study, we aimed to form a risk model in patients with common cancers by also questioning the role of various biochemical markers in this regard.
**Materials and Methods:** During a period of 8 months between May 2010 and January 2011, consecutive patients were prospectively recruited from 2 tertiary cancer centers. Ethical committee approval was obtained prior to onset of the study. Patients only with breast, colorectal and lung cancers, and all stages of disease, were allowed. Data on disease and treatment characteristics as well as comorbidities, global quality of life scores as assessed by EORTC QLQ-C30 questionnaires, biochemical and hematological parameters (serum creatinine, Lactate Dehydrogenase, creatinine, ALT, albumin, hemoglobin, monocyte, neutrophil, lymphocyte, thrombocyte counts, mean platelet volume, and C reactive protein levels (CRP)), and Granulocyte Colony Stimulatory Factor (GCSF) usage were collected. Patients were carefully observed for the development of FN after each chemotherapy cycle. Univariate and multivariate logistic regression tests are conducted to test the determinants of FN.
**Results:** A total of 1139 patients were recruited and 3970 cycles were delivered during the study period. The number of cycles delivered for patients with breast, lung and colorectal cancers are 1608 (40.5%), 1023 (25.8%), and 1339 (33.7%), respectively. In total, 59 episodes of FN (after 1.5% of total cycles) in 53 patients are encountered. Mortality occurred in only one case after FN (~2% mortality in patients with FN). As, type of cancer was associated with the risk of FN (lung cancer versus breast and colorectal cancer), data was separately analyzed for these 2 groups. In patients with breast and colorectal cancers, the independent predictors of FN were cycle of chemotherapy (Exp(B) = 0.8, P = 0.045), gender (Exp(B) = 5.2, P = 0.030) and previous history of FN (Exp(B) = 282.5, P < 0.001). On the other hand, in patients with lung cancer, the independent determinants were the site of chemotherapy administration (inpatient versus outpatient, Exp(B)=52.6, P = 0.001), CRP levels (Exp(B) = 3.1, P = 0.038), and again, previous history of FN (Exp(B) = 81.6, P < 0.001).
**Conclusions:** In patients with common cancers and in daily practice, type of cancer is important as different predictors of FN seem to be influential. Notably, CRP levels and gender appear to be predictive. Some of the predictors from this study are novel, and can well help stratify patients according to their FN risk. We are working to produce a handy nomogram to be used by the clinicians. In addition, we are starting to test our model in a new cohort of patients for validation purposes.

**3016** POSTER

**Clinical Differences of Opioids in Cancer Pain not Responding to Fentanyl Escalation**

E. Aruga[1]. [1]*Tokyo University School of Medicine, Department of Palliative Medicine, Tokyo, Japan*

**Background:** Basically morphine, oxycodone and fentanyl are considered to have similar therapeutic efficacy against cancer pain, however we often experience different pharmacological responses between these opioids. Few patients obtain insufficient analgesic response despite the dose escalation of fentanyl. The aims of this study were describe patients with poor analgesic responses and to evaluate the efficacy of opioid rotation from fentanyl to other opioid.
**Methods:** This was a retrospective chart review in 224 patients who requested consultation with the palliative care team at the Teikyo Oncology Center in Tokyo from Jan. 2010 to Dec. 2010, including 20 patients were administered fentanyl. Four patients were enrolled with poorly controlled cancer related pain [worst pain severity rated as 7 or greater on the Numeric Rating Scale (NRS)] and required opioid rotations (OR). They did not have any cancer therapies and medications concerning to reduce their pain within two weeks. Pain intensity, safety profile and opioid daily dose at baseline and after opioid rotation were evaluated on each patient.
**Results:** Pain intensity measured with NRS was markedly decreased after opioid rotation in every patient. Effective daily doses were varied from 6 to 50% lower than general equianalgesic doses of fentanyl.
**Conclusions:** These results showed opioid conversion ratio varies widely and suggest fentanyl-induced hyperalgesia and tolerance. Opioid rotation is considered the effective method to improve refractory pain, but the conversion dose should be titrated carefully based on opioids condition.

| Patient | Fentanyl | | | | Opioid rotation (OR) | | | |
|---|---|---|---|---|---|---|---|---|
| | Dose | Route | Adjuvant analgesics | Duration | NRS pre OR | Opioid post OR | Dose of opioid post OR | NRS post OR |
| 1 | 67 μg/h (iv) | iv | ketamin | 10d | 8 | Morphine (oral) | 30 mg | 0 |
| 2 | 100 μg/h (td) | td | pregabalin | 2M | 9 | Morphine (oral) | 120 mg | 2 |
| 3 | 300 μg/h (td) | td | gabapentin | 3M | 8 | Oxicodone(oral) | 30 mg | 0 |
| 4 | 100 μg/h (td) | td | gabapentin | 2M | 8 | Morphine (iv) | 10 mg | 1 |

iv: intravenous; td: transdermal.

**3017** POSTER

**Management of Chemotherapy-induced Neuropathy With 8% Capsaicin Patch − a Preliminary Case Series**

A. Bhaskar[1], J. England[1], J. Lowe[1]. [1]*Christie Foundation NHS Trust, Pain Medicine & Anaesthesia, Manchester, United Kingdom*

Chemotherapy-induced painful peripheral neuropathy is a known sequelae following treatment with agents like bortezomib, vincristine, taxols and platinum compounds. Systemic neuropathic agents and opioids have been used in its management, but adequate analgesia is not always achieved despite maximal therapy and dose escalation of opioids could be limited by unacceptable side effects. We are presenting our preliminary case series of ten patients with resistant chemotherapy-induced neuropathy who we have successfully managed using 8% capsaicin patch.
10 patients who had painful chemotherapy-induced peripheral neuropathy were treated with a single 30-minute application of 8% capsaicin patch after an hours' pre-treatment with EMLA as local anesthetic cream. The treatment was well tolerated and the burning sensation after treatment was managed with local cooling measures or small doses of short-acting opioids. Side effects like erythema, pruritus and pain were essentially at the patch application site and were self-limiting. Patients started reporting improvement in pain relief after about 24 hours and most patients reported sustained analgesia on follow-up. There was consistent reduction in pain scores and improvement in activities like walking that were previously limited by the pain. The pain relief was further validated by reduction in opioid doses and also systemic neuropathic pain medications.
Capsaicin acts on the TRPV1 receptors and an 8% capsaicin patch is being recently used for the management of peripheral neuropathic pain states. The mechanism of action is by initial hyperstimulation and then neurite degeneration; this is followed by regeneration over three to six months. There is good analgesic effect, but no change in sensory modalities like light touch, pinprick, temperature or vibration sense. Unlike the 0.075% capsaicin cream, which needs to be applied three or four times a day over several weeks, the 8% patch is a single application and could be repeated after 3 months.
Preliminary findings are very encouraging in the use of 8% capsaicin patches in the management of chemotherapy-induced neuropathy. It is efficacious, well tolerated and could reduce systemic analgesic requirements. Further studies and long-term follow-up are being carried out to further evaluate this novel therapy in the management of chemotherapy-induced painful peripheral neuropathy.

**3018** POSTER

**Treatment of Painful Bone Metastases With Magnetic Resonance Guided Focused Ultrasound**

V.G. Turkevich[1], V.V. Savelyeva[1], S.V. Kanaev[1], I.V. Dunaevsky[1], P.I. Krzhivitsky[1]. [1]*N. N. Petrov Research Institute of Oncology, Nuclear Medicine and Radiation Oncology, Saint Petersburg, Russian Federation*

**Background:** Magnetic Resonance guided Focused Ultrasound (MRgFUS) is a non-invasive treatment technique that recently has been shown to be effective for thermal ablation of a variety of benign and malignant tumours. We present here results of a clinical trial conducted in our facility. The main objective of the trial was to evaluate safety and effectiveness of MRgFUS treatment of pain caused by bone metastases.
**Material and Methods:** 31 patients with painful bone metastases were treated with MRgFUS at Petrov Research Institute of Oncology, St. Petersburg, Russia. Immediately after procedure patients were examined for any adverse events and after a brief recovery discharged. Patients were followed up on 1 and 3 days, 1 and 2 weeks, 1, 2 and 3 months post treatment. During each visit, treatment safety was evaluated by recording and assessment of device or procedure related adverse events. Effectiveness of palliation was evaluated using the standard pain scale (0-no pain/10-worst pain imaginable) and by monitoring changes in the intake of pain-relieving medications. A reduction of 2 points or more on pain scale was considered a significant response to treatment. 17 patients were male and 14 female. Mean age was 55 years old (19−76). The primary cancers were: 19 breast, 4 stomach, 2 bronchus, 2 bladder, 4 other. Targeted lesions were 14 osteolytic, 8 osteoblastic and 9 mixed. 23 were pelvis metastases, 4 were located in the humerus bone and 4 were located in the ribs.
**Results:** No significant device or procedure related adverse events were recorded. 3 patients died during the follow-up period due to disease progression, thus 3 months follow-up data includes only results of 28 patients. All patients reported significant improvement in pain with no change in their medication intake. Mean worst pain score at baseline, 1 day, 3 days, 1 week, 2 weeks, 1, 2 and 3 months post-treatment was 6.9, 6.1, 5.1, 3.5, 2.6, 1.8, 1.2 and 0.9 respectively.
**Conclusions:** MRgFUS can provide effective, safe and noninvasive palliative therapy for patients suffering from painful bone metastases.