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TOXIC EFFECTS OF THE WORK ENVIRONMENT – A RETROSPECTIVE 5 YEARS STUDY IN THREE TEXTILE FACTORIES

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Introduction Several types of natural fibres used in textile/clothing industry causes respiratory diseases, such as: asthma, allergic rhinitis, allergic alveolitis, chronic obstructive pulmonary disease (COPD), whose number has increased constantly over the last few years. The respiratory adverse effects of professional exposure to natural fibres dust (as cotton, wool, flax, cashmere) in the textile industry was first described several centuries ago as a syndrome later called byssinosis. Then, World Health Organisation included other criterias to differentiate and to diagnose long-time respiratory disease.

Methods A number of 1180 employees from three garments factories were monitored (on the occasion of the annual medical examination), between May-September, synchronous with the professional pollutant determinations (cotton, linen, wool, carried out by the Public Health Authority of the county). Spirometry has also been performed on all employees.

Results Although the dust determinations were within the limits imposed by the local legislation in force, we found that values close to the upper limit of normal are associated with a higher concentration of respiratory pathological phenomena and changes in spirometric parameters. Increased humidity, high temperature, and low or zero airflow rates at work create more significant changes in respiratory indices, especially on the first working day of the week (Monday-morning syndrome).

Discussion The textile industry is an important sector of concentration of professional respiratory pathology. The microclimate of the workplace, the concentration and type of textile dust, as well as the personal illness history (recurrent respiratory infections, extraprofessional allergens, psychosocial factors – stress, and neuro-endocrine factors, as well as physical effort) contribute to the initiation and maintenance of physiopathological mechanisms. Cessation of exposure and correction of professional factors lead, in most cases, to remission of symptoms and improving the quality of life.

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THE ASSOCIATION BETWEEN OCCUPATIONAL ASTHMA AND SKIN SENSITISATION TO LOW-MOLECULAR WEIGHT AGENTS: A SYSTEMATIC REVIEW

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Introduction Occupational asthma is one of the most frequent forms of work-related lung disease in industrialised countries. Mounting evidence suggests that low-molecular-weight (LMW) agents, such as isocyanates and anhydrides, are linked to the development of occupational asthma through skin exposure and sensitisation. This review aimed to provide an overview of all reported LMW agents exhibiting evidence of inducing respiratory sensitisation via skin exposure.

Methods We conducted a database search with MEDLINE/PubMed and Embase. We included animal studies that

investigated the potential of LMW agents to elicit respiratory responses after airway challenge after prior skin sensitisation; epidemiological studies that evaluated the association between skin exposure to LMW agents and occupational asthma; and case reports of occupational asthma and concurrent allergic dermatitis caused by LMW agents. One person conducted the search and first screening. Two reviewers independently performed the final selection using full-text reports.

Results Of 6949 identified articles, 306 studies were included: 83 animal studies, 45 epidemiological studies, 99 case reports, 37 reviews and 38 other types of articles. The 83 animal studies concerned 36 different LMW agents, with trimellitic anhydride (TMA), toluene diisocyanate (TDI), and diphenylmethane diisocyanate (MDI) being studied most frequently, mostly in BALB/c mice, Brown Norway rats, and Hartley guinea pigs. The appraisal of the human studies is ongoing.

Discussion This systematic review summarises the recent research progress on the association between asthma and skin sensitisation to LMW agents. An improved evidence-based understanding in this field should facilitate the control of exposure to chemical sensitizers in the workplace. Moreover, this systematic review will contribute to improve our understanding of the pathogenesis of non-atopic asthma in general.

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THE SILICOSIS CASES IN DENTAL TECHNICIANS AT ISTANBUL OCCUPATIONAL DISEASES HOSPITAL

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Introduction and aim Silicosis is a kind of parenchymal lung disease caused by inhalation of crystalline silica dust due to occupational and environmental exposure. Crystalline silica is used in many industries including asphalt manufacturing, concrete production, glass manufacturing, mining, quarrying, tunnelling, sandblasting, construction areas, cement production, and also in dental laboratories. Workers and technicians employed in these industries are at the greatest risk of silicosis. In the advanced stages of silicosis, severe functional loss may lead to respiratory insufficiency and death.

This study aims to define the features of silicosis in dental technicians diagnosed at our hospital and attract attention to the occupational hazards in that field.

Method This is a descriptive study with 111 cases diagnosed with silicosis after detailed investigation including clinical situation, occupational history, smoking habits, pulmonary function test results, chest X-ray and high resolution computerised tomography findings of dental technicians between 2007–2016 at Istanbul Occupational Diseases Hospital, Turkey.

Results Mean age is 39.01±7.87 years (range 23–61). Total duration of employment is 19.80±9.07 years (range 3–48). Mean duration of work per day is 9.82±2.42 hours and median is 10 hours. While 37.8% (n=42) of them had symptoms 62.2% of cases are asymptomatic (n=69). Of the symptomatic cases, 40.5% (n=17) had exertional dyspnea, 47.6% (n=20) had cough. Mean duration of symptoms is 26.63±26.65 months (1–120 months). 38.7% (n=43) of cases are active smokers, 34.2% (n=38) are nonsmokers and 17.1% (n=19) of them were exsmokers. The mean amount of cigarettes is 12.35±7.84 pack.year (1–33 pack.year). Functionally, FEV1 is 3.29±0.83, FEV1 (%) mean value is 87.80±19.19

(bu nedir anlayamadım, yüzde ise parantez içinde yazalım). FVC mean value is 4.06 ± 0.88 ; FVC (%) mean value is 90.22 ± 16.27 . Results of FEV₁/FVC mean value is 80.98 ± 9.34 . According to ILO classification, 2.7% (n=3) of them is category 0, 42.3% (n=47) is category 1; 28.8% (n=32) is category 2% and 26.1% (n=29) is category 3. Five out of 10 cases (50.0%) with radiological major opacity are type A, the remaining five is type B.

Conclusion Silicosis is a preventable occupational disease, but it can be incurable at later stages which might lead to respiratory failure and death. The most common symptom of silicosis is exertional dyspnea. The duration of symptoms is 2 years. Category 3 and major opacities are seen at advanced stages and indicate a delayed diagnosis. We believe that taking preventive measures for risky workers such as dental technicians, monitoring in terms of disease development and providing early diagnosis is important in combating silicosis and its complications.

715 OCCUPATIONAL EXPOSURE TO TRICHLORAMINE AND TRIHALOMETHANES ADVERSE HEALTH EFFECTS IN REHABILITATION SWIMMING POOLS

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Introduction Studies have shown that employees and visitors at indoor swimming pool facilities are experiencing symptoms in the nose and throat, eye irritation and, in some cases, asthma. Due to chlorination, byproduct such as trichloramine and trihalomethanes can be present in indoor swimming pool air. This exposure has not been described in rehabilitation swimming pools that normally consists of smaller facilities and use warmer water compared to ordinary swimming pools.

Methods The occupational exposure of trichloramine and trihalomethanes in air has been studied at ten Swedish indoor swimming pool facilities. The study has also included the prevalence of ocular symptoms and symptoms and effects on the upper and lower respiratory tract. Nitrogen oxide (NO) in exhaled air has been investigated as a measure of early respiratory tract inflammation.

Results The average trichloramine concentration for personal measurements (n=17) was $23 \mu\text{g}/\text{m}^3$, varying between 1 and $76 \mu\text{g}/\text{m}^3$. Corresponding stationary measurements (n=27) performed at the pool side showed an average concentration of $30 \mu\text{g}/\text{m}^3$, varying between 1 and $140 \mu\text{g}/\text{m}^3$. A WHO reference value for trichloramine, based on stationary measurements, is set to $500 \mu\text{g}/\text{m}^3$. The levels of trihalomethanes for both personal (n=20) and stationary (n=35) measurements were less than 1% of the Swedish OEL for chloroform. Measurements of NO in exhaled air showed a change during shift when exposed (n=23) and controls (n=50) were compared.

Discussion Both personal and stationary measurements showed low levels of trichloramine and trihalomethanes. When comparing exposed and controls during shift, a difference of NO in exhaled air was noted.

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RARB GENE-POLYCYCLIC AROMATIC HYDROCARBONS INTERACTION EFFECT ON PULMONARY FUNCTION DECLINE AMONG COKE OVEN WORKERS

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Introduction Accumulating evidence indicates that gene and air pollution are associated with pulmonary function measurements. However, gene-air pollution interaction effect on pulmonary function decline remains largely unknown.

Methods A total of 1243 coke oven workers, followed up from October 2010 to October 2014, were included in the present study. Eighty-three pulmonary function strongly associated SNPs were included in the analysis. Total polycyclic aromatic hydrocarbons (ΣOH-PAHs) were determined in baseline urinary sample. Pulmonary function, forced expiratory volume in one second/forced vital capacity (FEV₁/FVC) and forced expiratory flow between 25% and 75% of vital capacity (FEF₂₅₋₇₅), was measured in 2010 and 2014 by spirometry. The decline meant that the values of pulmonary function parameters in 2010 minus the corresponding values in 2014. Multivariate linear regression model was used to evaluate gene-ΣOH-PAHs interaction effect on pulmonary function decline.

Result For RARB rs1529672, each A allele increase was associated with 0.87 (95% CI: 0.02, 1.73; p=0.045)% increased decline in FEV₁/FVC. When considering interaction of RARB rs1529672 with ΣOH-PAHs on pulmonary function decline, ΣOH-PAHs was not significantly associated with FEV₁/FVC decline in CC carrier [β (95% CI)=-0.55 (-3.80, 2.70)], but each 10-fold increase in ΣOH-PAHs was related to 3.85 (95% CI: 1.01, 6.69), and 9.44 (95% CI: 4.01, 14.87)% increased decline in FEV₁/FVC in AC, and AA carrier, respectively (P for interaction=0.0006). Similar results appeared for RARB rs1529672 and gene-ΣOH-PAHs interaction effect on FEF₂₅₋₇₅ decline.

Conclusion Our findings show that minor allele carrier of RARB rs1529672 is more susceptible to ΣOH-PAHs caused pulmonary function decline than major allele homozygote, and provide evidence for gene-ΣOH-PAHs interaction effect on pulmonary function decline.

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SERUM PROLIDASE ACTIVITY IN SILICOSIS

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Introduction Silicosis is the result of silica exposure. Many chemotactic mediators arise with toxicity resulting from exposure to silica particles and silicotic nodules occur from the