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Is manganese another neurodevelopmental toxicant?

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Background and hypothesis: Manganese is a neurotoxic substance able to determine extrapyramidal disturbances in humans. Exposure to high doses for short periods of time causes a Parkinson-like intoxication that has been described in miners, ferroalloy smelters and welders. Prolonged environmental exposure to low doses may facilitate the onset of Parkinsonian disturbances in the population. Children are a susceptible subpopulation that may be more at risk for neurodevelopmental effects.

Methodology: A review of the literature on neurotoxic effects on children was planned using common electronic databases.

Results: Published retrieved articles showed that manganese exposure can impair motor and cognitive functions in children. Overall, the specific literature on manganese neurodevelopmental effects is quite limited and recent, with an increasing trend in the last few years.

Implications: Manganese overload can take place through dietary supplements, and may increase after widespread use of the gasoline additive methylcyclopentadienyl manganese tricarbonyl (MMT). It is therefore necessary to further increase and stimulate research on neurodevelopmental effects due to manganese exposure.