HRCT and B-Reader Agreement in Early Asbestos Disease

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Introduction: The accurate diagnosis of asbestos related pleural disease is requisite for surveillance of the large number of asbestos exposed persons in the general and working population. While both inter- and intra rater reliability have been shown to be poor for the ILO/NIOSH methods for the evaluation of chest radiographs, the reliability of the HRCT readers has been infrequently measured. **Objectives:** This study evaluated the ability of two NIOSH certified B-readers and three certified radiologists to independently identify the presence of pleural plaques in the lungs of 102 volunteers from an asbestos surveillance program. **Methods:** 102 chest PA and HRCT films were evaluated for the presence of pleural plaques, indicative of previous asbestos exposure. Subjects had no parenchymal involvement (NIOSH/ILO scores < 1/0). Observer agreement was measured by several statistical indices including percent disagreement, Cohen's kappa, indices of positive and negative agreement, and bias and prevalence adjusted kappa scores. **Results:** NIOSH certified B-readers had the lowest number of positive cases and the highest overall kappa values. The radiologists reading the HRCT films identified a significantly greater number of positive cases with pleural plaques but had lower kappa values. Non-adjusted kappa values when comparing B-readers indicated fair agreement ($\kappa = 0.43$), while non-adjusted values when comparing HRCT readers indicated poor to fair agreement ($0.22 \leq \kappa \leq 0.34$). For the B-readers, bias and prevalence adjusted kappa values indicated excellent agreement ($\kappa = 0.86$) and adjusted values for HRCT reader agreement was between fair and good ($0.58 \leq \kappa \leq 0.76$). **Conclusions:** In the identification of pleural plaques in this sample of presumed low exposure subjects, two experienced NIOSH certified B-readers had slightly higher indices of inter-rater agreement than the three experienced HRCT readers. Agreement among HRCT readers is an important measure in evaluation of the diagnostic capability of this method.

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The Efficacy of Influenza Vaccination in Patients with Pneumoconiosis

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BACKGROUND: Influenza vaccination is currently recommended in the patients with chronic lung disease. However, the efficacy of the influenza vaccination is not known in patients with pneumoconiosis. So, we assessed the efficacy of the influenza vaccination in patients with pneumoconiosis. **METHODS:** This study consisted of 168 patients with pneumoconiosis in our hospital. The vaccinated group consisted of eighty-two patients (mean age, 73.7 years), who received inactivated vaccine containing A/H1/N2, A/H3/N2 and B in 2001-2002 influenza season. The unvaccinated group was consisted of eighty-six patients (mean age, 73.7 years). The outcomes were respiratory symptoms (snivel, sore throat, cough, sputum, and fever elevation), hospitalization and death during the season. χ^2-test was used for statistical analyses. **RESULTS:** The incidence of snivel, sore throat, cough, sputum, and fever elevation was 26.8%, 18.3%, 19.5%, 20.8%, and 19.8% in vaccinated group, and 26.7%, 25.6%, 37.2%, 32.6%, and 15.9% in unvaccinated group, respectively (relative risk [RR] 1.00, 0.72, 0.52, 0.64, and 1.37, p=0.990, 0.254, 0.011, 0.084, and 0.297). The incidence of hospitalization was 8.5% in vaccinated group and 18.6% in unvaccinated group, respectively (RR 0.51, p=0.058). The incidence of hospitalization for pneumonia or bronchitis was 6.0% in vaccinated group and 15.1% in unvaccinated group, respectively (RR 0.41, p=0.059). In vaccinated group, no patient died in the season. In unvaccinated group, the incidence of death for all causes and death for pneumonia was 7% and 4.7%, respectively (p=0.043, and 0.141). **CONCLUTION:** The rate of hospitalization and death in the influenza season was lower in vaccinated group than in unvaccinated group. Influenza vaccination may be effective for patients with pneumoconiosis as well as other chronic lung diseases.

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Evaluation of Malignant Pleural Mesothelioma Using Morphometry and Immunohistochemistry

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Objective: To analyze the significance of morphometry and immunohistochemistry in the prognosis of malignant pleural mesothelioma. **Methods:** Histopathologic material was obtained from 51 decedents who had been diagnosed with pleural tumors in the state of Rio de Janeiro between 1979 and 2000. Pleural tumor biopsies had been routinely fixed in formaldehyde and embedded in paraffin. In 34 of these cases, there was enough material for immunohistochemistry analysis following a slightly modified ABC-method to assay for calretinin, thrombomodulin, CEA, CD15, p53 and Ki-67. The stereological method of "point-sampled intercepts" was used. **Results:** The most common histopathologic pattern of the mesotheliomas diagnosed was epithelioid (27 cases, 60%). The median survival period for mesotheliomas was 6 months and the 5-year survival rate was 3%. Using Cox proportional hazards model, only 3 variables provided additional prognostic information: female sex (median survival=4 months; p=0.04) and percents of tumor cells staining for thrombomodulin and for p53. Thrombomodulin staining of more than 3.9% mesothelioma cells, and p53 staining of 12% or more, correlated with poor survival (median=3 and 4 months, respectively, p=0.05). For Ki-67, nuclear staining of more than 17.7% of the cells indicated low survival, but the difference was not statistically significant. **Conclusions:** The identification of thrombomodulin expression and biologic features related to nuclear activity in tumor tissue from patients diagnosed with pleural mesothelioma may have clinical relevance.

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Estimates of Airborne Asbestos Fibre Concentration in Industries Associated with Risk of Asbestos-Related Disease

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Background: Estimating the intensity of asbestos exposure is important when attributing lung pathology to previous asbestos exposure from both medical and medico-legal points of view. Sporadic description of asbestos exposure for high-risk occupations has been mentioned, but there have been no recent comprehensive review of the content of asbestos in the atmosphere for occupations associated with asbestos related-diseases. **Methods:** We searched articles from several research engines and identified data on different activities over wide range of professions. We also reviewed papers, chapters in textbooks, chapters in official health and safety documents and relevant websites. References quoted in booklets and textbooks were also reviewed. The earliest manuscript was dated 1975 and the most recent document was dated 2002. **Results:** We reviewed 66 citations, papers and chapters in textbooks. We identified 189 activities in which asbestos exposure might occur. We grouped occupations into 6 categories according to the average fibre/ml concentration of asbestos fibres. Concentration of fibres for certain occupation declined over the years. The following measures reduced asbestos fibre concentration P<0.002 for each method: ventilation, dust extraction, wet processing, mechanising activities. **Conclusion:** The concentration of airborne asbestos fibres has reduced over the years according to the literature. Risk of mesothelioma continues to be present if appropriate protection for asbestos fibre inhalation does not take place. Risk of other benign and malignant asbestos-related disease will continue to be present in many countries where legislations for protection of workers handling asbestos have not been yet applied.

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Cooking and Its Effects on Respiratory Function

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This study was developed to assess the effects of the exposure to nitrogen oxides on the respiratory function of professional cooks. We analyzed 38 cooks that work in the cuisine of four hospitals in the city of Araraquara, State of São Paulo, Brazil. Three people reported asthma. We made measurements of NO_2 levels in each one of those cuisines along three periods of one week. We performed spirometry for each one of the cooks and obtained information on, years working in the same function, smoking status, age, gender, high, weight, and body mass index (BMI). Correlations between the variables analyzed in this study were assessed using Pearson Correlation Coefficients. Linear regression models were adopted to estimate the impact of predictors on pulmonary function using the forced expiratory volume in one second (FEV_1) and the average of forced expiratory flow over the middle half of the FVC (FEF_{25-75}) as dependent variables. The age of the participants varied from 25 to 64 years and 84% of them were women. The average of time working as a cook was 10 years. Seventy-one percent of the participants were non-smokers or former smokers for more than three years. NO_2 level were not associated with decreases in pulmonary function. The number of years working in cuisines was inversely and significantly associated with decreases in pulmonary function. Each five years of working in industrial cuisines were associated with decreases of 2.2% on both parameters controlling for BMI, smoking, and age. The small size of the effects may be attributed to the use of Knudson standard and the healthy state of the workers. The use of more appropriated standard for the characteristics of Brazilian people may bring up more reliable effect estimates.

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Effect of Lignite Dust on Respiratory System

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A pilot study was initiated to access possible health effects in workers of a South Greece lignite mine.In this area a severe air pollution is present with NOx ,SOx and especially fly ashes.We studied a group of 195 male workers (group A) ,age 51± 4 years - 31(16%) smokers, 22 (11%) non-smokers and 142 (73%) ex-smokers - with a mean duration of work 26±5 years and a group of 125 white colour workers (group B) ,as control group. The chest x-ray was normal. Forced expirogram test and diffusing capacity measurement for CO were performed.In group A the mean values (± 1 SD) (as % of the normal predicted value) for FVC was 73.1 ± 25.3% , for FEV_1 71.2 ± 26.5% , for T_LCO 72.0 ± 15% and for K_{CO} 78.0 ± 11.0%. Mean value of FEV_1 / FVC % was 63.3 ± 10.5%. In group A,according the ATS dyspnoea scale,41 workers(21%) were grade 0, 55 (28.2%) were grade 1, 54 (27.7%) were grade 2, 25 (12.8)% grade 3 and 20 (10.3%), all of them smokers or ex-smokers, grade 4. In group B, workers with dyspnoea of grade 3-4 were only 7 (5.6%) (P<0.001).During the day and progressive exercise , 42% of the workers A showed no evidence of either respiratory limitation or cardiac disease,24% of the workers were complained for respiratory limitation ,15% had cardiac limitation and 4% showed some evidence of peripheral vascular disease.A statistical difference of P<0.05 was found between the values of lung function tests in workers with different grades of dyspnoea. It is concluded that exposure to lignite and smoking may cause an exercise limitation in a small group of lignite mines workers. Also it was found that there was a small relationship between lung function and severity of respiratory limitation during a rest period.

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