N staging were significant different between arm A and C (P = 0.023), arm A and B (P = 0.029). Surgical decision-making in arm A was more accurate than that in arm C (96.2% vs. 80.6%, P = 0.001). Pathological T stage (P < 0.001), N stage (P < 0.001), TNM stage (P < 0.001), serum level of SAA (P = 0.002) and tumor height (P = 0.030) were significantly associated with final surgical procedures.
Conclusions: MPE is a powerful strategy in preoperative staging and more accurate than other available strategies in surgical decision-making for rectal cancer. The final surgical procedures are associated with pathological T, N, TNM stages, which MPE could dependably provide for surgical practice.

6019 POSTER

Phase II XERT trial: Neoadjuvant cetuximab, capecitabine and radiotherapy (RT) in locally advanced resectable rectal cancer

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Background: Preoperative chemoradiotherapy (CRT) with capecitabine is a widely accepted treatment for locally advanced rectal cancer. Tumor response may be further enhanced by the radiosensitizing effect of the EGFR-targeting monoclonal antibody, cetuximab. This prospective, non-randomized, open-label phase II study evaluated the efficacy and safety of cetuximab combined with capecitabine and concurrent RT for locally advanced resectable rectal cancer.
Materials and Methods: Enrolled patients (pts) with MRI-confirmed stage II/III rectal cancer received capecitabine 1250 mg/m^2 twice daily for 2 wks, followed by IV cetuximab 400 mg/m^2 at wk 3, then cetuximab 250 mg/m^2/wk and capecitabine 825 mg/m^2 twice daily (including weekends during RT). RT was started at wk 4 at a 45 Gy dose (25 × 1.8 Gy, 3D conformal technique). Total mesorectal excision was scheduled 4–6 wks after CRT completion with tumor regression grades (TRG) assessed using the Dworak system. The primary endpoint was complete pathologic response (pCR; TRG 4).
Results: A total of 37 pts were evaluable for efficacy and safety; 81% male; median age 55 (range 33–72) yrs. Four pts (10.8%) had T4N2 tumors, 15 pts (40.5%) T3N2, 1 pt (2.7%) T2N2, 13 pts (35.1%) T3N1, 1 pt (2.7%) T2N1, and 3 pts (8.1%) T3N0. The median tumor distance from the anal verge was 6 (range 1–11) cm. A pCR (TRG 4) was reported in 3 pts (8.1%), TRG 3 in 7 pts (18.9%), and T-, N-, and overall downstaging rates were 56.8%, 81.1%, and 73.0%, respectively. The total sphincter preservation rates were 75.7% and 53.0% in 17 pts whose tumors were located ⩽5 cm from the anal verge. All pts received 45 Gy RT. Dose reduction or treatment interruption was required for 9 pts (24.3%) due to hypersensitivity reaction (n = 4), grade 3 diarrhea (n = 4), and grade 3 hepatotoxicity (n = 1). Other grade 3 toxicities included dermatitis (n = 6, 16.2%), infection and anorexia (each n = 1, 2.7%). Eleven pts (29.7%) experienced non-fatal perioperative complications; 6 of whom had wound healing problems. One pt (2.7%) with anastomotic leakage and abdominal abscess and 1 pt (2.7%) with incarceration of transversostoma required reoperation, and 34 pts (91.9%) received postoperative chemotherapy. One pt died from sepsis after colonic necrosis and perforation.
Conclusions: Preoperative CRT with cetuximab and capecitabine is safe and feasible. While the pCR rate was in the range previously reported for CRT with capecitabine, a high pathologic downstaging rate was achieved.

6020 POSTER

Large variation between hospital types and pathology laboratories in lymph node evaluation in colon cancer in the Netherlands and its impact on survival, a national population-based study

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Background: Adequate lymph node evaluation is important for staging and subsequent planning of treatment in patients with colon cancer. Adjuvant chemotherapy should be considered for patients with lymph nodes metastasis. A large variation in the number of evaluated lymph nodes exists. The aim of this study was to describe the influence of patient and tumour characteristics, hospital type and pathology laboratory on adequacy of nodal examination, and to determine its relationship with stage distribution and survival.
Methods: Data from all patients with colon carcinoma stage I-III (pT1–4NanyM0) who underwent surgical treatment, diagnosed in the period 2000–2006 were retrieved from the Netherlands Cancer Registry. Multilevel logistic analysis was performed to examine the influence of relevant factors on the number of evaluated lymph nodes. The relation between pathology laboratories and stage distribution was assessed. Cox regression analysis was performed to analyse the association between the number of examined lymph nodes, the lymph node ratio and survival.
Results: The number of examined lymph nodes was determined for 29,551 (89%) of the 33,206 tumours. The median number of evaluated lymph nodes was 8, varying from 4 to 15 lymph nodes between pathology laboratories. Median number of lymph node count was negatively associated with volume of pathology laboratory and positively associated with volume of hospital. Females, younger patients, right-sided tumours, tumours with larger depth of invasion, tumours with nodal involvement and patients treated and evaluated in a university medical centre were less likely to have 9 or less lymph nodes evaluated. After adding these factors to the multilevel model, an unexplained variation between the pathology laboratories remained. This variation led to differences in stage distribution between the pathology laboratories, correlating with the median number of evaluated lymph nodes (p < 0.001). With increasing number of evaluated lymph nodes, the risk of death decreased, both in patients with positive lymph nodes and in patients with negative lymph nodes. The risk of death increased with rising lymph node ratio in patients with lymph node metastasis.
Conclusion: There was a large diversity in lymph node evaluation among patients with colon cancer, with variation between pathology laboratories, leading to differences in stage distribution and being associated with survival. These results indicate that improvement in nodal sampling is needed in many pathology laboratories.

6021 POSTER

Efficacy of chemoradiotherapy for the treatment of locally advanced squamous cell carcinoma of the rectum

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Summary background data: Squamous cell carcinoma (SCC) of the rectum is a rare pathologic entity, accounting for only 0.1% to 0.25% of all rectal cancers. Only 57 cases of colorectal SCC having been reported over a period of more than 60 years. From June 2006 to August 2008, six consecutive patients with squamous cell carcinoma (SCC) of the rectum were treated at the same Institution, according to protocols used for anal SCC.
Methods: All tumours were locally advanced and the clinical stage was T3N0M0 in 2 cases, T3N1M0 in 1, T4N1M0 in 2 and T3N2M1 in 1 case (lung metastases). Five patients received primary chemoradiotherapy and one received chemotherapy only due to previous pelvic irradiation. Radiotherapy was delivered to a target volume including primary tumor, internal and external iliac nodes and mesorectum. The minimum dose was 5.040 cGy; a boost dose to the primary tumor up to 5.940 cGy was given to three patients. Radiotherapy was associated with these chemotherapy schedules: 4 patients received 3 cycles of 5-fluorouracil (5-FU) (1000 mg/m^2/day continuous infusion on days 1–4) and cisplatin (CDDP) (80 mg/m^2 on day 1) repeated every 3 weeks; 1 patient received 6 weeks of continuous infusion of 5-FU (225 mg/m^2 daily). One patient received 2 cycles of 5-FU (1000 mg/m^2/day continuous infusion for 4 consecutive days) in combination with mitomycin-c (10 mg/m^2 on day 1) every 4 weeks; this patient received 2 additional cycles of chemotherapy at the end of radiotherapy because of the presence of metastases. The patient treated with chemotherapy alone received 2 preoperative cycles of 5-FU and CDDP repeated every 3 weeks. All patients concluded their treatment without a diverting enterostomy.
Results: Complete clinical response (CR) was achieved in 3 patients and partial response (PR) in 2. Disease stabilization (SD) was obtained in 1 case and no patients showed progressive disease (PD). Surgery was performed in 1 patient with PR and in 1 with SD. The patient with lung metastases received 4 courses of systemic chemotherapy. As of the last follow-up (FU) patients with CR were free of recurrence at 17 (cT4N1), 31 and 28 months (cT3N0). At a median FU of 18 months all patients are alive and all but the patient with metastasis are disease free.

Conclusions: Our data, though in a limited series, strongly support the conclusion that concomitant chemoradiotherapy of rectal SCC can achieve a complete response in a relevant proportion of patients, avoiding demolitive surgery.

6022 POSTER

Chemoradiation with capecitabine and mitomycin C in preoperative treatment of locally advanced rectal cancer

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Background: Administration of 5 Fluorouracil during preoperative radiotherapy in locally advanced rectal cancer (LARC) is standard treatment. All other new drugs or their combinations have been compared with this therapy in order to reach better results and lower toxicity.
The purpose of our study was to evaluate tolerance and efficacy of preoperative radiotherapy combined with capecitabine plus mitomycin C in patients (pts) with LARC.
Materials and Methods: From October 2006 to April 2008, a prospective study was performed on 46 pts at the Institute for Oncology and Radiology of Serbia. Preoperative radiotherapy was conducted on linear accelerators with tumor dose of 45 Gy in 25 fractions, combined with concomitant chemotherapy Mitomycin C 7 mg/m^2 at 1, 29 day, Capecitabine 825 mg/m^2 bid continuous from 1−37 day. T3 stage was diagnosed in 32 pts and T4 in 14 pts. Positive lymph nodes were noted in 25 pts.
Four to six weeks after radiochemotherapy clinical response rate (cRR) was evaluated by control examinations, rectoscopy and abdominal and pelvic CT and pts were undergone to surgery. NCI-CTC criteria were used for toxicity grading. Regression status was evaluated after operation according to Dworak Tumor Regression Grade (TRG).
Results: Acute complications one or more were diagnosed in 34 pts. The most frequent complication was dermatitis in 26 pts (grade II and III in 21 pts). Skin-foot syndrome was registered in only 3 patients (grade I and II). Diarrhea was reported in 15 pts (grade II and III in 9 pts). Hematological toxicity was noticed in 13 pts (leucopenia grade I and II in **6** pts, anemia grade I in 4 pts and thrombocytopenia grade I in 3 pts).
Clinical complete response was noticed in 10 pts, partial response in 30 and stabile disease in 6 pts. No patient showed disease progression. All patients undergone surgery with R0 resection.
At patohistological findings, the stage distribution was as follows: pT0 (p CR) in 8 pts, pT2 in 9 pts, and pT3 in 25 pts and pT4 in 4 pts. 21 pts had positive lymph nodes. TRG regression rate was: grade IV in 6 pts, grade III in 5 pts, grade II in 19 pts, grade I in 13 pts and grade 0 in 3 pts
The mean follow-up time was 15 months. Out of 46 pts, 5 pts relapsed.
Conclusions: Combined chemotherapy Capecitabine and MMC given concurrently with radiotherapy in preoperative setting is safe and well tolerated with good treatment results and quality of life of treated patients.

6023 POSTER

The value of PET-CT during radiochemotherapy in the tumour response prediction for rectal cancer

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Background: To study the role of sequential FDG-PET-CT (PET-CT) imaging during and after pre-operative radiochemotherapy (RCT) as a predictive tool for the treatment response in locally-advanced-rectal-cancer (LARC).
Patients and Methods: Thirty patients diagnosed with LARC, referred for pre-operative RCT, were included in this prospective study. All patients underwent sequential PET-CT imaging at 4 different time points: prior to therapy, at day 8 and 15 during RCT and shortly before surgery. The metabolic response of the tumour, as assessed from the PET-CT data, was correlated with the pathological response based on the tumour-regression-grade (TRG) and the ypT-stage.
Results: Overall, the FDG uptake significantly decreased during pre-operative RCT ($P < 0.001$). Four patients were characterized with an increased FDG uptake peri-tumoural, indicating an inflammatory reaction. Based on the TRG, 13 patients were classified as pathological responders (TRG 1, 2), whereas 17 patients were classified as pathological non-responders (TRG 3−5). The pathological responders showed higher FDG-uptake response-indices (RIs) compared to pathological non-responders. Using ROC-curve analysis, the time-trend of the maximum standardized-uptake-value (SUVmax) provided the best predictor of pathological treatment response. The RI of SUVmax on day 15 of RCT (AUC of 0.87) was found to be superior to the RI on day 8 (AUC of 0.78) or the RI calculated from the pre-surgical PET-CT scan (AUC of 0.66). A cut-off value of 43% for the reduction of SUVmax resulted in a sensitivity of 77% and a specificity of 93%. Excluding the patients presenting with a peritumoral inflammatory response further improved the accuracy of the prediction model to an AUC of 0.97, a sensitivity of 91% and a specificity of 93%.
Conclusion: The SUVmax reduction after the first 2 weeks of RCT provided the best prediction of the pathological treatment response with an AUC of 0.87, suggesting that an accurate prediction of the pathological response is feasible already early during RCT. However, for a few patients an increased FDG uptake due to peritumoral inflammatory reactions was observed, which led to false negative predictions. Nevertheless, the PET-CT scan performed after the first 2 weeks of RCT provides very useful as response predictor and should be further evaluated in future trials aimed at individualizing the treatment of rectal cancer.

6024 POSTER

Does chemotherapy intensity in pre-operative chemoradiation for rectal cancer affect pathologic response?

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Background: To examine the relationship between chemotherapy intensity and outcome and factors affecting tumor response in patients who underwent preoperative chemoradiotherapy for rectal cancer.
Materials and Methods: Medical records of 172 patients who received preoperative chemoradiotherapy followed by radical surgery for clinically staged T3 or 4 rectal cancer from July 2003 to November 2008 were retrospectively reviewed. Radiation dose ranged from 50.4 to 54 Gy. Thirty-four patients were treated with one cycle of bolus 5-FU (group A), 112 with two cycles of bolus 5-FU (group B) and 26 with oral capecitabine (group C). Interval from radiotherapy to surgery was 37 to 92 days (median 58). One hundred fifty eight patients underwent low anterior resection, while 3 patients underwent Hartmann's operation and another 11 underwent abdominoperineal resection.

	No. of pts (%)			
	Group A	Group B	Group C	P value
Pathologic response				
Grade 5	5 (14.7)	22 (19.6)	4 (15.4)	0.750
⩾Grade 4	8 (23.5)	51 (45.5)	11 (42.3)	0.072
⩾Grade 3	20 (58.8)	90 (42.3)	23 (88.5)	0.011
Downstaging				
Yes	23 (67.6)	85 (75.9)	17 (65.4)	0.425
No	11 (32.4)	27 (24.1)	9 (34.6)	
RRM				
⩾2 mm	27 (79.4)	98 (87.5)	20 (76.9)	0.279
<2 mm	7 (20.6)	14 (12.5)	6 (23.1)	
Sphincter saving				
Yes	20 (76.9)	75 (96.2)	22 (91.7)	0.010
No	6 (23.1)	3 (3.8)	2 (8.3)	

Results: The complete pathologic response and overall downstaging rate were 18% and 72.1%, respectively. The pathologic response rate of grade 3 to 5 for group A, group B, and group C were 58.8%, 80.4% and 88.5% (group A vs. group B, $p = 0.011$, group A vs. group C, $p = 0.012$) The rate of sphincter saving surgery was higher in group B compared to group A in tumors located below 5 cm from anal verge (96.2% vs. 76%, $p = 0.003$). Pathologic response rate was correlated with overall downstaging. There was no statistically significant difference in overall downstaging and radial resection margin same or more than 2 mm between three groups. There was no grade 3 to 4 gastrointestinal or hematologic toxicity during treatment in all patients.
Conclusions: Insufficient chemotherapy regimen showed inferior pathologic outcome and lower sphincter salvage rate in low lying tumor without