Vaccine slows progression of skeletal muscle disorder

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A potential vaccine for Alzheimer's disease also has been shown in mice to slow the weakening of muscles associated with inclusion body myositis, a disorder that affects the elderly.

The finding brings new hope for IBM patients with weakness, inflammation or atrophy of muscles in their fingers, wrists, forearms or quadriceps. There is no cure for IBM, nor is there an effective treatment, according to the National Institutes of Health.

"The immunization wasn't a complete fix, but it significantly slowed the deterioration of motor function in our IBM mice," said Frank LaFerla, director of UC Irvine's Institute for Brain Aging and Dementia. "I hope our discovery leads to clinical trials and, eventually, a vaccine for people suffering from or at risk for IBM."

Study results appear Wednesday, May 13, in The *Journal of Neuroscience*.

LaFerla and assistant project scientist Masashi Kitazawa tested the vaccine on 1-year-old mice with high levels of a protein called beta amyloid in their skeletal muscle tissue - a characteristic feature of IBM.

After three months of treatment, the mice were producing antibodies against beta amyloid and had less of the protein in their muscles. Levels of oligomeric beta amyloid - a more toxic form - also were reduced.

"It appears the antibodies helped remove beta amyloid or blocked its accumulation in muscle cells so they could stay healthy longer," Kitazawa said.

Immunotherapy approaches such as vaccination are being extensively studied for Alzheimer's in humans. In that disease, beta amyloid accumulates in the brain and leads to the creation of senile plaques, one of two signature Alzheimer's lesions. Although immunotherapy has shown some benefit in human clinical trials, there are significant safety concerns. For example, about 6 percent of people develop encephalitis, or brain inflammation.

LaFerla thinks it's unlikely IBM patients would develop encephalitis: "With IBM, brain integrity is not compromised like it is with Alzheimer's. We should be cautious, but there's little reason to assume IBM patients would have the same problem."

Source: University of California - Irvine