

Manganese Exposure and Parkinson's Disease : A Comparison Using Two Tremor Characteristics

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ABSTRACT

Parkinson's disease and manganese exposure often induce tremor modifications in humans. In the present study, we compare laser recorded index finger tremors for patients with Parkinson's disease (PD group, n=11), workers previously exposed to manganese (MN group, n=10) and control subjects (CO group, n=11). Then, for discrimination, within subject variability ratio (VR) and corrected Wobble (CW) tremor characteristics are proposed, both constructed from characteristics of Beuter and Edwards (1999,2000). According to these characteristics, the MN group stands between the CO and PD groups and the hypothesis of a continuum of tremor impairment between CO-MN-PD groups respectively is supported. Blood manganese levels at time of the experiment were available for the three groups and also at the end of the manganese exposure time for the MN group (one year before the time of the experiment). For the MN group, no correlation was found between the two available manganese blood level values. However, our results show linear relationships between blood manganese levels at the end of the manganese exposure and reliable tremor characteristics such as amplitude. For the three groups of subjects for which blood manganese levels were available at the experimental time (n=28), blood manganese levels appear to have short term effects on tremor but do not discriminate between the three groups.