

Do spinal cord injuries cause subsequent brain damage?

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Most research on spinal cord injuries has focused on effects due to spinal cord damage and scientists have neglected the effects on brain function. University of Maryland School of Medicine (UM SOM) researchers have found for the first time that spinal cord injuries (SCI) can cause widespread and sustained brain inflammation that leads to progressive loss of nerve cells, with associated cognitive problems and depression.

The research, published recently in two articles, one in of the *Journal of Neuroscience*, the other in *Cell Cycle*, highlights the close links between spinal cord injury and loss of brain function, and suggests potential treatment to prevent such changes.

"Animal studies have shown that [traumatic brain injury](#), even mild repeated injuries, can result in progressive [brain tissue damage](#) and cognitive decline, as well as widespread brain inflammation. But little research has examined whether these problems occur after spinal cord injuries," said UM SOM anesthesiology professor and noted neurobiologist Alan Faden, MD, who led the study.

"Our studies the first to show that isolated SCI can cause progressive loss of brain cells in key brain regions," said Faden. "The brain degeneration was demonstrated in different experimental models and animals. We also have identified certain molecular mechanisms responsible for these pathological changes and shown that certain drugs can prevent these injuries, including inflammation, brain cell loss, cognitive decline and

depressive-like behaviors after injury."

"This is an important and significant advancement in our understanding of the overall effects of [spinal cord injuries](#)," said UM SOM Dean E. Albert Reece, MD, PhD, MBA. "The link between spinal trauma and [brain function](#) is now more clear, and we believe that further research in this area will offer the hope of new ways to treat this devastating trauma, and perhaps even reverse its effects on the brain."

Provided by University of Maryland

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