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Diagnostic accuracy and cutoff points of Her-2/neu, Cyfra 21-1 and CEA in lung adenocarcinoma-associated malignant pleural effusions

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Background: Cytology fails to detect neoplastic cells in approximately 40–50% of malignant pleural effusions, which commonly accompany lung adenocarcinomas. Published reports of the diagnostic sensitivity of various tumor markers are inconsistent. Reports on Her-2/neu in lung adenocarcinoma-associated malignant pleural effusion, for example, differ markedly (72% vs. 10%). In addition, optimal cutoff points have not been determined. To clarify contrasting reports and maximize diagnostic efforts, we evaluated the diagnostic sensitivity, specificity and optimal cutoff points for Her-2/neu, Cyfra 21−1 and CEA in distinguishing lung adenocarcinoma-associated malignant from benign pleural effusions.
Materials and Methods: Pleural effusion samples were collected from 41 patients with lung adenocarcinoma-associated cytologically malignant effusion, and from 93 with benign conditions including tuberculosis, parapneumonic pleural effusions, congestive heart failure, and liver cirrhosis. We evaluated the diagnostic sensitivity, specificity and cutoff points for tumor markers Her-2/neu, Cyfra 21−1, and carcinoembryonic antigen (CEA) to discrimination lung adenocarcinoma-associated malignant from benign pleural effusions.
Results: Her-2/neu, Cyfra 21−1 and CEA vary in their ability to discriminate lung adenocarcinoma-associated malignant pleural effusion from benign effusion, from 79.85%, to 88.81%, to 94.03% respectively. False-positive rates of these markers in various benign effusions are 4.30%, 7.53% and 3.23% respectively. CEA combined with Cyfra 21−1 increases diagnostic sensitivity to 97.6%. The cutoff points for these markers are optimally set at 3.6 ng/mL, 60 ng/mL, and 6.0 ng/mL respectively.
Conclusions: With appropriate cutoff points, CEA provides the best current diagnostic sensitivity and specificity. Combining CEA with Cyfra 21−1 will obtain the diagnostic sensitivity near 100%.

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Dynamic MR based analysis of tumor movement in upper and mid lobe localized lung cancer

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Background: Tumor motion is a very important factor in the radiotherapy of lung cancer. Uncertainty resulting from tumor movement must be considered in 3D therapy planning especially in case of IMRT or stereotactic therapy. The aim of our dynamic MR based study was to detect tumor movements in upper and mid lobe located lung tumors.
Materials and Methods: Twenty-four patients with newly diagnosed stage II-IV lung cancer were enrolled into the study. According to tumor localization in the right S1-S3 segments 9, in the right S4-S10 segments 2, in the left S1-S3 segments 9 and in the left S4-S10 segments 4 lesions were detected. In normal treatment position individual dynamic MR examinations were performed in axial, sagittal and coronal planes (100 slices/30 s). For tumor motion analysis E-RAD PAC's® software was used.
Results: Movements of the tumor under normal breathing conditions were registered in the three main direction. The mean antero-posterior deviation was 0.109 cm (range: 0.063−0.204 cm), the mean medio-lateral deviation was 0.114 cm (range: 0.06−0.244 cm). The greatest deviation was measured in cranio-caudal direction (mean: 0.27 cm, range: 0.079−0.815 cm). The mean direction-independent deviation was 0.18 cm (range: 0.09−0.48 cm).
Conclusions: Dynamic MR is a sensitive and well tolerable method for tumor motion monitoring for high precision 3D therapy planning in lung cancer. Our results demonstrate that tumors located in the upper and mid lobes have moderate breath synchron movements. The greatest deviation should be considered in craino-caudal direction.

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Adjuvant chemotherapy inelderly patients with non small cell lung cancer (NSCLC)

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Background: Recent trials have shown significant survival benefit from adjuvant chemotherapy after resection of NSCLC. Whether elderly patients tolerate platinum-based adjuvant chemotherapy and derive the same survival advantage is unknown. This retrospective study evaluated the influence of age on survival, chemotherapy delivery and toxicity in patients with NSCLC.
Patients and Methods: Pretreatment characteristics and survival benefit from treatment were compared for patients <65 & >65. Chemotherapy delivery and toxicity were compared for 213 treated patients with NSCLC.
Results: There were 327 young and 155 elderly patients. Baseline prognostic factors by age were similar with the exception of histology (adeno 58% young, 43% elderly; squamous 32% young, 49% elderly; p = 0.001) and PS (PS 0 53% young, 41% elderly; p = 0.01). Overall survival by age showed a trend favoring the young in univariate (HR 0.77, CI 0.58−1.04, p = 0.084) and multivariate analyses (HR 0.75, CI 0.56−1.01, p = 0.059). Patients >75 years had significantly shorter survival than those aged 66−74 (HR 1.95, CI 1.11−3.41, p = 0.02). Overall survival for patients >65 years was significantly better with chemotherapy vs observation (HR 0.61, CI 0.38−0.98, p = 0.04). Chemotherapy administration and toxicity were evaluated in 63 elderly and 150 young patients. Mean dose intensities of vinorelbine (V) and cisplatin (C) were 13.2 and 18.0 in the young and 9.9 and 14.1 in the elderly (V p = 0.0004; C p = 0.001). The elderly received significantly fewer doses of V (p = 0.014) and C (p = 0.006). Fewer elderly patients completed treatment and more refused treatment compared to the young (p = 0.03). There were nï significant differences in toxicities, G-CSF use or hospitalization by age group, except for myalgias and mood alteration (more frequent among the young). Six of 126 deaths (4.8%) in the young were from nonmalignant causes, vs 12 of 71 (16.9%) in the elderly (p = 0.008).
Conclusions: Én spite of receiving less chemotherapy than young patients, adjuvant chemotherapy improves overall survival in patients aged >65 years with acceptable toxicity. Adjuvant chemotherapy should not withheld from elderly patients, although patients >75 years of age require further study.

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Wait times in early-stage non small cell lung cancer (NSCLC)

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Background: Patients with early-stage (I-III) non small cell lung cancer (NSCLC) who undergo surgical resection represent a potentially-curable population. For those with high-risk disease, adjuvant chemotherapy has become a new standard of care since late 2004. However, the wait-times along this spectrum of care, and their relevance, have yet to be assessed. This study documents wait times at various resolutions of care intervals. Wait times are influenced by a complex interplay of demographic, clinical, epidemiological and system-resource dependant factors. We examine how some of these factors influence access to care, and highlight the use of different care interval definitions to report wait times.
Methods: All patients diagnosed in 2005 with NSCLC who underwent curative-intent surgery in Nova Scotia, Canada were identified through the provincial cancer registry. A retrospective chart review was conducted to abstract patient characteristics and timelines from first suspicious imaging study (detection) to adjuvant chemotherapy treatment (chemotherapy). A general linear model with stepwise selection was used to identify statistically-significant factors (P < .05) that influenced each wait time.
Results: 108 patients were identified, of whom 29 (27%) received adjuvant chemotherapy. The average wait time between detection-chemotherapy was 142 days. At this lowest resolution of care interval, Cancer Centre was the strongest predictor of wait time (Nova Scotia Cancer Centre vs Cape Breton Cancer Centre: 182 vs 60 days). At intermediate resolution of care intervals, detection-surgery and surgery-chemotherapy accounted for 94 and 55 days, respectively. For the former care interval, the strongest predictors of wait times included patient smoking history (current vs former vs never: 102 vs 85 vs 123 days) and surgeon (54–115 days range); for the latter, the strongest determinants were patient age (<60 vs >60 years: 51 vs 61 days) and medical oncologist (37−69 days range). The variables associated with wait times at high resolution of care intervals will be presented.