observed: obstipation 6/0, diarrhoea 6/0, CNS/mood 2/2, pain/myalgia 8/2, dyspnoea 8/0, thrombosis 4/0 and infections 5/0. Due to toxicity, an alteration of the cycle became necessary for 4% of cycles. The intensity of dosage reached 90.5% for C and T, and 72.8% for G. The latter was due to the reduction of dosage on day 8 (level 1) in cycles 2-6.

Conclusions: Since the moderate haematological and mild non-haematological toxicity proved to be controllable the analysis were lead into an international, GCIG (Gynecologic Cancer Intergroup), randomized phase III intergroup study (*Ovar- 9*) that compares the standard therapy (T/C) with the triple combination. The study has been active since August 2002.

165 POSTER

Gemcitabine (G) plus carboplatin (C) in patients whose epithelial ovarian carcinomas (EOC) relapsed ≥6 months after platinum-containing first-line therapy: Preliminary results of a phase II study

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Background: Ovarian cancer, over 90% of which is epithelial in origin, remains the leading cause of gynecologic cancer deaths, accounting for 4% of all cancer diagnoses in women and 5% of all cancer-related deaths, collectively.

Objectives: The primary objective of this study was to determine the overall response rate (ORR) of G plus C in patients with EOC that relapsed e 6 months after discontinuation of first-line platinum therapy. Secondary objectives were to assess toxicity, duration of response, time to progressive disease, time to treatment failure, and survival time.

Methods: During each 21-day cycle, patients received G 1000 mg/m^2 on days 1 and 8 and C AUC 4.0 on day 1 (after G).

Results: From July 2001 to November 2002, 40 patients enrolled at 4 sites. The median age was 54.5 years (range, 38-79). Patients' World Health Organization (WHO) performance statuses were 0 (80%) or 1 (20%). Eighty percent of pts received prior paclitaxel in combination with a platinum. A total of 234 cycles were delivered (median 6; range, 2-8). Based on Southwest Oncology Group (SWOG) response criteria, 6 patients (15%) had complete responses, 18 patients (45%) had partial responses, and 1 patient (2.5%) had a partial response in nonmeasureable disease, for an ORR of 62.5% (95% CI, 45.8%-77.3%). CTC grade 3/4 toxicities were primarily hematologic, consisting of neutropenia (42.5%/35.0%), leukopenia (30.0%/0.0%), thrombocytopenia (15.0%/2.5%), and anemia (15.0%/0.0%). Two (5.0%) patients had grade 3 infection with grade 3/4 neutropenia. Other grade 3 toxicities were febrile neutropenia, anorexia, gastritis, epistaxis, abdominal pain, nausea, and vomiting (all in 1 patient each). No patients died on-study or within the 30-day post-study follow-up period.

Conclusion: These preliminary results show that G plus C has activity in EOC cancer, and a toxicity profile that is expected and manageable. Although analyses are ongoing, G plus C appears to be a promising treatment option for relapsed EOC in platinum-sensitive patients. Final data, including time-to-event results, will be available at the meeting.

166 POSTER

Ct scan-generated small bowel dvh's, and small bowel toxicity profiles, in post-operative gynaecological cancer patients. a prospective study assessing the impact of a bellyboard device

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Aims: 1) To see if small bowel volumes in radiation portals were reduced by treating prone on a bellyboard versus supine without.This would be analysed using CT-planning 3D imaging and DVH's. 2) To establish relationships between small bowel DVH's and patients' RTOG/LENT-SOMA acute bowel toxicity scores, which were recorded prospectively.

Methods: 45 Post-op gynae. cancer patients to be prospectively assessed, first underwent conventional simulation supine and prone, as for standard 3 or 4 field pelvic radiotherapy. Planning CT scans were then done in the above two treatment positions. Small bowel was outlined on all slices, and DVH's acquired for both positions. The volume of small bowel in the radiation portals was analysed for supine and prone. Actual treatment was delivered prone, and acute bowel toxicity recorded prospectively. Observations:1.) Small bowel in the lateral radiation portals significantly reduced when prone on the bellyboard - 6-111cc reduction at 95% CI; p=0.04. 2.) Patients with no or negative reduction when prone had significantly smaller abodomino-pelvic volumes as calculated by CT planning; p, E. Wong, J. Chen, T. Coad, G. Rodrigues, M. Lock, G. Bauman (Canada)

Background: Whole pelvic IMRT is complex, requiring multiple fields, often with field splitting and junction problems. We developed an Intensity Modulated Arc Therapy (IMAT) radiation technique that simplifies treatment planning and delivery.

Materials and Methods: Five women with high-risk carcinoma of the endometrium received 4-6 cycles of paclitaxel and carboplatin sequentially with radiotherapy. Using axial CT slices, the tumor bed, iliac and pre-sacral vessels, ± lower para-aortic region were contoured as GTV. A CTV with 5-10 mm margin and PTV with 7 mm margin were generated. The small bowel, iliac crests, femoral heads, bladder and rectum were contoured as critical organs. Balancing the complexity of the arc technique with normal organ sparing, two anterior intensity modulated arcs, from 300° to 30° (IEC convention) and 330° to 60° were used. DVH, dose distribution, dynamic MLC patterns, and comparisons to conventional treatment and 5-field IMRT inverse plans were generated.

Results: Using the IMAT, 95% of the tumor volume received dose above 45 Gy, the nodes 40-45 Gy and bladder/ rectum ≤ 45Gy. This technique allowed sparing of the small bowel, iliac crests and femoral heads. The dose to the iliac crests was reduced compared to conventional radiation therapy and similar to IMRT. The volume of small bowel receiving dose above 45Gy was 80%, 10%, 15% for conventional, IMRT, and IMAT technique respectively. Treatment has been well tolerated with no significant acute toxicities.

Conclusions: IMAT provides an effective technique to treat the tumor bed and regional nodes while allowing a conformal avoidance of the bone marrow and small bowel compared with conventional radiation therapy. While critical structure sparing is similar to multi-field IMRT, our method is simpler to plan and deliver and was well tolerated. Ongoing work will assess both the clinical outcome and long term toxicity of this multi-modality treatment strategy.

167 POSTER

Is 5-year survival rate a real measure of outcome in cervix cancer patients treated by radiotherapy? Long-term results in patients treated with external beam radiation therapy and high dose rate brachytherapy

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Background: To evaluate the long-term outcome of patients with carcinoma of the cervix treated with a combination of external beam radiation therapy (EBRT) and high dose rate brachytherapy (EBRT).

Material and Methods: From 1984 and 1977, a total of 283 previously untreated patients (pts) with cervix cancer were treated with a combination of EBRT and HDRB. The median age was 62 years and there were 23 pts with stage IB disease (9%), 50 with IIA (18%), 116 with IIB (43%), 7 with IIIA (3%) and 77 with IIIB (27%). EBRT consisted of irradiation to the whole pelvis to a median dose of 46 Gy (range: 40-54.6 Gy) and HDRB typically in 3 insertions given weekly, each insertion delivering a dose of 8 Gy to point A. Chemotherapy was not given to any of these pts. The primary endpoints assessed in this analysis were survival, pelvic control and toxicity. In an attempt to determine predictive variables for survival and pelvic control, multivariate analyses, using a Cox proportional hazardous model were performed. Variables investigated were stage, age (<47 vs >47 years), overall duration of treatment (<47 vs >47 days), HDRB scheduling (<25th vs >25th day) and total dose (<98 Gy vs >98 Gy).

Results: At a median follow-up time of 84 months for pts at risk, the 5-, 10- and 15-year overall survival rates are 60%, 55%, and 49%, respectively. There was a continuous decrease in survival from cervix cancer with longer follow-up. The long-term survival rates and pelvic control rates for the different stages are shown in the table below. A total of 78 pts (24%) failed in the pelvis. On multivariate analysis, stage ($p < 0.0001$), age ($p = 0.019$) and treatment duration ($p = 0.057$) had a significant impact in survival, while stage, age, treatment duration and brachytherapy scheduling

Stage	5-year Survival/ Pelvic Control	10-year Survival/ Pelvic Control	15-year Survival/ Pelvic Control
Overall	60%	55%	49%
IB	62%/78%	62%/78%	62%/78%
IIA	75%/90%	67%/86%	57%/86%
IIB	70%/80%	63%/74%	58%/74%
IIIB	48%/55%	40%/55%	40%/55%

all correlated independently ($p < 0.05$) with pelvic control. Grade * genito-urinary and gastrointestinal late toxicities were seen in 1% and 4.5% of the pts, respectively.

Conclusion: HDRB, using a relatively small number of fractions, is well tolerated and results in similar outcomes of HDRB using larger number of fractions or low dose rate brachytherapy. Long-term follow-up demonstrates that 5-year survival rates may not reflect the true outcome of these pts, as a number of them will eventually present with tumor recurrence at a late date. Stage, age and therapy duration have a significant impact in overall survival and pelvic disease control.

168 POSTER

A phase II study of docetaxel, epirubicin, and cisplatin with G-CSF (lenograstim) support in patients with advanced ovarian cancer

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Background: To evaluate the efficacy and safety of the combination therapy docetaxel (T), epirubicin (E) and cisplatin (P) in the treatment of ovarian cancer in a phase II study.

Materials and methods: Main eligibility criteria were: histologically proven epithelial ovarian cancer stage Ic-IV, age 19-70, ECOG performance status (PS) ≤ 2 and adequate organ function. Based on an earlier dose-finding study, on Day 1 every 3 weeks, patients with PS 0-1 received T 75 mg/m^2, E 75 mg/m^2 and P 75 mg/m^2; patients with PS 2 received T 75 mg/m^2, E 50 mg/m^2, and P 75 mg/m^2. G-CSF (lenograstim) 150 μg/m^2 sc was given on Days 2-11. In patients where primary debulking was inadequate, secondary debulking surgery was scheduled after 3-4 cycles of chemotherapy. Patients were treated for a minimum of 6, and a maximum of 9 cycles of chemotherapy. Second look was scheduled in the event of a clinical complete remission (cCR) to verify histological complete remission (HCR), which was the primary study endpoint.

Results: A total of 87 patients (median age 65 years) were enrolled; 5 patients were excluded from the efficacy analysis due to protocol violations, but were included in the safety analysis. Stage Ic-II was found in 17% of patients and stage III-IV in 83% of patients. In 50% of patients, primary surgery resulted in residual lesions ≤ 2 cm. Fifty-seven (70%) patients achieved cCR. A second-look laparotomy was performed in 48 patients, which confirmed HCR in 35 patients (43%). At a median follow-up of 30 months, 45 (55%) patients developed progressive disease and 27 (33%) patients had died. The median progression-free survival was 23 months. The estimated 3-year survival rate was 64% (95% CI: 50%-77%). Grade 3-4 neutropenia was the most frequently reported haematological toxicity, occurring in 62 (71%) patients; however, only 8 (9%) patients suffered febrile neutropenia. Grade 3-4 nonhaematological toxicities were nausea/vomiting (21%), hypomagnesaemia (26%), diarrhoea (9%), and fatigue (8%). Grade 3 neurosensory toxicity occurred in 4.6% of the patients.

Conclusion: The combination TEP is active in ovarian cancer with an acceptable toxicity profile. Final results will be presented at the meeting.

169 POSTER

Uterine papillary serous and clear cell carcinoma: analysis of the impact of pelvic radiation therapy in early stage disease

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Purpose: Uterine papillary serous carcinoma (UPSC) and uterine clear cell carcinoma (UCC) are well recognized subtypes of endometrial cancer associated with aggressive spread and worse prognosis. Our goal is to analyze the outcome of these patients, with a focus on the impact of locoregional therapy on early stage patients to better define optimal therapeutic guidelines.

Materials and Methods: Clinical and pathologic data were gathered on 424 patients with uterine cancer treated between 1996-2002. A total of 41 patients with UPSC and UCC were identified, 28 UPSC and 13 UCC. Of these patients, 19 were found to have early stage disease (IA-IIA). Of those with stage I/II disease, 14/19 patients received extended surgical staging and 13/19 patients received adjuvant radiation therapy directed at the whole pelvis to a dose of 45-50.4 Gy. Among the remaining 6 patients: 3 were stage IA and was offered no adjuvant therapy, 1 patient was stage IA and received brachytherapy alone to the vaginal cuff, and 1 patient was stage IB and discontinued external beam radiotherapy after 10.8 Gy. Twenty-four patients presented with stage III/IV disease and received chemotherapy as primary treatment.

Results: The 5-year actuarial disease free survival (DFS) for stage I/II pts was 79.3% with overall survival (OS) being 100%. Sites of failure in these patients included pelvic lymph node metastasis in two patients (stage IC and IIA with UCC) and a vaginal cuff recurrence in one patient (stage IB UPSC). No distant metastasis were observed in early stage patients. Lymphovascular invasion was not found to have a significant impact on DFS in stage I/II patients. When analyzing all stages, the 5-yr actuarial DFS and OS were 48.3% and 83.2%, respectively. Sites of failure in stage III/IV patients included isolated in-field pelvic failures in 4/24 patients (16.7%), concomitant in-field and distant failures (i.e., outside of pelvic radiation field) 3/24 patients (12.5%), and distant failures alone in 4/24 patients (16.7%).

Conclusions: Early stage disease can achieve excellent locoregional control with the addition of adjuvant whole pelvic radiotherapy following complete surgical staging, with the exception of stage IA patients where observation after surgery appears reasonable. Furthermore, one could also consider administering pelvic radiotherapy with concurrent systemic therapy in more advanced stage disease to reduce isolated pelvic relapses.

170 POSTER

The necessity of treatment planning and optimisation in each high dose rate brachytherapy fraction using tandem and ovoids

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Aim: To detect the change of applicator geometry and its effect on rectal (R) and bladder (B) dose, between Ir192 High Dose Rate (HDR) Brachytherapy (BT) fractions in patients with cervical carcinoma.

Methods: HDR BT using Tandem (T) and Ovoid (O), performed by the same physician, after completion of 40 Gy external radiotherapy. The same procedure of anaesthesia was done in all fractions of each patient. Applicators were fixed to each other and the coach. Reference volume, R and B dose calculations performed according to ICRU-38 recommendations. Treatment planning and optimisation was done in each fraction. In order to obtain the changes of applicators positions, pelvic bony landmarks were accepted as constant points; applicators (T, left O, right O), B and R reference points were accepted as inconstant points. The distances between constant and inconstant points were measured in x, y and z axes and the differences were calculated. The magnitudes of the displacements in three planes were used to calculate the resultant vector. The relation between the initial tumour size and the magnitude of resultant vectors were also examined. To see whether the change of applicator position has an effect on calculated R and B doses, active source position and treatment time of first fraction was repeated for subsequent fractions of each patient. Then, difference between first and subsequent hypothetic R and B doses were calculated, changes were compared with the initial tumour size. The relation between the magnitude of displacement of applicators and the calculated hypothetic doses were examined.

Results: Average magnitude of displacement of inconstant points in x, y and z axes were between 2,0 and 16,9 mm. Resultant vectors of displacement were between 10,0 and 19,4 mm. There was no significant relation between the initial tumour size and the magnitude of resultant vectors of Left O, Right O, T, R and B ($p>0.05$). The mean differences of hypothetical B and R doses were between 78-149 cGy, and 70-84 cGy respectively. No relation was seen between changes in subsequent R and B doses, and initial tumour size. Magnitude of resultant vectors and changes in calculated doses showed no correlation ($p>0.05$).

Conclusion: There were significant variation in B and R positions and doses between BT fractions, which is confirming the necessity of treatment planning and dose calculation in each HDR BT fraction using tandem and ovoids to treat locally advanced cervical carcinoma.