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Neurotoxic Effects of Aluminium and Alzheimer's Disease: Single Photon Emission Computed Tomography (SPECT) imaging among retired foundry workers with mild cognitive impairment (MCI).

Introduction: Aluminium is a well known neurotoxic metal and in a previous study (Neurotoxicology 2002; 23:761-774) we found a probable relationship between inhalation of aluminium dusts and MCI. The present study examined SPECT in a small subgroup that accepted to perform the test.

Methods: In a cross sectional study we enrolled 29 subjects: 20 professionally exposed to Aluminium, 9 control without any known occupational exposure to the toxic metal.

We determined SPECT imaging, serum levels of Aluminium (Al-s) and Iron, blood levels of Manganese and different neurocognitive tests: Mini Mental State Examination score (MMSE-score), the time to execute the test (MMSE-Time), Clock Drawing test (CDT) and auditory event related evoked potential ERP-P300 (P300).

Results: Al-s levels in the controls were lower than 10 µg/L. ($8,6 \pm 1,5$ µg/L) and none showed SPECT hypoperfusion.

In foundry workers, Al-s levels were significantly higher ($p < 0,02$) ($12,9 \pm 1,5$ µg/L) and SPECT imaging was normal in two subjects (10%), while 18 (90%) showed some degree of cerebral hypoperfusion: 14 (70%) revealed hypoperfusion in the temporo mesial hippocampus, para hippocampal region, and frontal cortex and 4 (20%) showed hypoperfusion in the cerebral cortex.

Conclusions: Even if the small size of the studied population imposes prudence in the interpretation of the results, SPECT hypoperfusion seems to be compatible with aluminium exposure; this could be controlled implementing lifestyle/diet (physical activity, curcuma, silica enriched water) to slow the brain ageing, to reduce body burden and to chelate the metal.

Biography

Salvatore Polizzi has completed his School of Medicine in 1981, at the age of 24 years, from Turin University School of Medicine. He completed his Occupational Medicine residency program from Turin University School of Medicine in 1988. He is the director Occupational and Environmental Medicine since 1984 and of Oncological Screening Program since 2000. He has published more than 60 papers in reputed journals both national and international.

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