Heavy metals in MS

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In a new study published recently, tissue from the MS Research Australia Brain Bank was used. Led by Associate Professor Roger Pamphlett from the University of Sydney, to study the role of heavy metal accumulation in the spinal cord of people with MS and other neurodegenerative disorders.

Motor neurons, the cells in the brain and spinal cord that control muscle function and movement, can be injured and lost in MS and often in areas not affected by lesions. One factor that may contribute to this loss is the uptake of toxic substances from the environment such as heavy metals like mercury or silver.

The research used a technique called autometallography which allows researchers to see whether heavy metals are present within cells. Associate Professor Pamphlett examined spinal cord tissue samples from people with MS, as well as people who did not have any evidence of motor neuron damage. He found that heavy metals were present in motor neurons and also in a special class of nerve cells called interneurons, which relay electrical signals between different types of nerve cells.

It was found that in the normal ageing process heavy metals accumulate in nerve cells. However, if this accumulation was too great, or if people had other risk factors it may contribute to the loss of neurons. In particular, damage to interneuron types of cells can lead to nerve loss, as these cells normally help protect nerve cells, but removing interneurons short circuits this protection leading to nerve cell loss.

The use of tissue from people with MS is key to the success of this study, as only examining nerve cells from the spinal cord, in this case, can help answer the question of whether heavy metals or other environmental toxins are having an impact on MS and other neurodegenerative disorders.