Brain Network Decay Detected in Early Alzheimer’s

In patients with early Alzheimer’s disease, disruptions in brain networks emerge about the same time as chemical markers of the disease appear in the spinal fluid, researchers at Washington University School of Medicine in St. Louis have shown.

While two chemical markers in the spinal fluid are regarded as reliable indicators of early disease, the new study, published in JAMA Neurology, is among the first to show that scans of brain networks may be an equally effective and less invasive way to detect early disease.

“Tracking damage to these brain networks may also help us formulate a more detailed understanding of what happens to the brain before the onset of dementia,” said senior author Beau Ances, MD, PhD, associate professor of neurology and of biomedical engineering.

Diagnosing Alzheimer’s early is a top priority for physicians, many of whom believe that treating patients long before dementia starts greatly improves the chances of success.

Ances and his colleagues studied 207 older but cognitively normal research volunteers at the Charles F. and Joanne Knight Alzheimer’s Disease Research Center at Washington University. Over several years, spinal fluids from the volunteers were sampled multiple times and analyzed for two markers of early Alzheimer’s: changes in amyloid beta, the principal ingredient of Alzheimer’s brain plaques, and in tau protein, a structural component of nerve cells.

The volunteers were also scanned repeatedly using a technique called resting state functional magnetic resonance imaging (fMRI). This scan tracks the rise and fall of blood flow in different brain regions as patients rest in the scanner. Scientists use the resulting data to assess the integrity of the default mode network, a set of connections between different brain regions that becomes active when the mind is at rest.

Earlier studies by Ances and other researchers have shown that Alzheimer’s damages connections in the default mode network and other brain networks.

The new study revealed that this damage became detectable at about the same time that amyloid beta levels began to fall and tau levels started to rise in spinal fluid. The part of the default mode network most harmed by the onset of Alzheimer’s disease was the connection between two brain areas associated with memory, the posterior cingulate and medial temporal regions.

The researchers are continuing to study the connections between brain network damage and the progress of early Alzheimer’s disease in normal volunteers and in patients in the early stages of Alzheimer’s-associated dementia.

Article courtesy of Michael Purdy, Washington University School of Medicine.
U.S. Department of Health and Human Services (HHS) released the National Plan to Address Alzheimer’s Disease: 2013 Update in June, a follow-up to the initial plan released in May 2012. The update reflects national progress towards accomplishing the goals set a year ago, as well as new and revised action steps.

The plan includes: finding ways to prevent and effectively treat Alzheimer’s disease by 2025; enhancing care for Alzheimer’s patients; expanding support for people with dementia and their families; improving public awareness; and carefully tracking data to support these efforts. The Plan was developed collaboratively by experts in aging and Alzheimer’s disease from federal, state, private and non-profit organizations.

“Over the past year, the Plan has provided a framework for the progress made to relieve the burden of dementia on individuals, families, our health care system and our economy,” HHS Secretary Kathleen Sebelius said.

“Researchers are expanding their work on prevention and treatment and we are getting clinicians the tools they need to help people with the disease. By enhancing collaboration between the public and private sectors, the Plan is breaking down walls that have prevented the sharing of expertise, data and resources needed to combat the disease and provide the best care possible.”

HHS launched the widely praised website, www.alzheimers.gov to increase public awareness and connect people with a diagnosis and their caregivers with important resources. The site had more than 200,000 visits in the first ten months.

The update plan also identifies additional action steps that HHS and its partners will take. These include:

- A unified Alzheimer’s disease training curriculum for primary care providers will be developed to help deliver high-quality dementia care. Researchers will investigate avoidable hospitalization and emergency department use among those with Alzheimer’s disease and the best interventions for reducing them.
- Detection of elder abuse and neglect will be expanded through aging networks and program providers who work with the Alzheimer’s population.
- An expanded Dementia Capability Toolkit will be developed for state and local health networks to better help them provide dementia services in their communities.

For more information about Alzheimer’s disease, visit www.alzheimers.gov. To read the National Plan to Address Alzheimer’s Disease: 2013 Update, visit http://aspe.hhs.gov/daltcp/napa/NatlPlan2013.shtml

Update on Drug Treatments for AD Prevention

Have you ever wondered about the status of medications to treat or prevent Alzheimer’s disease (AD), and why so many seemingly promising drugs do not advance past clinical trials? Dr. John C. Morris, Director of the Knight ADRC and Principal Investigator of the Memory and Aging Project, shared his perspective with The Dana Foundation, a private philanthropic organization that supports brain research through grants, publications, and educational programs. Dr. Morris’ article, “Persistent Failure of ‘Disease-Modifying’ Drugs to Benefit Alzheimer Disease: Now What?” addresses three major factors behind the failure of these therapeutic agents. To read the article and learn more, visit the Dana Foundation website and article link at: https://www.dana.org/publications/Persistent_Failure_of_Disease-Modifying_Drugs_to_Benefit_Alzheimer_Disease__Now_What_/
Honors, Awards & Funding

Beau Ances, MD, PhD was promoted to Associate Professor of Neurology.

Randall J. Bateman, MD, Charles F. and Joanne Knight Distinguished Professor of Neurology, was awarded $6 million over four years from the National Institutes of Health for the Dominantly Inherited Alzheimer’s Network Trials Unit to support the first prevention trial for Alzheimer’s disease using anti-amyloid drugs.

Tammie Benzinger, MD, PhD was honored with the Friedman Center for Aging’s 2013 Kopolow Award, which recognizes stellar contributions to research in aging. Dr. Benzinger is a radiologist and leader of the Knight ADRC Imaging Core.

Matt Brier, a MD/PhD candidate in the Ances laboratory, received the best Oral Presentation Award at the Alzheimer’s Imaging preconference to the Alzheimer’s Association International Conference. His work “Functional Connectivity and Graph Theory in Preclinical Alzheimer’s Disease” was recently accepted by Neurobiology of Aging.

David Carr, MD, Department of Internal Medicine and Neurology, was chosen to receive the WUSM 2014 Distinguished Clinician Award. Carr was also appointed Clinical Director of the Division of Neurorehabilitation in the Department of Neurology. Dr. Carr continues to serve as Medical Director of The Rehabilitation Institute of St. Louis. In his new role, Dr. Carr will be responsible for coordinating clinical operations in Neuro-rehabilitation and integrating clinical activities more strongly with The Rehabilitation Institute. He will also be involved in mentoring clinical faculty and resident physicians, as well as in the development of novel clinical programs and outreach activities. Dr. Carr was also appointed the Director of the Knight ADRC African-American Outreach Satellite.

Becky Fierberg, MSW, LCSW received the 2013 Friedman Award from the Friedman Center for Aging at Washington University. The award recognizes outstanding contributions to the care of older adults.

Fierberg is a social worker at the Memory and Aging Project and coordinates the Adult Children’s Study and other research opportunities for study participants.

John C. Morris, MD was awarded the Washington University School of Medicine Second Century Award. Given annually, the award is the highest honor bestowed by the medical school and recognizes individuals whose long-term commitment and participation truly have made a difference, enabling the School of Medicine to look to the future with strength and confidence. Dr. Morris was presented the award on October 4, 2013 at the Ritz-Carlton. On October 21-23, 2013, Dr. Morris presented the keynote lecture at the 13th Eibsee Meeting on Cellular Mechanisms of Neurodegeneration in Munich, Germany. Additionally, Dr. Morris was elected to the 2013-2015 American Academy of Neurology (AAN) Board of Directors and the AAN Institute Board of Directors.

Erik Musiek, MD, PhD was promoted to Assistant Professor of Neurology.

Suzanne Schindler, MD, PhD participated in the highly competitive National Institute on Aging Summer Institute on Aging Research, held in Maryland. The institute provides the opportunity to learn more about research on aging, and only 32 participants are selected each year from a nationwide pool of applicants. Congratulations also to Dr. Schindler for passing her American Board of Psychiatry and Neurology certification exam.

Chengjie Xiong, PhD, Knight ADRC Biostatistics Core Leader, was promoted to Professor of Biostatistics.

Mark Your 2014 Calendar

Annual State of the Knight ADRC Address
Tuesday, June 10, 2014, Noon - 1:00 pm
Connor Auditorium in the Farrell Learning and Teaching Center, Washington University Medical School
Delivered by John C. Morris, MD, Director and Principal Investigator, Knight ADRC
Online Nutrition Resource Available

Healthy eating is important at any age. It can be especially valuable to support healthy cognition as you age. The National Institute on Aging offers an online nutrition resource that is full of information to help older adults make good food choices every day. Explore What’s On Your Plate? for videos and practical tips to help older adults live healthy lives. The dynamic website features topics like:

- recommended eating plans
- shopping for food that’s good for you, even on a tight budget
- safely preparing, handling, and storing food
- printable resources to use on-the-go or share with others

Check it out online at: http://www.nia.nih.gov/health/publication/whats-your-plate

Do You Know Someone with Memory Problems?

Memory disorders are increasingly common as our population ages. At present, we have only a limited understanding of the difference between age-related memory complaints and memory deficits caused by illnesses such as Alzheimer disease. The Memory and Aging Project seeks older adult volunteers to participate in a study on memory and thinking. Volunteers must be:

- 65 years or older
- Have a general history of good health
- Have mild memory loss for one year or longer
- Able to participate in 2-3 visits on an annual basis
- Have a family member or close friend to serve as co-participant

We also welcome healthy volunteers over age 55 whose parents were unaffected by dementia and lived past age 70.

There is no cost to participate. Volunteers receive a thorough assessment of memory and thinking each year by an experienced clinician. Study procedures include a blood draw, brain imaging studies, and a lumbar puncture.

Contact Volunteer for Health, (314) 362-1000, 1-866-362-5656 toll free, vfh.wustl.edu This research is not a substitute for your regular doctor’s visits. Director: John C. Morris, MD.

Congratulations to Knight ADRC African American Advisory Board Chair Ida Goodwin Woolfolk who received the Monsanto Family YMCA Lifetime Achievement Award at the Tuxedo & Tennis Gala on November 23, 2013.

The award recognizes an individual who is committed to serving the community with dignity and integrity.

Ms. Woolfolk served the Saint Louis Public Schools for more than 38 years and is a nationally recognized consultant and speaker on diversity, stress management and communication.

Through her leadership and membership in countless service organizations, Ms. Woolfolk strives to build a better future for all.

Where in the World is the Knight ADRC?

Everywhere! Looking at the map to the left, you can see there are people all over the world visiting the Knight ADRC website to access information, resources, and training to use the Clinical Dementia Rating (CDR) assessment. The CDR is the same interview we use during your annual Memory and Aging Project (MAP) visit. The scope is impressive. Any area shaded in blue has accessed our website. Have you had a chance to visit our website? Go to http://alzheimer.wustl.edu/ to stay up-to-date with the latest Alzheimer’s research news, clinical trials, and center events of interest to you.

Mary Coats and Jan McGillick, MA, Education Director of the Alzheimer’s Association-St. Louis Chapter, pause for a photo during Mary’s retirement luncheon.
The Knight ADRC was pleased to host a group of visiting Taiwanese neurologists in July. The group was led by former Knight ADRC International Scholar Yuan-Han Yang, MD, MS, PhD. The visit also opened doors for a new partnership with the Mentality Protection Center, an outreach and education initiative of the Fo Guang Shan Buddhist Temple, St. Louis Branch.

In October, the African American Outreach Satellite and African American Advisory Board (AAAB) hosted two successful education and research awareness events. The 8th Annual Norman R. Seay Lecture featured Consuelo Wilkins, MD, Executive Director of the Meharry-Vanderbilt Alliance who presented “The Three Keys To Closing The Disparities Gap In Alzheimer’s Disease.” The event was followed by a reception sponsored by The Links, Incorporated, St. Louis Chapter. Following the Seay Lecture, the KADRC partnered again with The Links, Incorporated, St. Louis Chapter, Centene Corporation, and Home State Health Plan to host the “Alzheimer’s Disease: Unraveling the Mystery” luncheon at the Renaissance Hotel Saint Louis Airport. The event was a continuation of several strategic outreach events aimed at engaging the St. Louis African American community in memory and aging research. The event was led by AAAB Chair and community leader Ida Goodwin Woolfolk, and featured talks from John C. Morris, MD; David Carr, MD; Consuelo Wilkins, MD; Monica Parker, MD; Jocelyn Damper, Multicultural Outreach Coordinator, Alzheimer’s Association; and Sidney White and Ronald Gregory, African American Advisory Board Members and research supporters.

After an extensive renovation spanning nearly a year, the Knight ADRC welcomed the medical school community to an Open House and tour in June. Shown above at the open house (from left to right) Chancellor Mark Wrighton, PhD, John C. Morris, MD and Randall Bateman, MD.

The Knight ADRC made a strong showing in late August at the Walk to End Alzheimer’s Disease sponsored by the Alzheimer’s Association. Despite record heat for the event, we were thrilled with the overwhelming participation on the Knight ADRC / MIR Team, which included 138 walkers who raised $6,893 to fund Alzheimer services and research.

Keep up with the Knight ADRC and current research news on Facebook, Twitter, and online at http://alzheimer.wustl.edu/
HORIZONS is the newsletter of the Charles F. and Joanne Knight Alzheimer’s Disease Research Center (Knight ADRC) — a research program in the Department of Neurology, Washington University School of Medicine, funded by grants from the National Institute on Aging and private donations. The ADRC supports and promotes interdisciplinary research on Alzheimer’s Disease. The Memory & Aging Project (MAP) — the clinical research office of the Knight ADRC — provides expert clinical assessments of cognitive functioning in normal aging and dementia.

John C. Morris, MD, Director, KADRC; Director, MAP; Administration Core and Clinical Core Leader

Alison Goate, DPhil, Associate Director, KADRC; Genetics Core Leader

Eugene M. Johnson, PhD, Associate Director, KADRC

David M. Holtzman, MD, Associate Director, KADRC

Virginia Buckles, PhD, Executive Director, KADRC

Krista Moulder, PhD, Associate Executive Director, KADRC

Jason Hassenstab, PhD, Psychometric Leader

Nigel J. Cairns, PhD, FRCPath, Neuropathology Core Leader

Tammie Benzinger, MD, PhD, Imaging Core Leader

Chengjie Xiong, PhD, Data Management and Biostatistics Core Leader

Anne Fagan, PhD, Biomarker Core Leader

Andrea Denny, JD, MSSW, Education Core Leader