Enzymes link brain injury to Alzheimer's disease

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By David Douglas

NEW YORK (Reuters Health) - It's known that people who suffer a brain injury have a higher-than-normal risk of developing Alzheimer's disease, and now lab experiments suggest a reason why.

Alzheimer's disease is associated with accumulations of an abnormal protein, amyloid beta, in the brain. Traumatic brain injury triggers accumulation of enzymes required for production of amyloid-beta, researchers from Georgetown University Medical Center in Washington, DC, report in the research journal Nature Medicine.

"Past research has shown that traumatic brain injury is a risk factor for developing Alzheimer's disease -- AD -- in later life," Dr. Mark P. Burns explained to Reuters Health. Many autopsies of brains of people who suffered a traumatic brain injury "have amyloid deposits similar to those seen in

AD."

He added, "We have shown that a biochemical pathway that is active long-term in AD is activated short term in the days immediately following traumatic brain injury."

Burns and his colleagues found that blocking the enzymes in this pathway reduced the effects of brain injury in mice. "We found we could dramatically reduce the amount of brain damage that occurred," he said. "This led to a large reduction in physical disability, and a reversal of the learning problems that occurred after brain injury."

"As there is currently no treatment for traumatic brain injury," Burns concluded, "our research identifies new targets for drug therapy."

Furthermore, the drugs that inhibit the enzymes involved in amyloid beta production "are currently under evaluation in AD clinical trials, so could be quickly made available for traumatic brain injury clinical trials."

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