62%/87% (P = 0.008), respectively. Pelvic nodal recurrence was observed in 4 patients. One patient developed isolated pelvic node recurrence while the other 3 had concurrent recurrences at other sites, including 1 with a cervical tumor and 2 with cervical tumors and distant metastases. Nodal recurrence rates by the largest diameter were 1/64 for node-negative patients, 1/15 for nodes 10−14 mm, 0/13 for nodes 15−29 mm, and 2/7 for nodes ⩾30 mm.
Conclusion: Pelvic nodal metastases less than 30 mm were well controlled by CCRT without surgical resection using RT dose delivered. Thus, surgical debulking may be omitted for patients with enlarged pelvic nodes measuring less than 30 mm.

5038 POSTER

Prospective study on helical Tomotherapy as a new technique for whole abdominal irradiation in patients with advanced ovarian cancer

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Background: The prognosis for patients with advanced epithelial ovarian cancer remains poor despite aggressive surgical resection and platinum-based chemotherapy. Despite whole abdominal irradiation's (WAI) clinically proven efficacy, the use of radiotherapy in ovarian cancer has profoundly decreased mainly due to high toxicity. The purpose of this prospective study was to evaluate feasibility and toxicity of WAI applied by tomotherapy as a new method of image-guided IMRT.
Materials and Methods: Four patients who met our inclusion criteria (radically operated ovarian cancer FIGO stage III, R1 or R2 <1 cm and adjuvant platinum-based chemotherapy) were treated with WAI applied by tomotherapy to a total dose of 30 Gy in 1.5 Gy fractions as additional therapy. Organs at risk (OARs) were bone marrow, kidneys, liver, spinal cord, thoracic and lumbosacral vertebral bodies and pelvic bones. The planning target volume (PTV) included the entire peritoneal cavity. PTV was adapted according to breathing motion as detected in a 4D-respiratory-triggered computed tomography. Inverse treatment planning was done with the Hi-ART tomotherapy planning station. Daily control of positioning accuracy was performed with megavoltage computed tomography (MV-CT). Two patients are currently under therapy and more are about to be included in our study.
Results: Helical tomotherapy enabled a very homogeneous dose distribution with excellent sparing of OARs. A very satisfying target coverage was achieved, with a mean V90 of 94.0%, a mean V95 of 82.6%, a mean V105 of 6.5% and a mean V110 of 0.58%. Mean liver dose was 22.22 Gy and mean kidney doses were 8.62 Gy and 8.26 Gy respectively. Treatment could be performed in a mean time span of 21.3 minutes. No grade III/IV acute and late toxicity occurred. Until to date we did not encounter any relapse.
Conclusions: Helical tomotherapy is feasible and fast for WAI. It enabled excellent coverage of the PTV and effective sparing of liver, kidneys and bone marrow. No severe side effects occurred. Our technique provides a new promising alternative for intensity modulated WAI. Therefore we initiated a phase I/II study to evaluate the role of tomotherapy WAI in the treatment of advanced ovarian cancer.

5039 POSTER

Prognostic impact of pMI (mitotic index of proliferating cell population) in cervical cancer patients treated with carbon-ion beam

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Background: We previously reported that the pMI (Mitotic Index [MI] of Proliferating Cell Population) was a strong prognostic factor in cervical cancer patients treated with photon beam (Nakano and Oka. Cancer 1993). In this study, we investigated whether pMI predicted prognosis in cervical cancer patinets treated with carbon ion beam, or not.
Materials and Methods: Tissue sections were obtained from all of 27 patients with stage IIIB bulky (19 patients) and IVA (8 patinets) squamous cell carcinomas of the cervix treated with carbon ion beam at National Institute of Radiological Sciences between 1995 and 1997 as a phase I&II study with dose escalation fashion (protocol: 9403). The treatment was started with an initial dose of 52.8 GyE/24 fraction, and was increased by 4.8 GyE per step to total 72.0 GyE/24 fraction. Their ages ranged from 36 to 72 years old (mean and median: 56 and 54 years old). All patients were followed for a minimum of 5 years or until death. The MI and Ki-67 labeling index (Ki-67-LI) were determined by H&E and immunohistochemical staining, respectively. More than 1000 tumor cells were evaluated in each specimen. The pMI was calucurated as following formula; (pMI)=(MI)/(Ki-67-LI). Cut-off value of the pMI was defined as 3.5, according to the result of our previous report. The Fisher's exact probability test were used for the statistical analysis of differences. The data of the multivariate analysis for local control and survival were assessed with the Cox proportional multivariate analysis.
Results: The pMI ranged from 0.6 to 8.9 (mean and median: 3.9 and 3.2). A total of 44% (12/27) of tissue specimens had greater than 3.5 of the pMI. Nine of 12 patients with greater than 3.5 of the pMI had local recurrence, while only 4 of 15 patients with less than 3.5 of the pMI had local recurrence (p = 0.02). Ten of 12 patients with greater than 3.5 of the pMI were died of the disease within five years, while 6 of 15 patients with less than 3.5 of the pMI were died within five years (p = 0.047). The multivariate analysis indicated that the pMI had the strongest impact on both local control (standard regression coefficient = 0.48 and p = 0.019) and survival (standard regression coefficient = 0.48 and p = 0.017) among the variables, including clinical stage and irradiated dose.
Conclusions: Theses results suggest that high pMI predict a poor prognosis in patients with squamous cell carcinomas of the cervix treated with carbon ion beam.

5040 POSTER

Recurrent or metastatic endometrial cancer: Prognostic factors after taxane-based systemic chemotherapy

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Background: Taxane-based chemotherapy has been recently introduced as an effective therapeutic option in recurrent or metastatic endometrial carcinoma (RMEC), exhibiting considerable efficacy even in the more aggressive types of uterine papillary-serous carcinoma (UPCC) and clear-cell carcinoma (UCCC). The aim of the current study was to determine the potential prognostic factors in RMEC after taxane-based chemotherapy.
Patients and Methods: 110 eligible patients who received pacitaxel-containing regimen for RMEC were retrospectively evaluated and follow-up data were recorded. Potential prognostic factors for overall survival (OS) were identified with the Kaplan-Meier method in univariate analysis and the Cox regression model in multivariate analysis.
Results: Although non-endometriod (UPSC and UCCC) histology is associated with a worse prognosis compared to endometriod adenocarcinoma (14.46 months, 95% CI: 8.66−20.26 months vs 17.57 months, 95% CI: 11.91−23.24, p = 0.093), histology does not constitute an independent prognostic factor for OS in multivariate analysis (HR = 1.43, 95% CI: 0.82−2.48, p = 0.21). Performance status (PS) at diagnosis and histological grade are independent prognostic factors for overall survival (p = 0.007 and 0.045 respectively). Patients who do not relapse within the field of previous external radiation have a 45% reduction in the risk of cancer-associated death compared to patients who do so (HR = 0.55, 95% CI 0.32−0.93, p = 0.026).
Conclusion: Despite the documented efficacy of paclitaxel-containing regimens against UPSC and UCCC, patients bearing such tumours continue to be associated with a worse prognosis compared to those with endometriod tumours, albeit not significantly. PS at diagnosis, histological grade of the tumour and relapse within the field of previous external radiotherapy constitute a valid prognostic model in the RMEC setting after taxane-based chemotherapy.

5041 POSTER

Non-dysgerminomas of the ovary: a retrospective analysis at N.N. Blokhin Russian Cancer Research Center

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Purpose: This is a retrospective review of treatment results of patients with malignant ovarian germ cell tumors (MOGCT) except dysgerminomas in Clinical Pharmacology and Gynecology Departments, N.N.Blokhin Russian Cancer Research Center (NNBRCRC) between 1990 and 2006.
Methods: A total of 56 patients with nondysgerminomas were retrospectively reviewed. The histologic subtypes included endodermal sinus tumors (n = 13), immature teratomas (n = 13), embryonal carcinoma (n = 1),

chorioncarcinoma (n = 1) and mixed germ cell tumors (n = 28). 12 patients had primary treatment in NNBRCRC during the period 1990–2006, referred for the 1st line chemotherapy (n = 21), follow-up (n = 3) or salvage therapy after recurrence (n = 20).
Results: The median (range) age at presentation was 21 (14−42) years. 15 women (27%) presented with FIGO surgical stage I disease, 4 (7%) had pelvic metastases (stage II), and 20 (36%) had advanced (stage III/IV) disease. 17 patients had no comprehensive surgical staging. 2 women had evidence of dysgenetic gonads with a 46 XY karyotype. Primary surgery was done in 55 patients. 20 patients (36%) underwent fertility-sparing surgery.
Among the 33 women who received 1st line chemotherapy +/− surgery in NNBRCRC 23 (70%) are alive without evidence of disease at a median follow-up of 68 months. 8 deaths were associated with progressive disease, two patients died of severe chemotherapy complications and intercurrent disease, respectively. It is important to note that only 2 (10%) patients out of 20 treated in our center since 2000 year died of progressive disease. Among the 20 women referred for salvage therapy to NNBRCRC 10 women (50%) are alive without evidence of disease, 9 patients died of progressive disease and one patient died of chemotherapy complications. 3 (5%) patients received no adjuvant treatment after surgery due to stage Ia dysgerminoma with elevated AFP level. All of them are alive without evidence of disease at a median (range) follow-up of 4.2 (2−6.4) years.
Conclusions: Our date confirmed that prognosis of MOGCT is excellent if managed with standard treatment initially, that is possible, as a rule, only in specialized cancer hospitals.

5042 POSTER

Promising results of extended-field radiation therapy and high dose rate brachytherapy with concurrent platinum-based chemotherapy for uterine cervical cancer with para-aortic lymph node involvement

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Background: The purpose of this study is to explore the therapeutic efficacy of the extended-field radiation therapy (EFRT) and high dose rate (HDR) brachytherapy with concurrent platinum-based chemotherapy in the management of uterine cervical cancer with para-aortic lymph node involvement.
Materials and Methods: Thirty-eight patients diagnosed as uterine cervical cancer with gross para-aortic lymph node involvement with or without supra-clavicular, inguinal lymph nodes but no other distant metastases were enrolled in this study from May 1999 to August 2005. EFRT included whole pelvis and retroperitoneal para-aortic lymph node baring area and the radiation dose ranged from 32.4 to 64.4 Gy (median 55.8 Gy). After 36 to 50.4 Gy, the fields were reduced to the gross para-aortic lymph node and pelvis with mid line block. During EFRT, concurrent cisplatin (60 mg/m^2) and 5-fluorouracil (1,000 mg/m^2/24 hr for 5 consecutive days) were repeated in 3 weeks for three cycles. HDR brachytherapy using Ir-192 was delivered at the end of EFRT with doses of 21 to 32 Gy to point A in 5 to 8 fractions.
Results: Median follow-up period is 48 months (7−95 months). Two patients (5.3%) could not complete the planned EFRT because of Grade III gastroenteral complications; severe abdominal pain and diarrhea. Grade III or IV hematologic complications occurred in fifteen patients (39.5%), but all the patients were recovered without serious sequelae. Late complications requiring surgical intervention occurred in two patients (5.3%). The sites of recurrence were locoregional (pelvic and para-aortic regions), 23.7%; distant, 21.1%; and locoregional with distant, 10.5%. The 3-year overall and disease-free survival rates were 62.9% and 60.5%, respectively. There was no recurrence after 3 years of treatment. We could not find any significant prognostic factors in this study.
Conclusions: Our results suggest that EFRT and HDR brachytherapy with concurrent platinum-based chemotherapy could be safe and effective treatment for uterine cervical cancer with para-aortic lymph node involvement.

5043 POSTER

10-year-survival data for 138 patients with endometrial carcinoma treated with postoperative vaginal vault brachytherapy: excellent therapeutic ratio for intermediate risk-group and lower cancer-related mortality than from further malignancies

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Background: The discussion, in which subgroups of patients with endometrial carcinoma confined to the uterus external-beam radiotherapy (EBRT) can safely be replaced with vaginal vault brachytherapy (VB) is still ongoing. We evaluated the long-term results of VB in stage I-IIIA along with risk factors and causes of death.
Material and Methods: Of 151 pts with endometrial carcinoma treated with VB between 1990 and 2002, 138 met the entrance criteria (85% FIGO I, 12% II, 3% IIIA, TAH-BSO+/−LNE, no EBRT). 18 pts were of low risk (FIGO 2002: IA G1−2, IB G1), 103 intermediate risk (IB G2−3, IC G1−2, IIA-B G1−2) and 17 high risk (IC G3, IIIA). Lymphonodectomy led to >10 excised nodes in 38.4%, 1−9 nodes in 16.7% and none in 44.9%, respectively. HDR-brachytherapy was 3x10 Gy to the surface or 3x5 Gy in 5 mm tissue depths in 95.7% of pts. Update included all available data from living patients, relatives, physicians and tumour-registry Munich.
Results: Median follow-up was 93 months (range 3–185) and 107 mts for 97 survivors. 10 recurrences (3 intermediate, 7 high risk-pts) were vaginal in 1, pelvic in 5 and distant in 7 pts. At 10 years, vaginal control was 99.2% and disease-free survival 91.7% (DFS: low risk 100%, intermediate 97%, high risk 55%). LVSI and deep myometrial invasion were associated with poor DFS in univariate analysis ($p < 0.05$, Chi-Square, logrank), FIGO IIIA and grade 3 in uni- and multivariate analysis ($p < 0.05$, Cox regression). No patient experienced treatment-related toxicity > grade 2 to bladder or GI-tract.
Of 41 deaths, 12 were due to cardiovascular disease, 10 to other malignancies, 8 to endometrial carcinoma, 6 to various reasons and 5 unknown. At 10 years, overall survival was 68.5%, disease-specific survival 92.4%. In 31 patients 35 further malignancies occurred. The actuarial risk to die from these amounted to 9.9% and 17.7% after 10 and 15 years as opposed to 7.6% for endometrial carcinoma.
Conclusions: Vaginal vault brachytherapy provides an excellent therapeutic ratio in low and intermediate risk endometrioid adenocarcinoma, in which EBRT can safely be omitted. As long-term survival is high, minimizing toxicity is an important aim. More aggressive therapeutic concepts should be restricted to high risk patients in order to improve results selectively. Generally, the endpoint “overall survival” is unlikely to resemble treatment effects properly, as leading causes of death are cardiovascular disease and malignancies other than endometrial carcinoma.

5044 POSTER

Quality of life in cervical cancer survivors treated with chemoradiotherapy

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Background and Objective: Chemoradiation of the cervix is the standard treatment for locally advanced patients but there is no data concerning survivors of this disease treated with combined therapy. Our objective is to study quality of life in these patients using a validated scale.
Material and Methods: This is a case–control study. Case group – 135 cervical cancer survivors treated with chemoradiation in our institution from November 2000 to September 2002. Median age was 50 years. All women were contacted by telephone and invited to participate in the study. The Portuguese translated version of the Functional Assessment of Chronic illness Therapy-Cervix Cancer Questioner (FACT-Cx, 4th version) was then mailed. Some patients were directly contacted in the gynaecology outpatient service. Control group – healthy women matched for age were recruited in the breast cancer evaluation clinic of our institution.
Results: From January to April 2007, 101 women (62 cancer survivors and 39 controls) answered the FACT-Cx scale. Preliminary data of the first part of the scale (FACT-G) concerning quality of life in general for each item is as follows (cases vs controls): physical well being – 22.7 vs 21.5; social/family well-being – 19.9 vs 19.9; functional well-being – 18.6 vs 19.8,