14 months). One patient awaits the evaluation scan after 10 vaccines. No objective responses were achieved. One patient with progressive disease at inclusion obtained stable disease during the vaccination course after 6 and 10 vaccines. Preliminary immunological results suggest a correlation between the patients with stable disease and immunological response. At this time 13 of the 22 treated patients are still alive and 3 are still receiving monthly DC vaccines.

Conclusion: The production of individual vaccines is feasible and the administrations of the adjuvants are manageable. This treatment with tumor lysate pulsed DC's may have a stabilizing effect on patients with NSCLC and could form a basis for future research.

9038 POSTER
Indication of surgery for patients with clinical M1 lung cancer

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Background: Usually, surgery is not indicated to treat the primary focus in patients with clinical M1 lung cancer. Some M1 patients achieve prolonged survival, although this is rare. This study was conducted to examine the indication of surgery.

Material and Methods: Of 1,334 patients who underwent total resection of the primary pulmonary focus in our hospital between October 1986 and July 2007, we retrospectively investigated information on treatment for M1 lung cancer, relapse, and prognosis in 11 (0.8%) clinical M1 patients except pulmonary metastasis.

Results: Of the 11 patients, brain metastasis was detected in 6, adrenal gland metastasis in 3, and bone metastasis in 2. Concerning the clinicopathological background of 11 patients, they consisted of 7 males and 4 females, and 8, 1, 1, and 1 patients had adenocarcinoma, squamous cell carcinoma, large cell carcinoma, and atypical carcinoid, respectively. We reviewed the prognosis in the 11 patients. The 5-year survival rate was 34%, and the median survival time (MST) was 21 months. In 10 of the 11patients, relapse was detected. The 5-year relapse-free survival rate was 18%, and the MST was 8 months. In 2 patient with adrenal gland metastasis, radiotherapy was performed. In 1 with adrenal gland metastasis and 2 with bone metastasis, surgery was conducted. However, these patients died of relapse. In 6 with brain metastasis, surgery or radiotherapy (with a g-knife) was performed. Of these, recurrent brain metastasis was detected in 4, and liver metastasis in 1. In the former, additional surgery or radiotherapy was selected. A complete response (CR) was achieved in 3 patients, and there has been no relapse. The 5-year and 10-year survival rate in the 6 patients with brain metastasis were equally 63%.

Conclusions: Therapies other than surgery may be appropriate when selecting a treatment for the primary pulmonary focus in clinical M1 cancer patients. However, in patients with brain metastasis alone, a favorable prognosis may be achieved by performing pulmonary surgery and treatment for brain metastasis. The results also suggest that, when a recurrent brain tumor is detected in clinical M1 brain metastasis patients, the positive treatment of recurrent brain metastasis prolongs survival.

9039 POSTER
Lung cancer screening with low dose spiral CT and autofluorescence bronchoscopy in high risk group

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Background: The best prgnosis for lung cancer can be expected by diagnosis at an early stage of the disease. low dose spiral CT scanning is a good tool in detecting small pulonary nodules, but not central airway lesions. Autofluorescence bronchoscopy can localize pre-malignant and early stage malignant lesions in the large central airways. but not lung parenchyme. We investigated the effectiveness of early detection of lung cancer with low dose spiral CT and autofluorescence bronchoscopy both in high risk group.

Methods: in this study, 136 participants(adult> 50years old who had smoked at least 30 pack-years or lung cancer family history) underwent prevalence screening with LDCT and autofluorescence bronchoscopy from October 2006 through september 2008.

Results: The mean age of the patients was 61.74±7.5 years. smoking history were current smoke 100, ex-smoker 32, non-smoker 32, non-smoker 4, lung cancer family history 16. During the baseline screening stage 1a BAC 1, noncalcified SPNs 20, 2GO lesions were detected by LDCT screening, 6squamous metaplasia case, 1 hyperplasia case, 1 stage 0 lung cancer case, 1 carcinoma in situ case were detected by autofluorescence bronchoscopy.

Conclusion: screening with LDCT and autofluorescence bronchoscopy seems to be a promising method for screeinbg early lung cancer in high risk group.

9040 POSTER
Short term (2-month) survival prognostication in newly-diagnosed patients with Non-Small Cell Lung Cancer

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Purpose: Accurate short-term prognosis is important in guiding therapeutic decisions but so far has been studied mainly in patients with end-stage disease. The aim of this study was to evaluate which baseline characteristics can accurately predict short-term (2-month) survival, in newly-diagnosed patients with metastatic Non Small Cell Lung Cancer (NSCLC) intended to receive first-line therapy.

Patients and Methods: One hundred one patients were studied on admission for the initiation of first-line chemotherapy. Patients' baseline demographic characteristics are depicted in the following table:

	N	%
	101	100
Males	90	89.1
Age [median (±SD)]	68 (±11.2)	
Current Smokers	78	77.2
Adenocarcinoma	58	57.4

The following clinical and laboratory parameters were recorded: sex, age, body mass index (BMI), performance status (PS), % weight loss, Mini Nutritional Assessment (MNA), smoking history, cardiovascular disease history, histologic subtype, number of metastatic sites, hemoglobin, white blood cell count, lymphocytes, platelets, albumin, calcium (levels corrected for albumin), LDH and C-reactive protein (CRP), interleukin 6 (IL-6) and interleukin 8 (IL-8) levels. A statistical analysis was then performed for the identification of the prognostic value of the aforementioned parameters.

Results: 15 patients (14.8%) died within 2 months after diagnosis. Of the studied parameters, PS, MNA, albumin, CRP, IL-6 and IL-8 were highly significant ($p < 0.01$), while hemoglobin and lymphocytes were significant ($p < 0.05$) predictors of 2-month survival.

Conclusion: Baseline characteristics could be used to predict short-term survival in newly diagnosed patients with NSCLC. This prediction may facilitate treatment decisions.

9041 POSTER
Gene expression profiles according to smoking status in early non-small cell lung cancer (NSCLC)

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Background: Approximately 10−15% of lung cancers occur in patients (pts) who never smoked. Characterization of NSCLC in non-smokers may allow better understanding of this entity and provide clues to new therapeutic targets.

Methods: Snap-frozen tumor samples from 48 NSCLC pts (42 women and 6 men; 27 non-smoking and 19 matched smoking pts) with corresponding normal lung tissue (NLT) samples from 15 and 10 pts, respectively were analyzed. Expression of 21 genes (including genes associated with smoking, kinases, growth factor receptors, transcription factors, genes indirectly involved in HPV infection pathways and others) was assessed by qRT-PCR. Reactions were carried out in microfluidic cards (TLDAs) in HT7900 cycler (*AppliedBiosystems*). Gene expression was obtained by $2^{-\Delta\Delta C_T}$ method with the raw expression data normalized against the expression of *18S, POLR2A* and *ESD*. Statistical analysis used parametric test with Bonferroni correction for multiple comparisons.

Results: Five genes were significantly overexpressed in tumors from non-smokers vs. from smokers: aryl hydrocarbon receptor (AHR; $p = 0.001$), Ras-related associated with diabetes (RRAD; $p = 5 \times 10^{-3}$), colony stimulating factor for macrophages receptor (CSF1R; $p = 0.01$), receptor 2

for TGF beta (TGFBR2; p = 0.014) and sex-determining region Y-box 9 (SOX9; p = 0.038). Tumors in non-smoking females exhibited 4-fold higher PgR expression (p < 4×10^{-4}) and 2-fold higher androgen receptor expression (AR; p < 2×10^{-4}) compared to their smoking counterparts. NLT in smokers vs. non-smokers was characterized by higher expression of AHR and RRAD (p = 0.01 and p = 7x10^{-3}; not corrected). Tumors in smokers exhibited exclusive and significant 44-fold overexpression of aldo keto-reductase (AKR1B10) in contrast to tumors in non-smokers and NLT in both smokers and non-smokers (p = 7x10^{-6}). Tumors in both smokers and non-smokers overexpressed survivin (BIRC5; more than 7-fold; p = 1x10^{-7}) and nicotine receptor for acetyl-choline subunit A6 (CHRNA6; 4-fold; p = 1x10^{-7}) compared to NLT. Expression of CHRNA6 in tumors was higher in non-smokers than in smokers (p = 0.03; not corrected). P16 (CDKN2A) was expressed at a low level in NLT in both smokers and non-smokers, however, its expression was 5-fold higher in tumors, particularly in non-smokers (p = 7×10^{-4}). Expression of TGFBR3 and TGFBR2 was lower in tumors compared to NLT. TGFBR2 expression in tumor samples was higher in non-smokers than in smokers.

Conclusions: NSCLC is characterized by a specific gene expression profile related to smoking history. Some of the analyzed genes seem to play a role in adaptive response of lung tissue to smoking insult (RRAD, AHR, SOX). The overexpression of PgR and AR in non-smoking women suggests possible hormonal dependence. Some other molecular distinct features (e.g. downregulation of RRAD, TGFR2 and TGFR3) may prompt new therapeutic strategies.

9042   POSTER

Pre-operative radiological staging (CT and PET-CT) compared with pathological staging in patients with resected non-small cell lung cancer attending a regional thoracic centre

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Background: Accurate clinical staging of NSCLC is essential in order to identify resectable patients. Clinical staging is based upon CT and more recently PET/CT in those deemed resectable. We have compared CT and PET/CT staging of NSCLC with pathological staging to determine their impact on pre-operative staging.

Materials and Methods: Patients referred from 10 hospitals (2 tertiary centres, 8 district general hospitals) that underwent lung resections at Birmingham Heartlands Hospital between August 2006 and August 2008 were identified using the pathology database. Medical records including CT and PET/CT, MDT discussions and mediastinoscopies were reviewed. Pre-operative staging using AJCC criteria was compared to pathological staging.

Results: 154 patients were identified and 135 patients were suitable for analysis. 20 patients were excluded (not NSCLC or insufficient data). The mean age of patients was 66 years (46−83); 82 were male, 53 were female. Pathological findings were correlated with CT in 124 patients and with PET/CT in 99 patients. CT correctly T staged 71 patients (57%), 30 patients (24%) were over-staged and 23 patients (19%) were under-staged. CT correctly N staged 67 patients (54%), 25 patients (20%) were over-staged and 32 patients (26%) were under-staged. CT staged 22 patients as T1N0. 15 underwent PET/CT and of these 7 were correctly staged, 3 had upstaged T staging, and 5 had a higher pathological T stage. In the 7 patients who did not undergo PET/CT, 4 had a higher pathological T stage. PET/CT ruled out metastatic disease in 4 patients. 46 (63%) were correctly N staged, 13 (13%) were over-staged (these had negative mediastinoscopy) and 11 (11%) were under-staged. No patient had inappropriate surgery.

Conclusion: Our data confirms the use of CT in T staging and PET/CT in assessing nodal and distant disease. The role of PET-CT in T1N0 disease remains unclear. Targeted mediastinoscopy was useful in 13% of patients. This data emphasises the role of multidisciplinary working in the management of NSCLC.

9043   POSTER

Computer-assisted prediction of microscopic disease extension around non-small cell lung cancer using a pathology-validated PET/CT classifier

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Background: In radiotherapy planning of non-small cell lung cancer (NSCLC), uncertainties exist about potential presence of microscopic disease extension (MDE) around the CT-visible tumor. Prior studies have shown that these additional tumor foci may extent up to 15 mm from the edge of the visible tumor. The primary aim of this study was to develop a computer-assisted prediction model to distinguish between lung cancers of limited extent (MDE absent) and extended lung cancers (MDE present).

Methods and Material: Thirty-four patients undergoing a lobectomy for treatment of NSCLC underwent CT- and PET prior to surgery. The excised lung lobes were examined at pathology for the presence of MDE. The tumor was delineated on the CT scans by an experienced radiotherapist; on the PET scans the tumor was automatically delineated using a threshold of 42% of the maximum value. Imaging features at CT (tumor volume, mean CT Hounsfield unit (HU), shape, irregularity) and at PET (tumor volume, max SUV) were semi-automatically extracted and tested for possible correlations with the presence of MDE. Tumor type (presence/absence) of adenocarcinoma was considered as well. Using multivariate logistic regression with backward feature selection, a subset of features was obtained that is associated with presence or absence of MDE. Receiver operating characteristics (ROC) analysis was performed to quantify the performance of the model.

Results: MDE was found in 18 of the 34 patients. The tumor volume and mean HU within the tumor showed weak, but statistically significant correlation with the presence of MDE (p = 0.01 for both CT and PET volume and p = 0.02 for the mean HU). Multivariate analysis yielded a two-parameter model (mean HU and tumor circularity) with ability to distinguish between presence (high HU and low circularity) and absence of MDE (area under ROC curve 0.82). At the 90% sensitivity point on the ROC curve, 14 patients were identified by the model who may be potential candidates for smaller treatment margins.

Conclusions: We developed a pathology-validated model based on pre-treatment PET/CT to stratify NSCLC patients into two groups: high-risk and low-risk of microscopic disease extension. Our results suggest that the model may reduce treatment margins in 41% of patients, but further validation in larger clinical study is required.

9044   POSTER

Curative surgery in oligometastatic non-small cell lung cancer patients

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Background: Patients (pts) with metastatic non-small cell lung cancer (NSCLC) have a poor prognosis, with a median survival (MS) usually measured in months. Chemotherapy is considered the standard of care, whereas surgery and radiotherapy are reserved for symptoms relief. Retrospective reports suggest that - in selected pts with a solitary site of metastases (SSM) - radical treatment of the primary disease as well as of the metastatic site may provide long-term survivals. The aim of this review was to investigate the outcomes and extent of adoption of this therapeutic approach.

Methods: MEDLINE search of all the studies published in English between January 1990-December 2008; and ASCO abstract database search over the period 2003−2008. Combinations of the following keywords were used: "non-small cell lung carcinoma"; "NSCLC"; "oligometastatic"; "solitary/isolated metastasis"; "metastasectomy"; "adrenalectomy"; "brain/adrenal/lung metastasis". A database was created with main pt and disease characteristics, type and site of radical treatment and pt outcomes.

Results: The data of 643 oligometastatic pts were collected. Median age varied between 32−85 years. Three-hundred and fifty-eight pts presented with isolated brain lesions (group 1); 196 pts with adrenal metastases