

# Effetti neurotossici da esposizione a basse dosi di mercurio

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## KEY WORDS

Neurotoxicity; occupational exposure; inorganic and organic mercury; dental amalgams; fish eating

## SUMMARY

**«Neurotoxic effects due to low levels of mercury exposure»** **Objectives:** To assess early effects on the Central Nervous System due to occupational exposure to low levels of inorganic mercury (Hg) in a multicenter nationwide cross-sectional study, including workers from chloro-alkali plants, chemical industry, thermometer and fluorescent lamp manufacturing. The contribution of non-occupational exposure to inorganic Hg from dental amalgams and to organic Hg from fish consumption was also considered. **Methods:** Neuropsychological and neuroendocrine functions were examined in a population of 122 workers occupationally exposed to Hg, and 196 control subjects, not occupationally exposed to Hg. Neuropsychological functions were assessed with neurobehavioral testing including vigilance, motor and cognitive function, tremor measurements, and with symptoms concerning neuropsychological and mood assessment. Neuroendocrine functions were examined with the measurement of prolactin secretion. The target population was also characterized by the surface of dental amalgams and seafish consumption. **Results:** In the exposed workers the mean urinary Hg (HgU) was  $10.4 \pm 6.9$  (median 8.3, geometric mean 8.3, range 0.2-35.2)  $\mu\text{g/g}$  creatinine, whereas in the control group the mean HgU was  $1.9 \pm 2.8$  (median 1.2, geometric mean 1.2, range 0.1-33.2)  $\mu\text{g/g}$  creatinine. The results indicated homogeneous distribution of most neurobehavioral parameters among exposed and controls. On the contrary, finger tapping ( $p < 0.01$ ) and the BAMT (Branches Alternate Movement Task) coordination test ( $p = 0.05$ ) were associated with occupational exposure, indicating an impairment in the exposed subjects. Prolactin levels resulted significantly decreased among the exposed workers, and inversely related to HgU on an individual basis ( $p < 0.05$ ). An inverse association was also observed between most neuropsychological symptoms and seafish consumption, indicating a "beneficial effect" from eating seafish. On the contrary, no effects were observed as a function of dental amalgams. **Conclusions:** In conclusion, this study supports the finding of early alterations of motor function and neuroendocrine secretion at very low exposure levels of inorganic Hg, below the current ACGIH BEI and below the most recent exposure levels reported in the literature.