Respiratory Symptoms and Ventilatory Capacity in Metal Polishers

Husain, T[1], Rastogi, SK[2], Gupta, BN[2], Mathur, N[2]
[1]Sanjay Gandhi Post Graduate Institute of Medical Sciences , [2]Industrial Toxicology Research Centre

To evaluate the long term effects of metal dusts on the bronchopulmonary system and the synergistic effect of cigarette smoke, a comparative study of spirometric measurements in 104 polishers and 90 unexposed controls was carried out in 25 brass and steelware polishing industries at Moradabad in northern India. The two groups were comparable in terms of age, height, smoking habit and socio-economic status. A total of 58.6 % of the polishers had one or more respiratory symptoms, compared to only 25.5 % of the controls ($p<0.05$). Chronic cough was present in 21 polishers (20.2 %) as compared to 11.1 % of the controls. However, this difference was insignificant. Chronic phlegm was nearly three times as frequent among the polishers as among the controls (17.5 % vs 4.4 %) ($p<0.005$). The prevalence of dyspnoea of varying grades was also significantly higher (16.3 % as opposed to 4.4 %) among the exposed groups. Chronic bronchitis (6.7 %) and occupational asthma (4.8 %) were found to be confined to polishers. The polishers also experienced acute respiratory symptoms during the work shift. The prevalence of acute respiratory symptoms was recorded for cough in 19 workers (44.1 %) followed by dyspnoea in 14 workers (32.5 %) and throat irritation in 11 workers (25.5 %). Comparison of the mean values of pulmonary function parameters in the polishers and the controls showed significant differences in the smoking and non-smoking groups ($p<0.001$). The polishers exhibited significantly greater acute reductions in various lung functions over the work shift, particularly for forced expiratory flow over the 25-75 % portion of the spirogram (FEF25-75 %) FEF 25 % and FEF 50 % than did the controls. Among the exposed group, the acute changes in the lung function were found to be significantly larger in the smoking than in the non-smoking polishers. The duration of exposure showed a direct correlation with the acute fall in lung function. Polishers who were exposed to dusts of various metals for more than 10 years showed a significantly greater acute reduction in all the pulmonary functions ($p<0.001$) thereby indicating that occupational exposure to multimetals in the work environment of the polishing industry had deleterious respiratory effects.