

PULMONARY LESIONS AND SERUM LEVELS OF SOLUBLE FAS IN FORMER HARD COAL WORKERS

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Introduction: Silica is known as a substance causing inflammation and development of respiratory fibrosis after occupational inhalation. Fas /APO-1 (CD95) and Fas Ligand (FasL) is a major mediator system that activates programmed cell death (apoptosis) and is most important for pulmonary cellular homeostasis. Another form of Fas, circulating soluble Fas (sCD95), produced by alternative mRNA splicing antagonizes the cell-surface Fas function and may offer a survival advantage to cells.

Methods: To determine the role of the Fas/FasL system in silica-induced pulmonary lesions we investigated the serum levels of sCD95 in hard coal-workers. Samples were obtained from 55 individuals presented at the IPA for an expert opinion regarding coal worker's pneumoconiosis. Serum levels of sCD95 were determined by a sandwich ELISA (Bender MedSystems, Vienna). Associated radiographic abnormalities were described and codified according to the ILO 2000 Classification System. Coal workers' pneumoconiosis was diagnosed when the profusion of small round opacities was 1/1 or greater. Individuals with carcinoma, autoimmune diseases or pulmonary congestion were excluded; the study was approved by the local Ethics Committee.

Results: Radiologic features of coal workers' pneumoconiosis were found in 34 of the 55 individuals. The age of subjects with and without silicosis was similar (mean 73.5 years; $p = 0.924$). sCD95 could be quantified in all samples; significantly higher levels were observed in individuals with radiologic signs of silicosis (914 (752-1251) vs. 632 (509-804) pg/mL, $p < 0.001$). However, there was no relationship between sCD95 serum concentrations and ILO 2000 Classification System (CS): CS-1 (n=14) 934 (723-1304); CS-2 (n=15) 857 (739-1555) and CS-3 (n=5) 983 (807-1304) pg/mL.

Conclusions: Serum sCD95 concentrations in former hard coal workers were significantly higher in individuals with silicosis than those without silicosis. However, there was no correlation with the profusion according to ILO classification. The usefulness of sCD95 for prevention and diagnosis of coalworkers pneumoconiosis needs to be established by epidemiological studies.

Key words: silicosis, apoptosis, sCD95