

## **Bilateral vestibular loss in a worker exposed to organic solvent**

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**Objectives:** The main objective of this case report is to comprehensively assess the vestibular system and its functions in a worker with long term exposition to organic solvents.

**Background:** Ototoxicity induced by organic solvents has been identified in several groups of workers, such as employees in painting industry. These ototoxic effects have been well identified as a cause of auditory dysfunction. However, very little is known on the possible influence of organic solvents on the vestibular system and its functions.

**Methods:** A 58 years old male, working as an industrial painter for over 35 years presented with complains of severe oscillopsia and unsteadiness. In the past year, this patient went from clinics to clinics without proper diagnosis. Evaluation of all six semi-circular canals using video head impulse (vHIT), evaluation of both otholith organs using cervical and ocular vestibular evoked myogenic potentials (cVEMP and oVEMP) in combination with posturography using a force platform was performed.

**Results:** The low vestibulo-ocular reflex (VOR) gain for all six semi-circular canals in addition to catch up saccades as measured by the vHIT reveals hypofunction of all semi-circular canals. The cVEMP and the oVEMP were absent bilaterally suggesting hypofunction of all otolith organs. The sway area and sway velocity were significantly higher than those of healthy controls. Finally, the frequency analysis of postural sway (wavelets analysis) revealed greater contribution of visual cues to postural control and significantly less contribution of vestibular and somatosensory cues.

**Conclusions:** This case is, to our knowledge, the first reported case of complete bilateral vestibular dysfunction and its influence on postural control and sensory dependence in a worker exposed to organic solvents. The results suggest the importance of assessing the complete vestibular function in workers exposed to organic solvents with a comprehensive vestibular test battery. Finally, our results may help in guiding vestibular rehabilitation.