

US Department of Veterans Affairs: Reducing the Risk of Dementia

This work explores the relationship between insulin resistance and the development of cognitive impairment and dementia in older adults. The team now is examining therapeutic strategies for reducing the risk of dementia and reducing cognitive impairment.

Lead Agency:

US Department of Veterans Affairs (VA)
Veterans Health Administration (VHA)
Veterans Affairs Puget Sound Health Care System

Agency Mission:

"To care for him who shall have borne the battle and for his widow and his orphan."

Principal Investigator:

Suzanne Craft, Ph.D.
Associate Director, Geriatric Research, Education and Clinical Center
Veterans Affairs Puget Sound Health Care System
Professor of Psychiatry and Behavioral Sciences
University of Washington School of Medicine
GRECC S-182
VAPSHCS
1660 South Columbian Way
Seattle, Washington 98108

Partner Agency:

National Institute on Aging

General Description:

Dr. Craft's research program examines the relationship between Alzheimer's disease and insulin resistance, a condition in which insulin does not work efficiently, leading to diabetes, obesity, and cardiovascular disease. In one set of projects her lab investigated the specific mechanisms through which insulin resistance affected pathology related to Alzheimer's disease. Older adults received infusions of insulin designed to mimic insulin resistance, and then underwent spinal taps to measure levels of proteins thought to cause Alzheimer's disease. High insulin levels caused temporary increases in levels of these toxic proteins and markers of inflammation that have been linked to Alzheimer's disease, illustrating an important relationship between insulin resistance and Alzheimer's disease. In an ongoing study, we are examining the effect of low fat and high fat diets on Alzheimer's disease markers in older adults and patients with Alzheimer's disease. This study will provide important data about environmental factors that can modulate the risk of developing Alzheimer's disease. In other studies, we have examined how treatments for insulin resistance have therapeutic benefit for patients with Alzheimer's disease. In a pilot study, medications used to treat patients with Alzheimer's disease were shown to

benefit patients with Alzheimer's disease. In a second study, overcoming insulin resistance by providing insulin directly to the brain with a special nasal administration device resulted in improved memory and attention in patients with Alzheimer's disease. A larger clinical trial is now underway to determine whether long-term intranasal administration of insulin can benefit patients with Alzheimer's disease. Thus, her research projects have focused on important disease mechanisms that have yielded novel therapeutic approaches for this challenging disease.

Excellence: What makes this project exceptional?

These interrelated projects address important questions: How do insulin resistance and diabetes increase the risk of developing Alzheimer's disease and other dementias? Once potential mechanisms have been identified that appear to play a role in this risk, what therapies might be effective to improve the symptoms of Alzheimer's disease, or perhaps even delay or prevent its development?

Significance: How is this research relevant to older persons, populations and/or an aging society?

The importance of these questions is underscored by the current pandemic of conditions associated with insulin resistance, such as obesity, diabetes, hypertension and cardiovascular disease. The proliferation of these conditions, in the context of a rapidly aging society, may significantly increase the prevalence of dementia.

Effectiveness: What is the impact and/or application of this research to older persons?

This area offers one of the few potential approaches to preventing or at least delaying the onset of dementia, by diagnosing and treating insulin resistance prior to its onset.

Innovativeness: Why is this research exciting or newsworthy?

The approach used to address these questions is innovative, working with safe yet informative experimental models of insulin resistance in human patients that are then translated into novel therapies. The innovativeness of this work has been recognized by the National Institute of Aging, who awarded a MERIT grant for excellence in aging research to Dr. Craft. The news worthiness of this work has been acknowledged in a number of media reports, and as well as through its inclusion in an upcoming HBO series on Alzheimer's disease in March 2009.