cancer women as primary therapy (N = 160) or in sequence to previous tamoxifen (N = 171) for a median period of 54 months (range: 7.5−87).

Results: Nineteen cases (5.74%) of minimal trauma fractures were identified after 9−47 (median: 25) months of anastrozole administration (median duration of AI medication in group without fractures: 31 months, range: 7.5−87; difference not significant); women who took letrozole did not experience any bone fractures. Patients who experienced bone fractures under IA were significantly younger that those without that complications (median: 47 vs. 60 years; $p = 0.01$) and more frequently subjected to surgical/radiological menopause (57.89% vs. 3.85%; $p < 0.001$). None of cases with bone fractures was pretreated with tamoxifen before AI therapy was started in contrast to those without bone fractures (tamoxifen for at least 6 months: 0% vs. 59.21%, respectively; $p < 0.05$). No statistically significant differences were observed between two study subgroups in terms of frequency and regimen of anticancer chemotherapy as well as risk factors for bone fracture, such as: initial body mass index, previously diagnosed osteoporosis/osteopenia, life-style (physical activity, cigarette smoking, alcohol abuse, diary products intake, calcium supplementation), parental history of osteoporosis/hip fracture/multiple bone fractures, co-morbidities and medications related to bone mass changes (including hormone replacement therapy), pretreatment history of minimal trauma fractures. Relatively low rate of bone fractures did not allow to perform the multivariate analysis.

Discussion: Results obtained in this preliminary study: 1) revealed that traditionally used osteoporosis fracture risk factors do not reflect the probability of AI therapy associated bone events properly, thus suggest difference between AI induced bone loss and that observed after menopause; 2) support the osteoprotective activity of tamoxifen; 3) indicates that AI-related bone fractures in unselected group of breast cancer women are less prevalent than what has been described in clinical trials.

506 Poster

Some aspects of scalp cooling in breast cancer patients receiving chemotherapy

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Background: Alopecia, hair loss, is a common and distressing side effect of chemotherapy. Hair loss stigmatises by making cancer visible. Scalp cooling is worthwhile supportive care that is applied in breast cancer patients with chemotherapy schedules that cause (severe) hair loss. In 2008 scalp cooling is practised extensively in the UK and the Netherlands, but among others also in Belgium, Ireland, Norway, Sweden and Switzerland.

Methods: In 2005 a PhD-project has started comprising studies related to scalp cooling in breast cancer patients. 1. In order to optimise cooling methods the impact of post-infusion cooling times on the preservation of hair was determined in the 3-weekly docetaxel and FEC-high dose (epirubicine 90 mg/m^2 or more) regimens. Initially the post-infusion cooling times were 90 minutes. Now patients are randomised between post-infusion cooling times of 45 and 90 minutes in docetaxel and 90 and 150 minutes in FEC-high. 2. Impact of hair loss on well being and body image was measured by questionnaires completed before starting chemotherapy, 3 weeks and 6 months after the last chemotherapy session. Scalp cooled patients were compared to non-cooled patients 3. The risk of (scalp) skin metastases has been studied in the Munich Cancer Registry in non-cooled patients without metastases at diagnosis (n = 28.916). Furthermore medical records research was performed among all Dutch scalp cooled patients (n = 395) from 1997 to 2005.

Results: Results of our studies show: 1. 53% of 250 patients treated with FEC high dose and 82% of 38 patients treated with docetaxel did not require a wig after chemotherapy with 90 minutes post-cooling. Results of scalp cooling in randomised patients are not known yet, data will be presented at EBCC conference. 2. higher well being and better body image in successfully scalp cooled patients (n = 32) than in patients not receiving cooling (n = 142) who in turn have better results than not-successfully cooled patients (n = 30). 3. 694 (11%) of 6205 patients with metastases in follow up presented with skin metastases. Skin metastases alone comprised 150 patients (2.4%). While about 80% of skin metastases present on the trunk, the percentage of scalp skin metastases will be lower than 0.5%. Medical record research showed 2 patients with scalp skin metastases, these patients were treated with chemotherapy in the palliative setting.

Conclusion: More than half of the patients do not require a wig in two chemotherapy schedules that normally induce severe hair loss. Preservation of hair by scalp cooling leads to a better well being and body image. Hazards of development of scalp skin metastases by scalp cooling seem very low, but can not be excluded unequivocally.

507 Poster

Electrolyte abnormalities and side effects of zoledronate in patients with bone metastases

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Background: Zoledronate is generally used for the treatment of bone metastases from different kind of neoplasms. Hypocalcemia and elevation of serum creatinine are expected adverse events during this therapy, although their actual incidence is unknown. The use of serum calcium and creatinine is therefore recommended. The primary aim of this study was to establish the actual incidence of hypocalcemia and elevation of serum creatinine during treatment with zoledronic acid. Skeletal-related events (SREs) and side effects were also assessed.

Materials and Methods: Serum creatinine and calcium levels were evaluated in 240 consecutive patients (83 males, 157 females, mean age 59.8 years) with metastatic bone lesions from different solid tumors, treated with zoledronic acid.

Results: Overall, 95/240 patients (39.6%) developed hypocalcemia: G1 in 47 patients (49.5%), G2 in 37 (38.9%) and G3 in 11 (11.6%). Median time-to-occurrence of hypocalcemia (any grade) was 2 months (range 0−35). A higher grade of hypocalcemia was associated with earlier appearance ($p = 0.0001$). Increased serum creatinine was observed in 33/240 patients (13.7%), of whom 19 had G1 (57.6%), 11 had G2 (33.4%) and 3 had G3 (9%). Median time-to-serum creatinine increase (for any grade) was 5 months (range 0−29). Elevated levels of creatinine were associated with advanced age ($p = 0.0017$).

Conclusions: The reported high incidence of serum hypocalcemia and creatinine strongly supports the need for accurate monitoring of plasma calcium and creatinine levels.

508 Poster

Radiogrametrical analysis of clavicle structure – predictive factor for bone fractures in breast cancer women treated with adjuvant anastrozole?

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Background: Adjuvant anastrozole (ANS) therapy increases bone fractures risk in postmenopausal breast cancer (BC) women. Some studies showed the bone mineral density has low sensitivity to assess bone fracture risk (BFR) in general population and seems to be even less predictive in BC women treated with aromatase inhibitors. Some data suggests that other than densitometric features of bone ("bone quantity"), such as bone geometry, microstructure ("bone quality") may contribute to BFR. We studied the influence of adjuvant ANS on radiological features of bone structure and its predictive value in estimating BFR.

Patients and Methods: Data for the study were collected from 85 BC women: 48 taking adjuvant ANS as a primary endocrine therapy and non-randomelly matched group of 37 patients who received no further endocrine treatment following adjuvant chemo-/radiotherapy. The influence of ANS on bone was assessed using the radiogrametrical digital analysis of clavicle and II. rib based on chest PA X-ray radiograms routinely taken in each patient before and min. 6 months of treatment/observation afterwards (median: 16, range: 6−45 mts / 17, range: 6−43 mts, respectively) and then digitally processed using image analyzer.

Results: 1) The comparative analysis of the pairs of data taken before and during treatment revealed that the linear spongious/cortical width ratio (S/C) increases significantly in patients being under ANS in both evaluated skeletal locations (clavicle $p < 0.001$; II. rib $p < 0.01$), whereas patients from control group experienced only statistically not significant increase of the S/C ratio; 2) typical feature observed in ANS-treated patients and control cases was the increase of the contrast between cortical and spongious part of bone shadow in clavicle and II. rib (parameter C), however the difference did not reach significance; 3) comparison of changes in bone structure during treatment/observation period showed the significantly