EVIDENCE FOR THE RISK OF PARKINSONISM AMONG WELDERS


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Manganese, an established neurotoxicant, is a common component of welding fumes. Symptoms of manganese poisoning include parkinsonism (PS). Evidence from research studies evaluating the relationship between occupational welding and PS is mixed and highly controversial.

This study investigated the prevalence of PS among 636 active male shipyard welders recruited from a local trade union membership list. Each subject was examined by a movement disorders specialist using the Unified Parkinson Disease Rating Scale motor subsection 3 (UPDRS3) without knowledge of exposure. Cases were defined as having a UPDRS3 score ≥15; this threshold corresponds to the degree of motor impairment found in early, symptomatic Parkinson's disease. Normal was defined as UPDRS3 < 6. Exposure was classified as cumulative hours of welding (=welding hours”). Prevalence ratios (PR) for PS, adjusted for age, race, smoking, and education, were calculated in relation to quartiles of welding hours.

For the entire group of welders, the prevalence estimate of PS was 13.5%. The PRs demonstrated a monotonic increase in PS with increasing cumulative welding hours. The PRs (95% confidence interval) for increasing quartiles were: 1.0 (reference), 1.3 (0.6-2.8), 1.8 (0.9-3.6), and 1.8 (0.9-3.6) (p-trend = 0.14).

Results from our ongoing epidemiological study of welders support an etiologic relation of welding exposure and PS. Further work will include a non-welding reference group, and will quantify exposure to manganese. Corroborative findings from other similar studies of welders will be needed to reach causal conclusions.

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