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Role of intraoperative ultrasound for mediastinal staging in lung cancer surgery

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Objectives: The extend of lymph node involvement in patients with non-small cell lung cancer (NSCLC) is the most important prognostic factor and influences multimodality treatment. We studied safety, accuracy and characteristics of intraoperative ultrasound (US) guided systematic mediastinal nodal dissection in patients with resected NSCLC.
Methods: Intraoperative hand held ultrasound probe was used in systematic mediastinal nodal dissection in 54 patients after radical surgery for NSCLC. Mapping of the lymph nodes by their number and station followed by histopathologic evaluation was performed. Data were compared with 58 patients who underwent lung resections and systematic mediastinal nodal dissection for NSCLC within the same time period at our institution. Statistical analysis was carried out.
Results: The surgical procedure used depended on the extent of the disease, as well as the cardiopulmonary reserve of the patients and was comparable in both groups. Operating time was prolonged for 12 (6−20) minutes in patients with US guided mediastinal nodal dissection, but number and stations of evaluated lymph nodes was significantly higher ($p > 0.001$) at the same group of patients. Skip nodal metastases were found in 24% of patients without N1 nodal involvement. Standard staging system seemed to be improved in US guided mediastinal lymphadenectomy patients. Complications rate showed no difference between analyzed groups of patients.
Conclusion: Higher number and location of analyzed mediastinal nodal stations in patients with resected NSCLC using hand held ultrasound probe suggested to be of great oncology significance. Procedure showed improved safety and higher accuracy. Our results indicate that intraoperative US may have important staging implication.

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Serum sialyl Lewisx and cytokeratin 19 fragment as a predictive factors for recurrence in patients with stage I non-small cell lung cancer

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Background: Surgical treatment is the most efficient therapy for early non-small lung cancer (NSCLC). However, even after radical surgery many patients relapse or progress to systemic disease. Recurrence was detected in approximately 40−50% of patients with NSCLC, even in stage I. If there were a reliable marker that could predict recurrence, these patients may receive aggressive therapy to improve their survival rate. This study aimed to establish the clinical significance of preoperative serum cytokeratin 19 fragment (CYFRA21−1) and Sialyl Lewisx (SLX) in patients with stage I non-small cell lung cancer.
Material and Method: The study involved 137 patients (87 male, 50 female; median age 69 years) with completely resected stage I NSCLC. SLX, carcinoembryonic antigen (CEA), squamous cell carcinoma antigen (SCC), and CYFRA21−1 were examined. Receiver operator characteristic (ROC) curves were constructed to determine prognostic cut-off values.
Results: Among 137 patients, we identified 30 patients with recurrence within 3 year or earlier. The 5-year survival rates in patients with and without recurrence were 14%, and 81%, respectively. The serum concentrations of SLX, CEA and CYFRA21−1 in the recurrence group were significantly higher than those in the non-recurrence group. The areas under the ROC curve (AUC) were 0.72, 0.65, 0.53, and 0.64 for SLX, CEA, SCC, and CYFRA21−1, respectively. The prognostic cut-off values, according to ROC curves, were 36 U/ml, 7.8 ng/ml, 1.5 ng/ml, and 3.2 ng/ml for SLX, CEA, SCC, and CYFRA21−1, respectively. A log-rank test revealed that age, performance status, T factor, SLX, CEA, SCC and CYFRA21−1 were associated with a significant survival rate. By multivariate analysis, age, performance status, SLX (risk ratio, 3.82) and CYFRA21−1 (risk ratio, 3.66) were independent prognostic factors. For patients positive for both CYFRA21−1 and SLX, the relative risk was 5.32 compared with patients who were negative for both markers. The 5-year survival rates were 80% in the group negative for both markers (n = 86); 52% in the group positive for one of the markers (n = 43); and 13% for the group positive for both markers (n = 8) ($p < 0.001$).
Conclusions: Serum SLX and CYFRA21−1 were prognostic markers for stage I NSCLC. Their combination should contribute to the classification of stage I NSCLC patients. We should consider adjuvant and neoadjuvant therapies to improve prognosis in patients positive for both tumor markers.

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Treatment of thymomas and thymic carcinomas: a retrospective review of treatment outcomes at the Tom Baker Cancer Centre from 1982 to 2004

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Background: The purpose of this retrospective cohort study was to determine the treatment outcomes of patients with thymoma or thymic carcinoma at a single tertiary care referral centre.
Materials and Methods: Patients in Southern Alberta with a pathological diagnosis of thymoma or thymic carcinoma were identified using the Alberta Cancer Board cancer registry. The patients were separated into early (1982–1998) and late (1999–2004) cohorts. Retrospective data were collected to determine if changes in patient factors, treatment factors, and/or outcome had occurred over time. The impact of these factors on overall survival (OS), disease free survival (DFS), and cause specific survival (CSS) were analyzed using the Kaplan-Meier method and Cox Proportional Hazards regression. Analyses were restricted to patients with Masaoka stage II-IV.
Results: A total of 62 patients were analyzed (thymoma n = 57, thymic carcinoma n = 5). There were fewer patients in the early cohort (n = 23) compared to the late cohort (n = 39). There were 30 stage II, 11 stage III, 17 stage IVA, and 4 stage IVB patients. Surgical extent varied from complete resection in 58% (36) to partial resection or biopsy in 42% (26). Curative intent radiation therapy to the primary tumor was delivered to 74% (46) with doses from 28−60 Gy (median dose 50 Gy) in 14−33 fractions. Curative-intent chemotherapy was used in 29% (18) with most patients (11) receiving standard CAP chemotherapy over 1−5 cycles (median 4 cycles). Sequential chemotherapy and radiation therapy was used in 22% (14) of which 64% (9) were Stage IV. The 5-yr OS for all patients was 60% (95% CI: 45.2−72.5%). There was a significant ($p = 0.034$) difference in 5-yr OS between the early group 46.0% (95% CI: 24.9−64.8%) and the late group 70.1% (95% CI: 48.4−84.1%). This finding was supported by Cox regression (HR 0.35, 95% CI: 0.12−1.05, $p = 0.061$). Using Cox regression, patients with stage III and IV were 4.7 times more likely to die by 5-yrs than stage II patients (95% CI: 1.38−16.2, $p = 0.013$). Similar findings for CSS were observed.
Conclusion: A trend towards improved 5-yr overall survival in the late cohort was seen independent of stage. This may reflect the use of multi-modality approaches to the treatment of thymic neoplasms. Our study also confirms that the most significant predictor of mortality at 5 years was Masaoka stage greater than II.

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Prognostic role of standard uptake value (SUV) on positron emission tomography with ^{18}F-fluorodeoxyglucose (FDG-PET) in malignant pleural mesothelioma (MPM)

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Background: Previous studies have suggested that baseline maximal SUV independently predicts survival in MPM. Aim of this study was to confirm these results in a series of MPM patients (pts) treated with chemotherapy.
Materials and Methods: From July 2002 to October 2006, 63 pts underwent pre-treatment FDG-PET at three different Institutions. All pts were treated with chemotherapy, mainly pemetrexed-based, and were considered for extrapleural pneumonectomy (EPP) if they had resectable disease. Quartile and median values, as well the previously reported cut-off of 10, were considered to classify pts as low vs high SUV. SUV values were analyzed according to age, gender, histology (epithelial vs. non-epithelial), IMIG stage (I-II vs. III-IV), and EORTC prognostic model (good vs. poor score). The impact of these variables on overall survival (Sv) was evaluated by univariate and multivariate analysis.
Results: Median SUV for all pts was 6.3 (with quartiles values of 4.5 and 9). No other variable was significantly related to SUV in univariate analysis. A significantly longer survival was observed in pts with epithelial histology