28.4)) compared to those in the control group (median OS, 12.3 months (95% CI, 9.4–15.2), P = 0.07).
The toxicities associated with the 2nd EGFR-TKI were generally acceptable and comparable to those observed for the initial gefitinib therapy.
Conclusions: Our results indicate that a 2nd EGFR-TKI treatment can be an effective treatment option for gefitinib responders.

9088 POSTER

Erlotinib as Frontline Treatment for Elderly Patients With Advanced Non-Small-Cell Lung Cancer (NSCLC) and Non-Squamous Histology − Results of a Galician Lung Cancer Group (GGCP044/09 Study) Grupo Galego De Cancro De Pulmón (GGCP)

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Background: NSCLC is primarily a disease of older people with a median age of approximately 70 years at diagnosis. Unfortunately, these patients are often excluded form the clinical trials, or they are underrepresented. Several guidelines point out that elderly patient should receive third-generation single-agent chemotherapy. Erlotinib is an orally available, reversible inhibitor of EGFR TK activity, providing significant survival benefits as monotherapy for the 2nd-line and maintenance treatment of patients with advanced NSCLC, and with a favourable safety profile and convenient administration.
This Galician study aims to evaluate the efficacy and safety of erlotinib as first-line treatment for elderly patients with advanced NSCLC and non-squamous histology.
Material and Methods: Elderly patients, defined as ⩾70 years old, patients with stage IIIB/IV NSCLC and non-squamous histology were included in this study after providing informed consent. Erlotinib was orally administered at a dose of 150 mg daily until disease progression or intolerable toxicity.
Progression-free survival (PFS; primary objective) and overall survival (OS) were measured from time of diagnosis.
Results: A total of 25 patients were enrolled. Patient characteristics were as follows: median age 78 yrs. (ranged 70−85); 52% female; 92% adenocarcinoma (including BAC features); 84% stage IV; 48% PS ECOG 2.
Out of 20 evaluable patients, 5 had PR and 6 SD, for a response rate of 25% and a disease control rate of 55%. The median PFS was 3.9 months (95% CI: 1.4−6.4), and the median OS was 9.9 months. The most common adverse event (AE) was skin rash (36%; 12% grade 3−4) and diarrhoea (24%). 4 patients (14%) needed dose reduction and 2 patients withdrew the treatment due to grade 3 diarrhoea and eye perforation, respectively.
EGFR mutational status was available for 6 patients (24%); two patients (85 and 77 years old) harboured activating mutations: both achieved partial response, and show SLP of 23 and 14 months respectively (both ongoing).
Conclusions: The results suggest that erlotinib monotherapy is an effective and well-tolerated treatment option for elderly patients with advanced NSCLC and non-squamous histology. Response rate is similar to that achieved with chemotherapy in younger people; benefit in PFS is modest, but median OS is acceptable, specially taking into account that half of the patients had an ECOG performance status of 2. *EGFR* mutation testing should be strongly encouraged among elderly patients. Data will be updated, including a higher number of patients.

9089 POSTER

Exploratory Predictive Biomarker Assessment in the BMS099 Study of Cetuximab in NSCLC

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Background: The phase III trial BMS099 showed no significant difference in progression-free survival (PFS) and significantly higher response rate (RR) with the addition of cetuximab (C) to 1st-line taxane/carboplatin (TC) in advanced NSCLC. Median overall survival (OS) was longer, with a difference (not significant) of similar magnitude to the significant OS improvement from FLEX (cis/vin±C). Most biomarker analyses to date have shown no association with C benefit, including EGFR mutation, KRAS mutation, and EGFR amplification in both trials (20−30% of the intent to treat [ITT] populations). We analyzed Fcγ receptor (FCGR) polymorphisms in BMS099, in order to identify patients (pts) expected to mount a more potent antibody-dependent cellular cytoxicity (ADCC) response and therefore likely to derive greater benefit from C. We also profiled mRNA expression patterns on tumour samples to identify EGFR-related and novel markers that may correlate with C benefit.
Methods: FCGR2 and FCGR3 genotypes were obtained from 285/676 pts from BMS099 using Taqman Allelic Discrimination assays for H131R and F158V alleles, respectively. Affymetrix expression data for RNA extracted from formalin-fixed, paraffin-embedded tumour tissue was available for 58/676 pts. Associations between FCGR2/3 genotypes, tumour gene expression patterns and clinical efficacy data were analyzed.
Results: No significant association was observed between FCGR genotype and C benefit across endpoints explored; the FCGR3 F/F polymorphism showed a trend for improved PFS with C, conflicting with prior clinical reports (Bibeau F, J Clin Oncol 2009; Zhang W, J Clin Oncol 2007), and with in vitro data (Lopez-Albaitero, Cancer Immunol Immunother 2009) showing more effective ADCC mediation with the V/V genotype. The population evaluable for gene expression patterns was not representative of the ITT (PFS was greater in the TC arm than the C+TC arm). Potential interactions between expression, median PFS and treatment were assessed and filtered for specific correlations with C benefit. No significant interactions were observed between treatment and RR or PFS for the *AREG*, *EREG*,*TGFa* or the *EGFR* genes. Genes were identified that may predict for progression on C, however independent validation is required.
Conclusions: Exploratory biomarker analyses in BMS099 have yielded no predictive biomarker for C; efforts are ongoing to identify pts likely to benefit from anti-EGFR mAb therapy in NSCLC.

9090 POSTER

Cumulative Exposure to Bevacizumab (BV) After Induction Therapy (tx) Correlates With Increased Survival in Patients (pts) With Non-small Cell Lung Cancer (NSCLC)

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Background: In E4599, pts with 1st-line advanced NSCLC were treated with maintenance BV until progressive disease or unacceptable toxicity following 6 cycles (18 weeks) of induction phase (IP) chemotherapy (CT) + BV. The use and duration of BV post-IP varies widely in clinical practice. This analysis examines cumulative post-IP BV exposure and overall survival (OS) in pts with NSCLC in the ARIES observational cohort study (OCS), with particular emphasis on incorporating the dynamic time-varying features of treatment patterns seen in the real world.
Methods: ARIES enrolled pts with advanced NSCLC who received 1st-line BV-containing tx. Pts who began BV and CT simultaneously and were progression-free through the completion of 12−18 weeks of CT were included in the analysis. OS was measured from the end of each pt's BV+CT IP. A time-dependent Cox regression model that controls for survival bias towards pts receiving longer exposure to BV was fitted to assess the effect of cumulative BV exposure on OS, controlling for potential confounders.

Cumulative Post-IP BV cycles[a]	Post-IP Follow-up time, days	n (cycles)[b]	n (0)[c]	HR (95% Confidence Limits)
1	21	473[d]	644[d]	0.955 (0.939–0.972)
2	42	380	562	0.913 (0.881–0.945)
3	63	296	499	0.872 (0.828–0.919)
4	84	233	456	0.833 (0.777–0.893)
5	105	189	413	0.796 (0.730–0.868)
6	126	158	375	0.760 (0.685–0.844)
7	147	129	344	0.726 (0.643–0.820)
8	168	113	317	0.694 (0.604–0.797)

[a] A cycle is approximately 21 days of post-IP cumulative exposure.
[b] No. of pts who received the specified number of post-IP BV cycles by follow-up time.
[c] No. of pts having no exposure to BV by follow-up time.
[d] Example: At 21 days post-IP, 473 pts had a total of approximately 21 days of BV exposure while 644 pts had no exposure to BV.

Results: Of 1967 pts in ARIES NSCLC as of February 2011, 1213 were eligible for the analysis. This population was 51% male, 87% Caucasian, and 15% never-smoker. 13% had ECOG PS ⩾2, 71% had adenocarcinomas, and the median age was 65 (32% were age ⩾70). The median OS for pts in the analysis was 13.2 months. Across follow-up, the

hazard ratios (HRs) for OS decreased by an average of 4.5% for each additional 21-day interval of post-IP cumulative exposure to BV (Table).
Conclusions: This analysis of real-world data from the ARIES OCS suggests that incremental exposure to post-IP BV may be associated with improvements in OS in pts with advanced nonsquamous NSCLC. These data support the sustained use of maintenance BV following IP tx with CT + BV as in the E4599 protocol.

9091 POSTER

Quality of Life Assesment in Patients With Non-Small Cell Lung Cancer Patients Who Have or Have Not Received Second Line Chemotherapy

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Introduction: Advances in non-small lung cancer (NSCLC) treatment is limited. Disease progression is seen in most patients after first line chemotherapy and many patients receive second line chemotherapy.
Aim: A prospective study is planned to compare the life quality of NSCLC patients who received second line chemotherapy and those without second line chemotherapy.
Methods: EORTC QLQ-C30 Version 3.0 (Turkish version) is used to evaluate the quality of life of the patients. The questionnaire is given to the patients at baseline and repeated two times with monthly intervals.
Findings: Twenty-four of the total 40 patients entered the study received second line chemotherapy and 16 patients received only supportive care. There were no statistical difference in basal demographic and clinical features (general health condition, function and symptom scores) of the two groups. The general health status, overall function, overal symptom, physical function, role function, emotional function, social function, fatigue symptoms and pain symptoms scores were significantly better in patients who received second line chemotherapy. Cognitive function and dyspnea symptom scores were significantly better after second month in the patients who received second line chemotherapy. There were no statistical difference for nausea, vomiting, anorexia, constipation, diarrhea symptom scores between groups during the first and second month. While insomnia and financial difficulty symptoms scores were significantly better at first month in patients who received second line chemotherapy; no difference is seen in second month.
Conclusion: Our findings shows that second line chemotherapy in advanced NSCLC patients significantly improve the general quality of life when compared to only supportive care.

9092 POSTER

Efficacy of Tyrosine Kinase Inhibitor for Non-adenocarcinoma NSCLC Patients With EGFR Mutation

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Background: Lung cancer is the leading cause of cancer-related mortality. Adenocarcinoma hold a majority, and then squamous cell carcinoma about 20−30%. Nowadays, adenocarcinoma patients have many choices to chemotherapeutic agents including tyrosine kinase inhibitors(TKIs), but non-adenocarcinoma patients haven't yet. So we want to find the efficacy of TKIs in non-adenocarcinoma NSCLC.
Material and Methods: We found out 263 patients who check out EGFR mutation between January 2007 and December 2010. Forty-three patients received TKIs, ten patients have EGFR mutation. We divided two group, EGFR mutation positive and negative, there is no significant difference baseline characteristics. Most of patients are stage IV and TKI used for 2nd or 3rd line treatment mainly.
Results: The objective response rate is 72.7% (PR 54.5%, SD 18.2%) in EGFR positive group, while 34.4% in EGFR negative group. There are no PR in EGFR negative group. The result is statistically significant. ($P < 0.001$) The median PFS is 3.83 months in EGFR positive group while 1.7 months in EGFR negative group. There are also clear difference, but no statistical significance ($P = 0.97$).
Discussions: This study shows the efficacy of TKI to EGFR muatation positive patients compared with EGFR mutation negative patients in non-adenocarcinoma NSCLC. Especially, this is single center study, so the data is consistent and homogenous. We can find the possibility of TKI in non-adenocarcinoma NSCLC. It is warranted further large-scale studies.

9093 POSTER

The Role of Specific KRAS Mutation Types in Response to Treatment by EGFR Inhibitors

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Background: KRAS mutations can be found in 15 to 25% of lung cancers, frequently in adenocarcinomas and their presence is associated with smoking. The role of KRAS mutations in biological targeted therapy by EGFR inhibitors is ambiguous. While some reports clearly assigned mutated KRAS as negative prognostic factor and negative predictor, others did not confirm such notion. In our work we aimed to elucidate the role of specific type of KRAS mutation in outcome of patients with advanced NSCLC threated with EGFR-TKI therapy.
Patients and Methods: 448 patients with NSCLC were examined. 38 patients, treated with erlotinib or gefitinib were further evaluated. 30 patients were suffering from adenocarcinoma, 7 patients had squamous cell carcinoma including 1 patient with poorly diferentiated carcinoma. 37 patients were smokers and only 1 patient was never smoker. Statistical significance was scrutinized by a Log rank test at a 95% confidence level.
Results: KRAS mutation was detected in 69 patients. Among closely analysed patients, glycine to cystein substitution at codon 12 [G12C] was the most frequent type of KRAS mutation, detected in 24 cases. Outcome of patients with G12C [n = 24] and patients with other specific type of mutation [nonG12C] [n = 14] was compared. Median of TTP in the G12C group was 4.3 weeks in comparison with 9.0 weeks in the nonG12C group [p 0.009]. Median of TTP among patients with adenocarcinoma in the G12C group was 4.1 weeks in comparison with 9.0 weeks in the nonG12C group [p 0.007]. Median of OS in the G12C group was 9.3 weeks in comparison with 12.1 weeks in the nonG12C group [p 0.068], median of OS among patients with adenocarcinoma in the G12C group was 9.3 weeks in comparison with 10.6 weeks in the nonG12C group [p 0.095]. Analysis of OS was influenced by different oncological threatment after EGFR-TKI, different quality of basic supportive care and higher incidence of brain matestases in the nonG12C group.
Conclusion: G12C KRAS mutation is a strong negative predictor for EGFR-TKI threatment. Other specific types of KRAS mutation didn't prove such a negative predictive value and TTP was comparable to patients bearing wild type KRAS gene.

9094 POSTER

Phase II Study of S-1 and Vinorelbine in Patients With Advanced Non-small Cell Lung Cancer

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Background: The combination of 5-fluorouracil (5-FU) with vinorelbine has provided synergistic activity against non-small cell lung cancer (NSCLC) in experimental models. S-1 is an oral fluoropyrimidine, including a prodrug of 5-FU, tegafur. We conducted a phase II trial to evaluate the efficacy and toxicity for the combination chemotherapy of S-1 and vinorelbine in patients with advanced NSCLC.
Methods: Eligibility required ECOG performance status 0−1 and no prior therapy. Based on a phase I study, vinorelbine (20 mg/m^2) was infused on days 1 and 8, and S-1 (40 mg/m^2 twice daily) was administered on days 2 to 6 and days 9 to 13 of a 3-week cycle. The primary endpoint was response rate, and the secondary endpoints were overall survival, progression-free survival and toxicity.
Results: Among 36 patients enrolled, two withdrew consent during the first cycle. The response rate was 41% (14/34). The median survival and progression-free survival were 14.5 months and 5.5 months, respectively. Grade 3 or 4 leukocytopenia, neutropenia and anemia occurred in 33%, 56% and 6%, respectively. Grade 3 febrile neutropenia and lung infection occurred in 14% and 6%, respectively. As the most serious toxicity, pneumonitis was observed in three patients (8%).
Conclusions: This combination of S-1 and vinorelbine is both feasible and active in the treatment of patients with advanced NSCLC.