.L.H.M.W. Van Lier[3], S.W. Heijmink[1], B.M.P. Aleman[2], G.J. Meijer[3], I.M. Lips[3,5], J. Nijkamp[2]
[1]*The Netherlands Cancer Institute, Radiology, Amsterdam, The Netherlands*
[2]*The Netherlands Cancer Institute, Radiation Oncology, Amsterdam, The Netherlands*
[3]*University Medical Center Utrecht, Radiation Oncology, Utrecht, The Netherlands*
[4]*University Medical Center Utrecht, Radiation Oncology and Surgery, Utrecht, The Netherlands*
[5]*Leiden University Medical Center, Radiation Oncology, Leiden, The Netherlands*

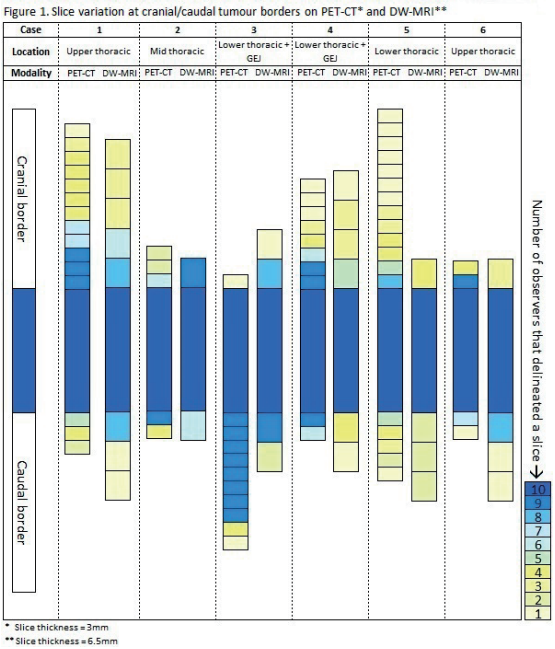
Purpose or Objective
Accurate GTV delineation is crucial for patients with oesophageal cancer treated with (chemo)radiation. Even with ^{18}FDG PET fusion to CT, delineation variation is a notorious problem especially at cranial and caudal tumour borders. MRI provides better soft tissue visualization but its use has been limited in oesophageal cancer and delineation variation is unknown. MRI may substitute CT for the MRI-linear accelerator (Unity ATL1, Elekta AB, Stockholm, Sweden) and the growing application of MRI in radiation oncology departments for treatment planning, image-guided adaptive radiotherapy and treatment response assessment encouraged to compare the contouring variability for oesophageal cancer on MRI to PET-CT.
Material and Methods
Six patients with locally advanced oesophageal cancer underwent an integrated PET-CT (slice thickness 3 mm) and after a mean interval of 14 days an MRI scan (slice thickness 6.5 mm, T2W-MRI and DW-MRI) before treatment. Clinical information (histology and endoscopy-EUS report) was provided. Ten observers from two institutes delineated the GTV on PET-CT in the first phase. In the second phase, after a minimum of one week and blinded for PET-CT images, the GTV was re-delineated on T2W-MRI and adjusted after fusion with DW-MRI. GTV volumes were compared using a two-sided T-test. Furthermore, generalized conformity indices (CIgens) and SDs of the most cranial/caudal delineated slice per patient were calculated.
Results
The average delineated GTV volume over all patients was 40.5 cm^3 on PET-CT and reduced with 5.7 cm^3 (range -0.6–13.6) on T2W-MRI (p=0.07). After GTVs were adjusted with DW-MRI, the average GTV volume reduced with 7.7 cm^3 (range -0.4–13.8) compared to PET-CT (p=0.01). CIgens were similar (Table 1). Figure 1 visualizes observer variation in delineated slices at the cranial/caudal borders on PET-CT versus DW-MRI. Notable were case 1 and 5 for cranial border SDs and case 3 and 4 regarding caudal border SDs (Table 1). In case 1 skip lesions were seen at endoscopy which might explain variation between observers. In case 3 and 4 with gastro-oesophageal junction (GEJ) involvement, notable less variation was observed at the caudal border when T2W-MRI was fused with DW-MRI. On average, delineation variation was comparable between PET-CT and (DW-)MRI (Table 1).

Table 1. PET-CT vs. MRI and DW-MRI based delineations*

	Cranial variation: 1 SD of the mean (cm)			Caudal variation: 1 SD of the mean (cm)			CIgen		
Case	PET-CT	MRI	DW-MRI	PET-CT	MRI	DW-MRI	PET-CT	MRI	DW-MRI
1	**1.25**	**1.38**	**1.30**	0.39	0.57	0.53	0.68	0.72	0.71
2	0.35	0.21	0.21	0.20	0.37	0.33	0.75	0.79	0.79
3	0.09	0.55	0.37	0.84	**0.76**	**0.37**	0.74	0.67	0.74
4	0.67	1.22	1.00	0.21	**1.22**	**0.46**	0.62	0.43	0.52
5	**1.22**	**0.44**	**0.33**	0.57	0.94	0.82	0.53	0.62	0.63
6	0.20	0.27	0.31	0.20	0.45	0.53	0.73	0.71	0.69
Average	0.63	0.68	0.59	0.40	0.72	0.51	0.68	0.66	0.68

*Notable results are marked **bold**

Figure 1. Slice variation at cranial/caudal tumour borders on PET-CT* and DW-MRI**



* Slice thickness = 3mm
** Slice thickness = 6.5mm

Conclusion
MRI for delineation of oesophageal cancer seems feasible and average delineation variation of the cranial/caudal borders equivalent to PET-CT, despite the limited experience of observers in delineation of oesophageal cancer on MRI. Average GTV volumes were reduced on (DW-)MRI compared to PET-CT, despite the time interval between scans. DW-MRI may be beneficial to T2W-MRI at the GEJ. Future effort should focus on guideline development for delineation on MRI combined with further optimization of MR scan protocols.

PO-0762 Liver metastases from colorectal cancer: propensity-score based comparison of SBRT vs MW ablation
C. Franzese[1], T. Comito[1], E. Clerici[1], P. Navarria[1], P. Mancosu[1], S. Tomatis[1], L. Solbiati[1], M. Scorsetti[1]