difference in grade 3 or higher toxicity. Based on this result, patient should undergo sufficient chemotherapy in combination with radiotherapy to improve pathologic outcome and maximize the chance of sphincter preservation.

6025 POSTER

Lymphatic mapping and lymphatic endothelial cell isolation in colorectal cancer patients

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Background: Sentinel Lymph Node (SLN) biopsy has already been established as a common procedure, and its clinical usefulness has been confirmed in patients with malignant lymphoma and breast cancer. In colorectal cancer, however, the application of the SLN theory remains uncommon and its clinical significance is also unclear. In addition, the characteristics of the lymphatic vessels that connect SLNs or the lymphatic endothelial cells have been unclear until now. Our purpose is to determine the feasibility and accuracy of SLN mapping by intraoperative subserosal dye injection and to develop a novel method for the isolation of anatomically defined lymphatic endothelial cells.
Methods: SLN biopsy by the subserous dye injection method (patent blue) was conducted in 36 patients with colorectal cancer for which curative resection was possible (stage 0: 2 cases, stage I: 18 cases, stage II: 4 cases, stage III: 12 cases), with additional systematic lymph node dissection. Lymphatic endothelial cells were isolated from lymphatic vessels identified at the time of the SLN biopsy by the collagenase II perfusion method, and we tried to transfer them into a culture system with an endothelial cell-specific medium and evaluated the biological properties of the isolated cells using molecular procedures.
Results: SLNs could be identified in 34 cases (94%). The total number of resected lymph nodes was 705, and 72 of those nodes were confirmed as SLNs (10.2%). Ten metastasis-positive nodes were found in SLNs (13.9%), and the mean number of identified SLNs per case was 2.0. The sensitivity to detect metastatic lymph nodes and the specificity of the SLN biopsy for all removed lymph nodes was 86.1% and 99.2%, respectively. No complications or toxicity associated with the dye injection were observed. In addition, cells isolated from removed lymphatic vessels formed colonies with endothelial cell-specific properties, and the expression of lymphatic endothelial cell-specific markers, VEGFR-3, Podplanin and Prox-1 was observed.
Conclusion: The SLN biopsy by the dye method for colorectal cancer is a procedure with high sensitivity, accuracy and safety that is applicable to cases with advanced cancer. In addition, a method was established to isolate only lymphatic endothelial cells from resected lymphatic vessels and to culture them. Our results are expected to be another milestone in the determination of the rational margin of resection in colorectal surgery and the future clarification of the mechanism of lymphatic metastasis.

6026 POSTER

Comparison of CT-guided and PET-CT guided radiotherapy planning in patients with rectum cancer treated preoperatively

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Background: Positron emission tomography (PET) has a potential improvement for staging and radiation treatment planning of various tumor sites. We analyzed the use of 18F-fluorodeoxyglucose (FDG)-PET/computed tomography (CT) images for gross tumor volume delineation of patients with rectum carcinoma candidates for preoperative conformal radiotherapy.
Materials and Methods: Twenty seven patients with rectum cancer for preoperative radiotherapy had both CT and PET images acquired. For each patient Gross Tumor Volume (GTV) was contoured on CT (CT-GTV) and PET/CT images (PET/CT-GTV). The volumes of CT-GTV and PET/CT-GTV were compared, also the intersection volumes, and tumor volumes remained outside PET/CT and CT were compared.
Results: The PET/CT-GTV ($48.5 \pm 8.5\,cm^3$) was significantly greater than the CT-GTV ($30 \pm 5.6\,cm^3$) ($p = 0.002$), respectively. The mean difference between PET/CT-GTV and CT-GTV was 38%. The intersecting tumor volume for both methods was $22 \pm 25\,cm^3$, and tumor volumes remaining outside CT and PET/CT were $24.5 \pm 29\,cm^3$ and $6.5 \pm 5.5\,cm^3$ respectively. PET/CT use causes a 38% increase in GTV, which may prevent unnecessary normal tissue irradiation and may cause geographic miss because of less GTV contoured on CT.
Conclusion: Co-registration of PET and CT information in rectum cancer may improve the delineation of GTV and theoretically reduce the likelihood of geographic misses. Imaging with PET/CT for preoperative radiotherapy of rectal cancer may lead to a change in target volume delineation. The GTV changed significantly, with a mean increase in size of 38%. PET/CT fusion images could have a potential impact on treatment planning.

6027 POSTER

Helical tomotherapy or intensity-modulated radiation therapy in the treatment of anal cancer: experience of Geneva and Lausanne

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Background: To assess the early clinical outcomes and toxicities in patients treated with high precision radiation therapy (RT) consisting of helical tomotherapy (HT) or intensity-modulated radiation therapy (IMRT) for anal cancer.
Materials and Methods: Since March 2006, 30 patients with stage I-IIIB anal squamous-cell carcinoma were treated curatively by IMRT or HT alone ($n = 2$) or by concomitant chemotherapy and IMRT or HT ($n = 28$). Median age was 59 years (range, 36–83 years) and the female/male ratio was 2.3 (21/9). Primary tumor site was anal canal, anal margin, or both in 26, 1, and 3 patients, respectively. Anal tumor, pelvic and inguinal nodes were irradiated with a median dose of 36 Gy using HT, or 5- or 7-field IMRT in 18 and 12 patients, respectively; After a planned gap of 1–2 weeks (median 1 week), a median boost dose of 23.4 Gwas delivered to the tumor and/or involved nodes using 3DRT ($n = 24$) or HT/IMRT ($n = 6$). The total delivered dose ranged between 59.4 and 64.8 Gy (median, 59.4 Gy). Concomitant chemotherapy consisted of mitomycin C alone ($n = 1$), mitomycin C and 5-fluorouracil ($n = 17$) or capecitabin ($n = 10$) in 28 patients. Common Terminology Criteria for Adverse Events v3.0 scale was used to score acute and late toxicities.
Results: All but one patient, who developed progressive local and distant disease at the end of RT, achieved a complete response. Twelve months following RT, one patient had a recurrence at the primary tumor site, salvaged with brachytherapy. After a median follow-up of 7.5 months (range, 1–35 months), no deaths were observed. The 2-year actuarial locoregional control and probability of disease control without colostomy rates were 82% and 79%, respectively. RT was well tolerated without any unplanned treatment interruptions. Grade 1 or 2 acute adverse events consisted of skin toxicity in 8 and 22 patients, diarrhea in 18 and 3 patients, and cystitis in 9 and 2 patients; respectively. Only one patient developed grade 3 mucosal necrosis at the end of the treatment, requiring diverting colostomy. No difference in terms of acute toxicity was observed between patients treated with HT or IMRT. None of the 22 patients with a follow-up of more than 3 months developed grade 3 or more late toxicity.
Conclusions: Our preliminary results suggest that HT or IMRT combined with concomitant chemotherapy for anal cancer is effective, and associated with favorable rates of toxicity compared with historical series. Further follow-up is warranted to assess late toxicity.

6028 POSTER

Prognostic value of pathological complete response after neoadjuvant therapy for locally advanced rectal cancer – a monoinstitutional experience

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Background: In the European randomized trials of neoadjuvant CRT the rate of complete response (CR) ranged from 11–16%. A favorable prognosis was observed for CRT after preoperative therapy in patients with locally advanced rectal cancer. The aim of our analysis was verify whether yCR predicts a favorable outcome.
Methods: 234 pts with locally advanced low and mid rectal cancer underwent neoadjuvant CRT in our academic institution from January 1998 to December 2007. Eligibility criteria included locally advanced rectal cancer with no distant metastases and evidence of ypCR after CRT. All patients received the same neoadjuvant treatment with 5-FU and Oxaliplatin. After a median interval of 8 weeks after complatation of CRTpatients underwent a radical resection according to the principles of TME. Standard pathological tumour staging of resected specimen was