408. Asbestos, silicosis and hypersensitivity pneumonitis

P4013
Farmer’s lung – How much farming is required? A quantitative re-evaluation of eight cases of hypersensitivity pneumonitis attributed to indoor mould exposure
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Background: Hypersensitivity pneumonitis is by definition caused by the inhalation of antigens, but limited quantitative data are available on exposure levels required to cause the disease.

Objective: To analyse exposure levels for mould spores in patients with clinical findings compatible with hypersensitivity pneumonitis and a history of indoor mould exposure.

Methods: We report eight consecutive patients diagnosed as hypersensitivity pneumonitis based on symptoms, high resolution computerized tomography, bronchoscopy, IgG findings, and self-reported mould exposure at home or work. Indoor and outdoor air samples from their dwellings or work sites were collected with slit to agar samplers, N6 Anderson samplers, and filter samplers used for quantification and outdoor air samples from their dwellings or work sites were collected with slit choscopy, IgG findings, and self-reported mould exposure at home or work. Indoor and outdoor air samples from their dwellings or work sites were collected with slit to agar samplers, N6 Anderson samplers, and filter samplers used for quantification and outdoor air samples from their dwellings or work sites were collected with slit choscopy, IgG findings, and self-reported mould exposure at home or work.

Results: We question if the lung diseases of these patients were caused by mould exposure in their indoor environments and document the need for quantitive exposure measurements when diagnosing hypersensitivity pneumonitis in patients living or working outside environments with well-documented high mould exposure levels.

P4014
Spirometric findings in asbestos-exposed subjects with pleural plaques missed by chest radiography but detected by HRCT
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Introduction: High-resolution computed tomography (HRCT) is the imaging modality of choice for detecting and quantifying lung fibrosis in patients exposed to asbestos. However, HRCT has a relatively low sensitivity in detecting pleural plaques (PP) compared to chest X-ray (CXR).

Objectives: We aimed to determine the sensitivity of HRCT in detecting PP among asbestos-exposed subjects.

Methods: A retrospective analysis of HRCT and CXR reports was performed for a group of 1075 asbestos-exposed subjects.

Results: Among these subjects, 100/1075 (9.3%) had PP only on HRCT and 975/1075 (91.7%) had PP only on CXR. When both modalities were compared, 90/975 (9.2%) had PP only on HRCT and 915/975 (94.1%) had PP only on CXR.

Conclusions: HRCT is a more sensitive modality than CXR for detecting PP among asbestos-exposed subjects. However, CXR remains an important screening tool, as HRCT may miss some PP.

P4015
Environmental exposure to asbestos-related radiological and/or functional interference in patients with clinical findings, and computed tomography findings of the quality of life
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Natural asbestos deposits found in some countries such as Turkey are main sources of environmental asbestos exposure (EAE) which may constitute a major health problem. The aim of our study was to further evaluate the asbestos-related standard radiological findings in a population with EAE with low dose computed tomography (CT).

Methods: We reasoned that if the PP missed on CXR are associated with decreased lung function, this would lend support to a wider use of HRCT in these subjects.

Results: We found that 100/1075 (9.3%) of the subjects had PP only on HRCT and 975/1075 (91.7%) had PP only on CXR. When both modalities were compared, 90/975 (9.2%) had PP only on HRCT and 915/975 (94.1%) had PP only on CXR.

Conclusions: We conclude that the lack of sensitivity of CXR in detecting PP in asbestos-exposed subjects is a matter of concern, as subjects with these abnormal findings on HRCT had decreased lung function values. This seems of special relevance among more exposed subjects.

Abstract P4014 – Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>CXR&lt;–HRCT(–)</th>
<th>CXR&lt;–HRCT(+)</th>
<th>CXR(–)HRCT(–)</th>
<th>CXR(–)HRCT(+)</th>
<th>CXR(+)HRCT(–)</th>
<th>CXR(+)HRCT(+)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVC%</td>
<td>97.7±18.5</td>
<td>92.3±16.5</td>
<td>102.7±16.9</td>
<td>96.4±18.1*</td>
<td>103.2±20.8</td>
<td>90.9±17.7*</td>
</tr>
<tr>
<td>FEV1 /FVC</td>
<td>98.6±22.8</td>
<td>90.3±19.2</td>
<td>100.1±16.9</td>
<td>90.9±20.3*</td>
<td>99.1±21.7</td>
<td>85.7±18.5*</td>
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</tbody>
</table>

*p<0.05 when comparing CXR(–)HRCT(–) to those CXR(–)HRCT(+)
P4016

Exposure characteristics of patients with different pathological types of malignant mesothelioma
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Background: Malignant mesothelioma (MM) of the pleura and peritoneum has 3 main pathological sub-types: epithelioid, sarcomatoid and biphasic with different clinical behaviour and prognosis but all related to asbestos exposure.

Aim: To identify any distinguishing characteristics of patients with different subtypes of MM that may relate to their differing clinical manifestations

Methods: All cases of MM that have been recorded in Western Australia since the first case in 1962 until 2010 were reviewed for the demographic characteristics, histological type, and asbestos exposure history.

Results: There have been 1976 (1612 males) confirmed cases of MM between 1960 and June 2011. Of those there are 237 sarcomatoid, 744 epithelioid and 367 biphasic subtypes with 519 cases not specified. Analyses were confined to cases with defined pathological sub-types. Results from univariable analyses are presented in Table 1. In a multinomial logistic regression, age at diagnosis, exposure route and topography were significantly associated with subtype.

Characteristics of MM subtypes

<table>
<thead>
<tr>
<th>Sex (Female)</th>
<th>Age at diagnosis (&lt;55)</th>
<th>Time since 1st exposure &gt;7y</th>
<th>Smoking (%)</th>
<th>Exposure type</th>
<th>Exposure route</th>
<th>Topography</th>
</tr>
</thead>
<tbody>
<tr>
<td>84.0</td>
<td>68.6 (11.9)</td>
<td>43.2 (11.9)</td>
<td>55.6</td>
<td>24.7</td>
<td>9.5</td>
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<tr>
<td>90.3</td>
<td>70.2 (9.9)</td>
<td>45.4 (11.5)</td>
<td>50.2</td>
<td>14.7</td>
<td>98.7</td>
<td></td>
</tr>
<tr>
<td>89.4</td>
<td>66.4 (11.4)</td>
<td>41.7 (11.8)</td>
<td>53.7</td>
<td>26.9</td>
<td>94.3</td>
<td></td>
</tr>
</tbody>
</table>

Conclusion: Compared to other subtypes sarcomatoid MM appears in older subjects and is less common with environmental exposure to asbestos. It is also less common in the peritoneum than pleura.

P4017

End of domestic asbestos exposure epidemic in Metsovo; N.W. Greece
Athena Gogali

Introduction: Metsovo has been exposed to tremolite asbestos from a white washed rock used by all until 1940. This exposure has resulted in frequent pleural calcifications (PCs) and a mesothelioma epidemic, fading due to abandonment of luto.

We have reported that most older Metsoveans have PCs in chest CT and asbestos bodies (ABs) in BAL. These parameters are used now in younger Metsoveans to evaluate if those not exposed are free from signs of exposure.

Materials & methods: 22 Metsoveans age 30-49 had chest CTs and 8 of them BAL. Age was chosen because it takes 30 years for PCs to appear and because they were born between 1960-80 when luto use had declined considerably giving us the possibility to evaluate Metsoveans who have lived all their life free of luto.

Previous BAL studies of 7 age matched Metsoveans were used as control. There were no similar control chest CTs. Therefore we studied all available (86) chest CTs of Metsoveans over 30.

Results: Only 32/2 had used luto (35.47,48 yo). All 8 BAL studies were negative, in contrast to the exposed control group, where 6/7 (85.7%) BAL studies showed ABs. Only one chest CT was positive for PCs (45yo: luto until 13yo). From the 86 chest CTs, 5 belonged in the 30-39 and 9 in 40-49 yo group. None of the 30-39yo group had PCs and none had used luto. There was one CT positive in the 40-49yo group (11%). He had used luto in childhood as was the case with 2/6 others of this group in which luto history was obtained.

Conclusion: There is no evidence of asbestos exposure in younger Metsoveans who have not used luto. The domestic use of this tremolite-whitewash has been the only source of asbestos in Metsovo. Its abandonment has resulted in the end of this epidemic.

P4018

Asbestos-related disease: Clinico-pathological correlation
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Introduction: The accurate diagnosis of asbestos-related diseases is important. For compensation asbestos is definately diagnosed without the aid of pathology while the diagnoses of lung cancer and mesothelioma require surgical lung biopsies. South African law makes provision for the autopsy examination of the cardio-respiratory organs of deceased miners for compensation purposes. This provides unique opportunities to correlate clinical and pathological findings.

Methods: Deceased cases assessed in-life for compensation using chest radiographs by the Asbestos Relief Trust and who had an autopsy at the National Institute for Occupational Health from May 2010 to May 2011 were studied. The in-life and autopsy diagnoses of asbestososis and its severity, mesothelioma and lung cancer were compared. Sensitivities, specificities and related values were calculated.

Results: 94 cases were studied. ARDs were diagnosed at autopsy in 78 (83%) of the cases: 47 (50%) had asbestosis, 20 (21%) mesothelioma and 15 (16%) lung cancer. Sensitivity, specificity and accuracy rates for the clinical diagnoses were 47%, 83% and 65% for asbestosis; 65%, 96% and 89% for mesothelioma and 40%, 100% and 90% for lung cancer respectively.

Discussion: Cases with slight asbestososis were more likely to be missed clinically (69%) than marked disease (42%). Many malignancies were undiagnosed in life.

These findings underline the difficulties of diagnosing ARDs and the importance of autopsies in detecting disease missed in life.

P4019

Relationship between endogenous NO and blood gas parameters in former asbestos workers
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Background: Nitric oxide is a major endogenous regulator of the vascular tone. Inhaled nitric oxide gas has been used for treatment of pulmonary arterial pressure and hypoxaemia (especially in persistent pulmonary hypertension of the newborn).

It is not known whether there is a relationship between endogenous bronchial NO concentration and blood gas parameters.

Patients and methods: 48 former asbestos workers (all non-smokers) were examined within the framework of a surveillance program. Lung function tests, blood gas analyses, diffusion capacity for CO (DL,CO), and multiple FeNO measurements (exclusive the estimation of the alveolar NO fraction CaNO) were performed.

Results: DL,CO was reduced in asbestos workers (83.4% pred. according to Cotes, 1979). The mean value of PaO2 at rest was borderline. None of the patients exhibited high FeNO values (FeNO>16.9±1.2 ppb). In contrast, CaNO was significantly increased when compared to the control group (n=43) (1.4±0.2 vs. 0.5±0.1 ppb, p<0.001).

There was a significant negative correlation between FeNO and CaNO, on the one hand and AaO2 on the other hand (rsp= -0.33, p<0.05; rsp= -0.36, p<0.05). CaNO showed a positive correlation with PaO2 (r=0.29, p<0.05).

Furthermore, a positive association was found between FeNO and DL,CO (r=0.40, p<0.05).

Conclusion: There was a significant negative correlation between FeNO and CaNO, on the one hand and AaO2 on the other hand (rsp= -0.33, p<0.05; rsp= -0.36, p<0.05). CaNO showed a positive correlation with PaO2 (r=0.29, p<0.05).

P4020

The evaluation of the relationship between malignant mesothelioma and environmental asbestos exposure in Sivas
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Objectives: Sivas province is located in the Central Anatolia where asbestos exposure is common. We aimed to study the relationship between environmental mineralogical aspects and epidemiological features of patients with MM.

Methods: In total, 219 patients with MM who were diagnosed in our hospital between 1993 and 2010 were retrospectively analyzed in terms of demographical and clinical features. Rock, soil and house plaster samples were taken from the habitats of those patients and were evaluated with optical microscopy and X-ray diffraction methods.

Results: The patients aged between 16 and 85 years (male/female ratio=1:4). Most of the patients (86%) confirmed an asbestos exposure history. The most frequent habitats of those patients and were evaluated with optical microscopy and X-ray diffraction methods.

Discussion and conclusions: The decreased values of DL,CO reflect the pulmonary fibrosis in asbestos exposed subjects. This is associated with reduced FeNO. The positive correlation between CaNO and PaO2 could be explained by local effects of NO in the alveoli. The relationship of endogenous NO blood gas parameters may be due to its vasodilative effects.
Conclusions: MM is primarily related to occupational chrystolite exposure in Sivas. However, single or combined roles and/or interactions of other fibrous and non-fibrous minerals in the etiology of MM are not yet fully understood and remain to be investigated.

P4021
Prevalence of obstructive and restrictive functional patterns in a population of environmental asbestos exposed
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Background: Tremolite is one of the six recognized types of asbestos. This material is toxic and inhaling the fibers can lead to asbestosis, lung cancer and both pleural and peritoneal mesothelioma. Resident population in the area of Lagonegro (Basilicata, Italy) has been shown to be exposed to environmental tremolite pollution, deriving from superficial rocks and asbestos caves. A branch of the ongoing health surveillance program for residents is evaluating the prevalence of obstructive or restrictive pulmonary functional patterns.

Methods: A total number of 1153 individuals were included into this study. The study group was composed by 695 residents in the tremolite-exposed area of Lagonegro (age 49.35±16.68, current smokers 121, ex-smokers 174). All the participants to the study performed a lung function test.

Results: Prevalence of obstructive disease was 0.58% in the exposed group and 2.58% in the non-exposed group (p=0.029). Only current or ex smokers showed obstructive pattern respectively 3.7% and 3.9%. Odds Ratio for obstructive disease in tremolite-exposed subjects was 2.36 (95% CI 0.079-0.708). Prevalence of restrictive disease was 5.2% in the exposed group and 5.9% in the non-exposed group (p=0.539).

Conclusions: According to our data, tremolite exposure has apparently no influence on the prevalence of functional respiratory deficit. It is necessary to follow the exposed group in time by repeated measurements.

P4022
The prevalence of silicosis in dental prosthesis technicians working in Kahramanmaras City
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Objective: The aim of our study is to determine, the presence and the frequency of occupational silicosis in dental prosthesis technicians in Kahramanmaras.

Methods and materials: The questionnaire was administered to participants prepared by the Turkish Thoracic Society for occupational and environmental lung diseases, physical examination was performed, PFT were measured, and HRCT was taken. The resulting images were evaluated independently by three readers. When at least two report as pathologic, cases were accepted as silicosis.

Result: Technicians involving the study were 82, 80 of them were male (97.5%). The mean age was 39.9±6.8, the mean pack-year of smoking was 12±4.1±3.8, the mean working period was 15.8±5.7 years. In 7 abnormal respiratory examination findings were detected. During working, 24 (29.3%) continuously, 21 (25.6%) never, 37 (45.1%) occasionally used the mask. No statistically significant difference was found between the mask usage and HRCT findings of silicosis (p>0.05) and between the symptoms in workplaces and the duration of working period (p>0.05). PFT of employees were evaluated as normal. In evaluation of HRCT, 51 (62.2%) had normal and 19 (23.2%) had radiology compatible with silicosis. The localizations of the radiological involvement were determined; only upper lobes in 12 (15.3%), only the lower lobes in 1 (5.3%), upper and middle lobes in 3 (15.8%), upper and lower lobes in 2 (10.5%) and together with the upper, middle and lower lobes in 1 (5.3%) person.

Conclusion: This study showed that dental prosthesis technicians have high risk for catching silicosis.

P4023
Silicosis caused by sandblasting in tetloko coated pan manufacturing
Nurhan Koksal, Hasan Kahraman, Nurhan Altlla, Pulmonary Diseases, Faculty of Medicine, Kahramanmaras Sutcuimam University, Kahramanmaras, Turkey

Silicosis is an occupational disease of the lungs caused by inhalation of crystalline silica and is marked by fibrotic pulmonary reaction. Sandblasting has been commonly used during abrading of jeans, glass, and metal. We presented 17 silicosis cases occurring in tetloko coated pan manufacturing. Symptoms questionnaire, pulmonary function tests, carbon monoxide diffusion test, and thorax HRCT were done. All of employees were male and mean age was 28.8±5.2 (18-41). The mean duration of working period for this job was 24.8±15.4 (9-60) months.

Table 1. Silicosis demographics

<table>
<thead>
<tr>
<th>Case</th>
<th>Age (years)</th>
<th>Smoking (pack-year)</th>
<th>Employment time (months)</th>
<th>Symptoms</th>
<th>Silicosis type</th>
<th>Current status</th>
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<tbody>
<tr>
<td>1</td>
<td>23</td>
<td>2</td>
<td>25</td>
<td>C-D</td>
<td>AS</td>
<td>NCS</td>
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<tr>
<td>2</td>
<td>32</td>
<td>–</td>
<td>60</td>
<td>S</td>
<td>CS</td>
<td>NCS</td>
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<tr>
<td>3</td>
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<td>NS</td>
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<td>5</td>
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<td>C-D-S</td>
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<td>Ex</td>
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<tr>
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<td>AC</td>
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<td>D</td>
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</table>

NCS=No symptoms, D=Disopnea, C=Cough, S=Sputum, CP=Chest pain, AS=Acute silicosis, ACS=Acylic silicosis, CS=Classical silicosis, ST=Silitocutoberculosis, NCS-No clinical symptoms, RF=Respiratory failure.

Clinically total 17 cases was evaluated, 7 cases as classic silicosis, 6 cases as classic silicosis, 3 cases as accelerated silicosis (ACS) and one case as silicotuberculosis (ST). Four cases of AS and one ST case were died during follow-up. Acute respiratory failure was present in one AS case and one ACS case. Clinical follow-up of other patients has been continued.

In view of the report, sandblasting of tetloko pan manufacturing cause silicosis. These clinical type commonly acute form and mortally was high.

P4024
Silica-induced inflammamme activation in lung epithelial cells
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Introduction and objectives: In myeloid cells the inflammasome plays a crucial role in innate immune defenses against pathogen- and danger-associated patterns such as crystalline silica. Respirable mineral particles impinge upon the lung epithelium causing irreversible damage, sustained inflammation and silicosis. In this study we investigated lung epithelial cells as a target for silica-induced inflammasome activation.

Methods: Primary mouse tracheal epithelial cells, human bronchial epithelial cells (BEAS-2B) and primary normal human bronchial epithelial cells (NHBE) were exposed to toxic but nonlethal doses of crystalline silica over time to perform functional characterization of NLRP3, caspase-1, IL-1β form functional characterization of NLRP3, caspase-1, IL-1β expression microarray, quantitative RT-PCR, BioPlex analysis, caspase-1 enzyme activity assay, western blot techniques and cytokine specific ELISA were performed.

Results: We were able to show particle uptake by lung epithelial cells, transcriptional and translational upregulation of the components of the NLRP3 intracellular platform, as well as activation of caspase-1. This activation furthermore led to maturation of pro-IL-1β to secreted IL-1β, and a significant increase in the unconventional release of alarmins such as IL-33 and HMGB1. Small interfering
RNA experiments using sNLRP3 revealed the pivotal role of the inflammasome in diminished release of pro-inflammatory cytokines, danger molecules and growth factors.

Conclusions: Our novel data indicate the presence and functional activation of the NLRP3 inflammasome by crystalline silica in human lung epithelial cells, which prolongs an inflammatory signal mediating a cadre of lung diseases.

P4025 Screening healthcare workers for Mycobacterium TB: Is QFT-G now the test of choice?
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Introduction: Quantiferon-Gold (QFT-G) is FDA approved for the diagnosis of infection with Mycobacterium tuberculosis. CDC guidelines have supported the use of QFT-G in all cases where Tuberculin Skin Test (TST) is used, including screening of healthcare workers (HCWs). We sought to establish the benefits of QFT-G in HCW screening within our own hospital practice.

Methods: In June 2010 we consecutively screened, by TST all newly employed HCWs. 41 patients over the period had full data for analysis. Country of origin and evidence of prior distant history of BCG vaccination on examination, were also documented. A TST of ≥10mm was considered a positive result and was followed by a QFT-G.

Results: 41 TST were performed, 35/41 (85.4%) had a BCG scar. TST was positive in 23/41 (56.1%). QFT-G was positive in 15/23 (65.2%). Significantly 8/23 (34.8%) TST proved to be false positives on the basis of a subsequent negative QFT-G.

Conclusion: HCWs are identified as a cohort at risk of Mycobacterium TB infection. A positive TST is presumed to be due to previous exposure. A positive QFT-G supports the diagnosis of active TB. The utility of QFT-G in HCW screening is supported.

References:

P4026 GTh heme oxygenase-1 polymorphism in beryllium-exposed dental technicians
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Background: Dental technicians (DTs) are exposed to Beryllium (Be) and other substances capable of inducing lung disease. Heme oxygenase-1 (HO-1) play a protective antioxidant role in the lung. The guanine-thymidine (GT) n repeats in the HO-1 promoter determine HO-1 induction level. Short (GT) n repeats (n = <25; S genotype) is considered as non-induced HO-1 and increases more rapidly than in long (GT) n repeats (n = ≥25; L genotype).

Aims: To evaluate the correlation of HO-1 polymorphisms to functional and exposure parameters in DTs and the protective role of HO-1 on Be Oxide (BeO) exposed A549 epithelial cells apoptosis.

Methods: 65 DTs were followed-up for 2 years by questionnaires, induced sputum (IS) particles size distribution laser analysis (Dapi 2000 Donner Tech and Pulmonary Function Tests. HO-1 genotyping was done by PCR DNA sequence (AB prism 310). A549 epithelial cell line was cultured with BeO and pretreated with Hemin and Znpp (for stimulation and inhibition of HO-1 respectively), HO-1 gene expression was evaluated in IS and A549 cells by quantitative PCR and apoptosis by TUNEL staining.

Results: Association was found between GTs and HO-1 gene expression in IS (p = 0.35 vs 0.017), the GTs ≥25 group had higher HO1 expression than the GTs<25 group (0.18;0.16 V6 vs 0.07;0.06 p= 0.007 respectively). Decrease in DLCO (Diffusion Lung CO) was associated with GT ≥25. Hemin increases the HO-1 gene expression and decreases the apoptosis levels in A549 epithelial cells while is increased by ZnPP.

Conclusions: DLCO decrease is associated with L genotype. Decrease apoptosis in BeO-exposed A549 epithelial cells by hemin may indicate a protective role of HO-1.

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P4027 Hypersensitivity pneumonitis related to Streptomyces mesophile and Penicillium chrysogenum: The usefulness of the Medical Indoor Environment Counselor (MIEC)
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Introduction: Hypersensitivity pneumonitis (HP), secondary to the inhalation of organic antigens at home are rare and the diagnosis is very often difficult without home visit. Observation: We report a case of a 55 years male patient, ex-smoker, with an allergic asthma since childhood, well controlled with inhaled corticosteroids, who developed two respiratory distresses during asthma exacerbations. HPS was suspected because of the fever (39°C), the dry cough, rapidly progressive dyspnea, chest pain and crackles. Blood gas analysis found a hypoxemia of 82 mmHg, and the CT-scan showed a few ground glass images in the upper lobes. 126 respiratory function tests showed a severe obstructive syndrome and a decrease of diffusion test. Allergological investigation: The diagnosis was suspected because the symptoms were linked to domestic environment, triggered by stays in a camper. The MIEC visited the house and the camper and performed air and dust samples. Moldy woods were found in the camper. The identification of microorganisms presents on the nats, in the air and in the dust, were used for the search for precipitins in double diffusion (DD) and electrosorvetness (E). Of the 14 antigens tested, serological tests were considered significant for Streptomyces mesophile (5 bands DD, 6 bands E) and Pencillium chrysogenum (1 band DD, 4 bands E). The patient removed the nuts from his camper. Since then, he has not experienced any exacerbation.

Conclusion: This is a case of domestic HSP to Streptomyces mesophile and Penicillium chrysogenum. The MIEC’s intervention was useful for the diagnosis and the treatment.

P4028 Geochemical factors and incidence of sarcoidosis in Tomsk region
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Methods: Sarcoidosis incidence has been studied according over a 20-year period (528 patients without unhealthy working conditions). The incidence rate has been determined per 100 000 population and compared to other regions.

Results: In the mainly agricultural districts was minimal 23.5. In Seversk recurrent forms were significantly higher - 20.56 versus 10.23 in Tomsk (p < 0.01). The correlation to the incidence rates were significantly higher compared to the prevalent forms incidence in - 42.6 (r = 0.79±1.16 p < 0.05). The incidence rate has been significantly higher compared to the mean findings in region - 42.6 (r = 0.79±1.16 p < 0.05). The incidence rate has been significantly higher compared to the mean findings in region - 42.6 (r = 0.79±1.16 p < 0.05). The incidence rate has been significantly higher compared to the mean findings in region - 42.6 (r = 0.79±1.16 p < 0.05). The incidence rate has been significantly higher compared to the mean findings in region - 42.6 (r = 0.79±1.16 p < 0.05).

Conclusions: Sarcoidosis incidence is high in Tomsk region. Sarcoidosis highest incidence was found on the territories exposed to anthropogenic factors: in Seversk 67.3 (nuclear fuel industries). Under the conditions of industrial territories the incidence rate was significantly higher compared to the prevalent forms incidence in - 42.6 (r = 0.79±1.16 p < 0.05). The correlation to the incidence rates were significantly higher compared to the prevalent forms incidence in - 42.6 (r = 0.79±1.16 p < 0.05). The correlation to the incidence rates were significantly higher compared to the prevalent forms incidence in - 42.6 (r = 0.79±1.16 p < 0.05). The correlation to the incidence rates were significantly higher compared to the prevalent forms incidence in - 42.6 (r = 0.79±1.16 p < 0.05).

P4029 Exhaled airway and alveolar nitric acid in extrinsic allergic alveolitis
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Background: In extrinsic allergic alveolitis (EAA), alveolar nitric oxide (AlvNO) and the airway fraction of exhaled nitric oxide (FiNO) have not been well studied.

Methods: EAA cases were derived from a referral center and an integrated health delivery organization (IHCDO); age- and gender-matched referrals were recruited from the IHCDO. Subjects were invited to participate in home visits including spirometry (EasyOne; and Medical Technologies, Andover, MA, USA) and FiNO measurement (NO Vario, Filtz, Berlin, Germany) at 41 flow rates (50, 100, and 300 mls/sec) yielding the measured airway FiNO and the calculated FiNO. We tested differences by EAA status using the chi square, t-test, and (for FiNO and AlvNO) Wilcoxon rank sum.

Results: We completed home visits for 18 EAA cases and 106 referrals; 91 in each group (77% and 86%, respectively), yielded interpretable FEno and Alvno measurements.
results. There were no statistical differences by case vs. referent status for age (60±13 vs. 60±11 years), female sex (56% vs. 63%), or height (167±9 vs. 167±9 cm). EAA cases compared to referents had lower forced vital capacity (FVC) (3.1±1.0 L vs. 3.5±1.0 L; p<0.01) and reduced FVC % predicted (83±18 vs. 96±19%; p<0.001). Airway FE\textsubscript{Eno} was higher in cases than referents (22.5±14.1 ppb vs. 17.4±8.4 ppb; p=0.03), as was Alv\textsubscript{no} (4.1±4.9 vs. 2.7±4.9 ppb; p=0.003).

**Discussion:** Both airway FE\textsubscript{Eno} and Alv\textsubscript{no} are increased in EAA, supporting exploration of their associations with disease activity and health status.

**Clinical:** Assessing airway FE\textsubscript{Eno} and Alv\textsubscript{no} in EAA may provide insights into exposure status and disease management.

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