

THE EFFECT OF CIGARETTES SMOKING ON THE INDEXES OF IMMUNITY AND ACUTE PHASE REACTION IN SUBJECTS WITH OCCUPATIONAL EXPOSURE TO ORGANIC SOLVENTS

P. Moszczyński

Province Immunology Laboratory in Brzesko, Poland

SUMMARY

The study was carried out in 156 men, including 49 nonsmokers and 47 smokers who had never been exposed to chemicals, 19 nonsmokers exposed to organic solvents, and 41 smokers exposed to organic solvents. The results of toxicological analysis of air in the working place carried out in the range depending on the type of solvents used in the process of lacquering of steel cans and on the data obtained from the producer showed that the solvents contained benzene, toluene, xylene and their derivatives partly hydrogenated, paraffin hydrocarbons, olefins, naphthenes (components of painter's naphtha), monohydric and polyhydric alcohols (butanol, cyclohexanol, butyloglycol), esters (ethylglycol acetate, butyl acetate) and ketones (methyl isobutyl ketone, cyclohexanone). Measured benzene concentrations varied from 0 to 370 $\text{mg} \times \text{m}^{-3}$ (0 to 116 ppm), with arithmetic mean annual averages of about 100 $\text{mg} \times \text{m}^{-3}$ (31 ppm) in the late 1960's and less than 50 $\text{mg} \times \text{m}^{-3}$ (16 ppm) in the 1970's. In the 1980's values for the TWA were 0-38 $\text{mg} \times \text{m}^{-3}$ (0-12 ppm) with arithmetic mean averages of about 19 $\text{mg} \times \text{m}^{-3}$ (6 ppm) and for the level of benzene 0-351 $\text{mg} \times \text{m}^{-3}$ (0-110 ppm), with arithmetic mean annual averages of about 48 $\text{mg} \times \text{m}^{-3}$ (15 ppm). Phenol concentration in the urine of the workers in groups was 7.9 ± 3.5 ; 10.0 ± 5.8 ; 16.8 ± 6.2 and $18.4 \pm 9.7 \text{ mg} \times \text{l}^{-1}$ respectively. Hippuric acid concentration in the urine of the workers in groups was 496 ± 326 , 538 ± 341 , 982 ± 420 and $1107 \pm 507 \text{ mg} \times \text{l}^{-1}$ respectively.

The parameters of immunity and proteins acute phase reaction were determined, measuring the count of T, B, and „non-T, non-B” circulating lymphocytes, the concentration of immunoglobulins, lysozyme, C3c, C4, α_1 -acid glycoprotein, haptoglobin and ceruloplasmin in serum. The results of the presented study suggest the role of cigarette smoking as a co-factor in the immunological changes brought out by occupational exposure to organic solvents. This phenomenon is reflected in the changes of IgA, IgD, IgG, IgM and lysozyme in the serum, and number of circulating T cells.

Key words: tobacco smoke, solvents, lymphocytes, antibodies, complement

Address for correspondence: P. Moszczyński, Province Immunology Laboratory, Kościuszki Str. 68, 32-800 Brzesko, Poland