IMMUNOTOXICITY OF WORK ENVIRONMENT EXPOSURE TO TOXIC METALS IN SOME WELDERS: IMPLICATIONS FOR OCCUPATIONAL HEALTH

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Abstract: The welding process generates fumes of toxic metals oxides and ground level ozone. Exposure to these complex mixtures may have deleterious effect on metabolic functions including the immune system. To investigate this line of thought, fifty welders and forty controls were recruited for the study. Interviewer styled questionnaire was administered for information on work history and biodata. Urine was estimated for welding related toxic metals, namely chromium, Iron, lead, manganese, zinc, nickel and lead using AA. Serum obtained from whole blood was used for the estimation of IgG, IgA, IgM, IgE and C3 by turbidmetric method and WBC of whole blood by haematology analyzer. Results were input into the computer and statistical analysis was done using Student T-test, Mann-Whitney U and Pearson correlation. There was significantly increased concentration of all the toxic metals analysed in welders compared to the control with a pronounced increased value in iron concentration P = 0.0002, There was also significant reduction in levels of WBC (P = 0.004), IgA (P = 0.001), IgM (P =0.001), C3, (P = 0.012) but not in IgG (P = 0.128), however IgE was significantly raised in the welders (P=0.02) There was positive correlation between levels of iron and reduced concentration of the immune markers. The welders studied are at increased risk of respiratory tract infections due to the depression in the immune system particularly IgA and in case of infections such as Mycobacterium tuberculosis, severity could be supported by reduced C3 and increased body iron levels. Furthermore the welders are also at risk of iron induced free radical mediated induction of lung cancer and allergic reactions

Keywords: Immunity, toxicity, toxic-metals, welders, risk, occupational health.