the anti-cytokeratine-antibody A45-B/B3 (Micromet, Munich, Germany), directed against cytokeratines 8, 18 and 19, and immunohistochemically staining with neu-fuchsin. All preparations were screened by two independent persons.
Results: 328 breast cancer patients were analyzed at primary diagnosis. Among those, 133 patients returned for a second blood sampling after completion of adjuvant chemotherapy. Most of the tumors were small (43% pT1, 51% pT2, 4% pT3, 1% pT4) but of intermdediate or unfavourable grade, (G1 4%, G2 46%, G3 42%). 66% of the patients were node-positive (34% pN0, 38% pN1, 20% pN2, 8% pN3) and a positive hormone receptor status was seen in 71%. In 22% the Her2-status was positive. MRD in peripheral blood was found in 31% of all patients before and in 9% after chemotherapy. The mean number of detected cells was 2 (range 1−9). 87.2% of patients who showed MRD at the first measurement turned negative after chemotherapy.
Neither tumor size ($p = 0.624$), lymph node metastases ($p = 0.450$), histopathological grading ($p = 0.168$), hormone receptor status ($p = 0.270$) or Her2/neu-status of the primary tumor ($p = 0.893$) correlated with the presence of MRD.
Conclusions: The detection of MRD in peripheral blood can be widely used and is suitable for repeated measurements. Further follow-up will show, if this method can be used for risk stratification and monitoring of treatment efficacy in adjuvant breast cancer.

2033 ORAL

Improved chemotherapy delivery in breast cancer patients receiving pegfilgrastim primary prophylaxis compared with current practice neutropenia management – results from an integrated analysis (NeuCuP)

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Background: Chemotherapy (CT) dose reductions and delays due to neutropenia or febrile neutropenia (FN) may worsen clinical outcomes. FN prophylaxis with granulocyte colony stimulating factor (G-CSF) can help to maintain planned CT dosing schedules. Recent EORTC/ASCO guidelines recommend routine growth factor primary prophylaxis (PP) for patients with overall $\geqslant$20% FN risk. An aim of this integrated analysis of individual patient data was to assess CT delivery in breast cancer patients receiving a range of CT regimens supported by PP pegfilgrastim or any G-CSF according to current practice (CP).
Methods: Studies involving breast cancer CT regimens with moderate (15–20%)/high ($\geqslant$20%) risk of FN were identified by literature review. For this integrated analysis, individual patient data were available from 8 clinical trials and 3 observational studies (conducted 1998–2005) involving these regimens and PP use of pegfilgrastim (6 mg dose in all cycles) or CP neutropenia management (no G-CSF or pegfilgrastim/daily G-CSF in any cycle). Outcome measures reported here are CT dose delays/reductions, hospitalizations, and anti-infective use.
Results: 2282 patients were analyzed (PP: 1303; CP: 979). The mean age ($\pm$SD, years) was 51.4$\pm$10.4 for PP vs 52.0$\pm$9.9 for CP; 28% vs 28% of patients had Stage IV disease, 97% vs 85% had ECOG status 0–1 (11% missing in CP) and 30% vs 37% had prior chemo/radiotherapy. The most common regimens were docetaxel (37% vs 50%), TAC (31% vs 27%), and ADoc (27% vs 3%). In cycle 1, 75% of CP patients did not receive any G-CSF, 12% received pegfilgrastim, and 12% received various daily G-CSF regimens (11% of whom had <5 doses, 50% had an unspecified number of doses). Dose delays/reductions for the PP and CP groups are shown in the table, as well as hospitalizations and anti-infective use.

	PP, % patients (95% CI) (n = 1303)		CP, % patients (95% CI) (n = 979)	
	Overall	Cycle 1	Overall	Cycle 1
Dose delay >3 days in any cycle	15 (13, 17)	N/A	16 (14, 19)	N/A
Dose reduction $\geqslant$15% in any cycle	9 (7, 10)	N/A	24 (21, 27)	N/A
FN-related hospitalization	4 (3, 5)	3 (2, 4)	10 (8, 12)	6 (5, 8)
Use of anti-infectives[a]	42 (40, 45)	22 (20, 25)	55 (52, 58)	43 (40, 46)

[a]210 PP and 248 CP pts were prescribed prophylactic antibiotics in original protocol.

Conclusions: In this analysis of patients receiving CT with moderate/high FN risk, PP pegfilgrastim supported a higher level of CT delivery than CP neutropenia management. PP pegfilgrastim also reduced the number of FN-related hospitalizations.

Poster presentations (Wed, 26 Sep, 14:00−17:00)
Breast cancer – early disease

2034 POSTER

Weekly docetaxel vs CMF as adjuvant chemotherapy for elderly breast cancer patients: safety data from the ELDA trial

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Background: we are conducting a phase 3 study to compare weekly docetaxel vs CMF as adjuvant treatment of elderly breast cancer patients (the ELDA trial, cancertrials.gov ID: NCT00331097). An amendment has been approved in December 2006 to modify methotrexate dose according to creatinine clearance. We have compared safety data collected before the amendment.
Patients and Methods: early breast cancer patients, 65 to 79 years old, are eligible if they have metastatic lymphnodes or average to high risk of recurrence according to 2001 St.Gallen criteria, PS 0−2, adequate bone marrow, renal and hepatic function. Patients are randomly assigned to CMF (cyclophosphamide 600 mg/m^2, methotrexate 40 mg/m^2, fluorouracil 600 mg/m^2, days 1−8) or docetaxel (35 mg/m^2 days 1−8-15), both every 4 weeks.
Results: data of 101 patients enrolled up to October 2006 were analysed: 53 in the CMF and 48 in the docetaxel arm. Median age was 70 years. At least one grade 3−4 toxic event of any type was reported in 40 (75.5%) and 19 (39.6%) patients with CMF and docetaxel, respectively (exact $p = 0.0002$). Grade 3−4 hematological events were observed in 37 (69.8%) vs 4 (8.3%) cases (exact $p < 0.0001$) and grade 3−4 non-hematological toxicity in 12 (22.6%) vs 15 (31.2%) patients (exact $p = 0.11$), with CMF and docetaxel, respectively. In particular, a significantly higher incidence of anemia, neutropenia, thrombocytopenia and febrile neutropenia was reported in CMF arm. Among non-hematological toxicity, constipation, mucositis, nausea and vomiting were significantly more common with CMF; diarrhoea, abdominal pain, dysgeusia, neuropathy and liver toxicity were significantly more frequent in docetaxel arm. No significant interaction was found between severe toxicity and baseline variables, including creatinine clearance and geriatric assessment.
Conclusions: in the present analysis, weekly docetaxel was less toxic than CMF. Efficacy data must be awaited to draw conclusions on the role of adjuvant weekly docetaxel for elderly early breast cancer patients.

2035 POSTER

NEAT-A: Accelerated sequential epirubicin followed by higher dose 14 day CMF, using pegfilgrastim, is a feasible alternative for delivering dose dense E-CMF chemotherapy in early breast cancer

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Background: E-CMF [epirubicin (E) $\times$ 4 cycles every (q) 21 days (d), followed by either classical CMF $\times$ 4 cycles q 28d or higher dose CMF q 21d] is established as highly effective adjuvant chemotherapy for early breast cancer (EBC), reducing mortality by 30% compared with CMF alone [Poole NEJM 2006]. Dose dense anthracycline-taxane schedules, accelerated with GCSF support, have been shown to be superior to conventional regimens [Citron JCO 2003, Burnell SABCS 2006]. Exploration of accelerated E-CMF is therefore of considerable interest. We

report the second phase of a study exploring two alternate schedules of accelerated E-CMF having previously reported the first phase [Rea ASCO 2007].
Methods: A non-randomised, multicenter trial to explore the feasibility and tolerability of accelerated E-CMF chemotherapy for women with EBC. The primary endpoint being delivered dose intensity (DDI). The accrual target was 40 patients (pts). Pts were treated with 4 cycles E (100 mg/m^2) q 14d, with Pegfilgrastim (PF) (6 mg sc) d2, followed by 6 cycles of cyclophosphamide, methotrexate, and 5-fluorouracil (800/50/600 mg/m^2) administered intravenously d1, with PF d2, q 14d. This schedule is designed to achieve similar DDI to the d1&8 accelerated q 21d CMF regimen previously reported.
Results: 41 pts were enrolled. Complete dose information from 36 pts and toxicity data from 360 cycles (41 pts) has been analysed. Median DDI was 98.8% of target. Delays of >2d were recorded for 5% of cycles. Dose reductions were recorded in 8% of cycles. Percentage grade 2 and 3/4 toxicity reported per cycle were respectively: all infections 4/2; bone pain 9/3; constipation 10/1; diarrhoea 1/2; dyspnoea 19/1; emesis 17/2; fatigue 32/6; febrile neutropenia not applicable (na)/1; mucositis 9/1; and phlebitis 7/na. Hospitalisation occurred in 6% of cycles.
Conclusions: Accelerated E-CMF with PF is feasible achieving high DDI in a majority of pts. Non-haematological toxicity was responsible for the majority of hospital admissions. We have established two alternative accelerated E-CMF schedules that achieve similar DDI. The marginal differences in toxicity profiles tend to favour the q 14d CMF reported here, rather than the d1&8 q 21d CMF schedule previously reported. Either schedules could be considered but to establish efficacy in comparison to conventional E-CMF requires phase III evaluation.

2036 POSTER

Prone position breast irradiation; an intensity modulated radiotherapy (IMRT) planning study

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Background: Supine position breast radiotherapy is most commonly used for radiotherapy of the whole breast in patients treated with breast-conserving therapy for early breast cancer. In women with larger and/or pendulous breasts, this technique can cause increased dose inhomogeneity and hot spots to skin fold areas, with, as a result, increased skin toxicity and impaired cosmetic outcome. In prone position, with the breast hanging free from the thoracic wall, skin folds could be eliminated and field separation could be reduced. We aimed to evaluate prone position breast radiotherapy by means of a CT planning study.
Materials and Methods: A pilot study was performed including 15 women with large or pendulous breasts. All women had a CT scan in supine and in prone position. The patients were treated conventionally, in supine position. Opposed tangential beam arrangements were set up in both positions. For each position, both a conventional 3D plan and an IMRT plan was developed. Breast coverage, dose homogeneity, and dose to the lung and heart were compared.
Results: The mean field separation in supine position was 24.7 cm (range 21.5−28.2 cm); this was reduced to 20.8 cm (range 16.2−24.6 cm) in prone position. In prone position, the breast tissue could be adequately covered. The maximum relative dose was 109%, 108%, 111% and 107% for supine conventional, supine IMRT, prone conventional and prone IMRT plans, respectively. In prone position, the conformal radiotherapy plan caused underdosage in the medial part of the breast, whereas with IMRT, a homogeneous dose could be obtained. In prone position, the dose to the ipsilateral lung was reduced compared with the supine position (average dose 6.02 Gy, 6.47 Gy, 1.20 Gy, 1.46 Gy for supine conventional, supine IMRT, prone conventional and prone IMRT plans, respectively). The dose given to the heart in prone was similar to that in supine position.
Conclusions: Prone position breast radiotherapy is a feasible technique, if IMRT is used. With this technique a homogeneous dose to a larger breast can be given, and skin folds are eliminated thus reducing the risk of skin epidermolysis. Also, the irradiated lung volume is reduced compared with supine breast irradiation.

2037 POSTER

The effect of hypofractionation and radiation dosimetry on the incidence of symptomatic rib fractures in women treated with radiotherapy for early breast cancer in the UK standardisation of breast radiotherapy (START) Trials

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Background: Symptomatic rib fractures (SRFs) are an uncommon but painful late normal tissue reaction following radiotherapy (RT) for breast cancer. The effect of fraction size (Fr) and radiation dosimetry on the incidence of SRFs was examined in the Phase III randomised START Trials of breast radiotherapy.
Methods: The incidence of SRFs was recorded prospectively in the START Trials (ST-A and ST-B) which tested hypofractionated post-operative RT in women with completely excised invasive breast cancer (T1−3, N0−1, M0). ST-A compared 50 Gy in 25 Fr (5 wks) vs 41.6 Gy vs 39 Gy, both in 13 Fr (5 wks). ST-B compared 50 Gy in 25 Fr (5 wks) vs 40 Gy in 15 Fr (3 wks). An extensive quality assurance (QA) programme was conducted as part of these trials with treatment plans collected from 1 in 3 patients.
Results: 4451 patients were recruited from 35 UK centres during 1999–2002, with a median follow-up of 5.1 years for ST-A and 6.0 years for ST-B. SRFs were reported in a total of 61 of 4451 patients (1.4%) entered into the trials [27/2236 (1.2%) in ST-A and 34/2215 (1.5%) in ST-B]. The mean age of patients who developed SRFs was 65.7 years (range 51.9−84.1) in ST-A and 62.9 years (range 43.7−84.2) in ST-B and the median time to first reporting SRFs was 3 years in both trials (range 1−7 years). In ST-A the numbers of SRFs reported were 8, 9 and 10 for the dose schedules of 50 Gy, 41.6 Gy and 39 Gy respectively. In ST-B the numbers of SRFs reported were 18 and 16 for 50 Gy and 40 Gy respectively. Overall, 161/1421 (11%) RT treatment plans reviewed by the QA team were described as posterior border hot with higher doses in ribs. For patients with treatment plans available to the QA team, higher rib doses were seen in 3/7 (43%) patients who developed SRFs in ST-A and 1/9 (11%) SRF patients in ST-B. A review of all treatment plans of patients who developed SRFs has now commenced.
Conclusion: Hypofractionated radiotherapy for early breast cancer was not associated with an increased incidence of SRFs in the START Trials. Dose inhomogeneity with higher rib doses did not account for all the cases of SRF. Avoidance of hot spots in ribs may reduce the incidence of SRFs but planning techniques which significantly reduce the total dose to ribs may be needed to avoid this side-effect in all patients.

2038 POSTER

Personality predicts quality of life in breast cancer patients, not type of surgery

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Background: Quality of Life (QoL) is an important outcome measure in oncology. In breast cancer, QoL is influenced by surgical treatment. Women who are treated with breast conserving therapy (BCT) report a better QoL compared with women treated with mastectomy (MTC). Another factor of influence on QoL is personality. So far, only one study has assessed the relationship between personality and QoL in breast cancer patients but this study did not look into the possible influence of type of surgery. To assess the influence of both surgical treatment and personality on QoL a longitudinal prospective cohort study was done. Based on the previous study it was hypothesized that women with a high score on trait anxiety would experience a poor QoL, especially women treated with BCT since they would worry about the remaining breast.
Methods: Between September 2002 and December 2005 women with a first presentation of a palpable lump in the breast or an abnormality on the mammography were asked to participate in the study. A set of questionnaires was completed by 337 women prior to diagnosis and 1, 3 and 6 months after diagnosis and possible treatment. Of the 131 women that were diagnosed with breast cancer, 53 women were treated with BCT and 78 women received MTC. Personality was assessed using the