Issue 14

Spring 2008

COAST
CENTRAL OHIO ADDISON'S SUPPORT TEAM

COAST News

April 12 meeting

Pharmacist to speak

You'll have an opportunity to learn more about your medications at the April COAST meeting. Pharmacist Charles Knueve will be our featured speaker. Dr. Knueve and students from Ohio Northern University have been researching questions members submitted at the January meeting, as well as basic information about common Addison's medications.

Please join us at our next meeting,

1 p.m.

Saturday, April 12, 2008

at the First Church of Christ, 206 W Dayton-Yellow Springs Rd. in Fairborn. From the north, take I-70 to I-675 south, then take the Dayton-Yellow Springs exit and turn left toward the city of Fairborn. The Church is on the left after you pass Ironwood Street. If you need further directions, call Marianne at 937-554-6383.

Members are encouraged to bring a snack to share.

Family members and friends are always welcome to participate in COAST meetings.

For questions or directions, or to RSVP, please contact Betsey at 614-854-0926, or Heb30@aol.com.

Research

Cortisol's role in ground squirrel survival skills provides clues to human learning

Tests on the influence of a stress-related hormone in ground squirrels could have an impact on understanding how it influences human learning, according to a University of Chicago researcher. It may also have implications in treatment for Addison's Disease, and the importance of maintaining ideal cortisol levels.

Jill Mateo, Assistant Professor in Comparative Human Development, has found that when they perform normal survival tasks, ground squirrels learn more quickly if they have a modest amount of cortisol, a hormone produced in response to stress, than those with either high or low levels of cortisol.

In humans, cortisol production is also related to stress and is known to have an impact on learning, but that impact is not well understood, Mateo said. The research on ground squirrels could point to additional avenues of research.

In order to survive, ground squirrels must adapt quickly and learn how to navigate the dangers of their environment to find their way back to their burrows. Ground squirrel pups typically emerge from their burrows about the time they're weaned, at four weeks of age.

"Two hundred can emerge at the same time, providing a feast for predators," said

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Cortisol and Learning, continued from page 1

Mateo, who studies Belding ground squirrels, native to high elevations in the western United States. In nature, about 30 percent of pups do not survive the first two weeks above ground.

Modest levels of cortisol are apparently linked to their survival, Mateo reports in the article, "Inverted-U shape relationship between cortisol and learning in ground squirrels," published online in the journal *Neurobiology of Learning and Memory* . The "inverted U" is the shape data forms on a chart. Animals with low levels of cortisol are at the left of the inverted U, and those with high levels are at the right, while those with modest levels and higher learning are in the middle

In order to test whether animals with low levels have difficulty learning, Mateo simulated a natural setting with a maze and connected it to the squirrel's home nest box. She noninvasively altered the amount of coritsol in the pups' systems and found that those with both high and low cortisol levels took an average of 13 to 14 trials before they navigated the maze, while a control group of non-treated pups with a modest amount of cortisol needed just nine.

She tested the animals' response to danger by throwing a Frisbee over the maze and pairing it with a squirrel vocalization. After several pairings, only the call was played to see if the pups learned that it warned of an 'aerial predator.' High and low amounts of cortisol reduced the animals' ability to learn how to respond to danger.

Among humans, what research that has been done on baseline cortisol and learning has been inconclusive. Unlike with animals, researchers cannot moderate cortisol levels in humans to study its impact. However, scholars are aware of situations in which cortisol levels change due to unusual interventions and events.

For instance, in order to help women at risk of pre-term birth deliver healthy babies, doctors sometimes treat them with synthetic glucocorticoids, which alter cortisol levels. The glucocorticoids facilitate fetal lung development.

"We know almost nothing about the neurobiological implications of these treatments on cognitive development of children," she said. Animal studies have shown that these treatments can have negative effects on brain development, she said.

Additionally, little is known about the impact of low cortisol on learning among humans. Some pregnant women who are exposed to stress, such as those directly experiencing the collapse of the World Trade Center on 9/11, developed Post-Traumatic Stress Disorder and had significantly lower cortisol years later, as can their babies.

The animal tests also help to understand the potential impact of low cortisol on human learning, she said.

COAST is there for you!

The Central Ohio Addison's Support Team (COAST) was founded in the autumn of 2004. A support group of the National Adrenal Diseases Foundation (NADF), we are a group of people who want to make life better for those with Addison's Disease.

COAST does not engage in the practice of medicine. COAST is not a medical authority, nor does it claim to have medical knowledge. In all cases, COAST recommends consulting your doctor regarding treatment.

Our goals are:

- To provide a caring network to support people with Addison's Disease.
- To supply up-to-date information to people with Addison's Disease
- To help educate health professionals to have a greater awareness of Addison's Diseases, and
- To make the general public aware of Addison's Disease.

We meet four times a year, always on the second Saturday of the month. Upcoming meetings are:

April 12—Details on page on of this issue.

July 12, 2008, Family Picnic, location to be announced.

(Would you like to arrange for our picnic site? Call Heather if you know of a good, *free* place!)

To get involved in an aspect of COAST, contact us at COAST@columbus.rr.com, or call Heather at 740-964-6306.

Research

Women With Higher Levels Of DHEAS Have Better Cognitive Function

Women with naturally higher levels of the hormone precursor DHEAS were found to have better cognitive function than women with lower levels, according to a new study appearing in the March issue of the *Journal of Clinical Endocrinology & Metabolism (JCEM)*. The study revealed that cognitively intact women with higher circulating levels of DHEA (dehydroepiandrosterone) in the form of DHEA sulfate (DHEAS) performed better on tests of executive function, concentration, and working memory.

"This study provides the first evidence that DHEAS is favorably associated with cognitive function," said Dr. Susan Davis of the Monash University in Victoria, Australia, and lead author of the study. "My colleagues and I found that circulating DHEAS was significantly positively associated with a higher score for a test of executive function, and in the areas of simple concentration and working memory higher DHEAS levels were positively associated with higher scores for women with at least 12 years of education."

DHEA is a steroid precursor, which means that it is converted in the body to steroid hormones such as testosterone and estrogen. It is the most abundant circulating sex steroid in women. It is, however, absent in women with primary Addison's Disease.

Previous studies suggest that DHEA and DHEAS may have neuroprotective effects. These studies also suggest that the decline in the production of these steroids with healthy aging may contribute to neuronal dysfunction and degeneration, and thus cognitive decline.
Maintenance of cognitive function in elderly women is influenced by a number of health variables, including diabetes, hypertension, and smoking. Other studies have reported association between these factors and progression to dementia in elderly individuals. "In our study we were specifically interested in the associations between cognitive function and DHEAS, social circumstances, and leisure activities," said Dr. Davis.

For this study, "Endogenous Androgen Levels in Women across the Adult Life Span," 295 women, ages 21 to 77 (mean age 55), were recruited from an Australian community-based dataset. Each participant underwent a battery of tests known to measure a wide range of cognitive abilities, including verbal, visual, spatial and working memory, attention and concentration, speed, and accuracy. Women were excluded if they reported any health condition that might potentially adversely affect cognitive function, including Addison's Disease, which affects DHEA levels.

"DHEAS is favorably associated with cognitive function"

In addition to the DHEA and DHEAS findings, the study also found that activities such as living with other people, doing crosswords, and playing a musical instrument were positively associated with cognitive performance. Circulating DHEAS levels were not associated in this study with performance on tests of verbal and nonverbal learning and retention or focused attention.
The researchers speculate that there may be a number of explanations for their findings, including direct action of DHEA and DHEAS, DHEAS being a marker of androgen and estrogen production in women, or simply DHEA and DHEAS levels being markers of general good health.

Although DHEA and DHEAS levels decline in both men and women with age, testosterone levels are generally well maintained in men. In contrast, testosterone levels in women are only a fraction of those found naturally in men. This may mean that even small differences in adrenal pre-androgen production may make a substantial difference to a woman's overall androgen profile.

DHEA is available as an over the counter dietary supplement in the United States, and is widely used by people with adrenal insufficiency. The researchers stress that they found no evidence that taking a DHEA supplement would be at all beneficial in women with normal adrenal function. Many people with Addison's, however, report that taking DHEA helps to maintain muscle mass, and leads to a general improvement of mood, alertness, and feeling of wellness. As always, the Central Ohio Addison's Support Team (COAST) and the National Adrenal Diseases Foundation (NADF) recommend that you consult your own doctor regarding any course of treatment or medication.

This article was adapted from a press release by The Endocrine Society, available online at: http://www.endo-society.org/news/

press/2008/February-2008-News-Briefs.cfm.

Check expiration dates of emergency meds

It's spring, and time to check the expiration date(s) on your emergency injectable steroid, and to make sure any meds you may keep "just in case" are still fresh. It's easy to carry a pillbox of a day's supply in the bottom of your purse, and forget about them until needed. But will they be full-strength if and when you finally need them? Replace them today with fresh pills.

More Research

Stress Hormone Impacts Memory, Learning in Diabetic Rodents

Diabetes, which often co-occurs with Addison's Disease, is known to impair the cognitive health of people, but now scientists have identified one potential mechanism underlying these learning and memory problems. A new study in diabetic rodents finds that increased levels of a stress hormone produced by the adrenal gland disrupt the healthy functioning of the hippocampus, the region of the brain responsible for learning and short-term memory. Moreover, when levels of the adrenal glucocorticoid hormone corticosterone (also known as cortisol in humans) are returned to normal, the hippocampus recovers its ability to build new cells and regains the "plasticity" needed to compensate for injury and disease and adjust to change. While this study did not look at artificially-maintained levels of cortisol in Addison's Disease, it is just one more tiny step in understanding our disorder.

The study appears in the Feb. 17, 2008, issue of *Nature Neuroscience* and was conducted by the National Institute on Aging (NIA), part of the National Institutes of Health (NIH). NIA's Mark Mattson, Ph.D., and colleagues in the Institute's Intramural Research Program performed the study with Alexis M. Stranahan, a graduate student at Princeton University in New Jersey.

"This research in animal models is intriguing, suggesting the possibility of novel approaches in preventing and treating cognitive impairment by maintaining normal levels of glucocorticoid," said Richard J. Hodes, M.D., NIA director. "Further study will provide a better understanding of the often complex interplay between the nervous system, hormones and cognitive health."

Cortisol production is controlled by the hypothalamic-pituitary axis (HPA), a hormone-producing system involving the hypothalamus and pituitary gland in the brain and the adrenal gland located near the kidney. People with poorly controlled diabetes often have an overactive HPA axis and excessive cortisol produced by the adrenal gland. To study the interaction between elevated stress hormones and the hippocampal function, researchers tested the cognitive abilities and examined the brain tissue in animal models of rats with Type 1 diabetes (insulin deficient) and mice with Type 2 diabetes (insulin resistant).

Researchers found that diabetic animals in both models exhibited learning and memory deficits when cortisol levels were elevated due to impaired plasticity and declines in new cell growth. Returning the levels to normal, however, reversed the negative impact on the hippocampus and restored learning and memory.

"This advance in our understanding of the physiological changes caused by excessive production of cortisol may eventually play a role in preventing and treating cognitive decline in diabetes," said Mattson, who heads the NIA's Laboratory of Neurosciences. He and Stranahan explained these findings may also help explain the connection between stress-related mood disorders and diabetes found in human population studies.

The National Institutes of Health (NIH) -- *The Nation's Medical Research Agency* -- includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov. To learn how you can participate in research on Addison's Disease, visit www.clinicaltrials.gov, or call the NIH Clinical Center Patient Recruitment office at 1-800-411-1222.

This article was adapted from a press release from the National Institutes of Health.

Link to Dusty's website!

Those who read the NADF News know Dusty Hardman, the inspirational woman from Idaho who runs marathons and other ultra-distance races in spite of having Addison's Disease. Not all of us can run marathons; (in fact, some of us have a hard time getting out to the grocery store) but we can all be inspired by Dusty's amazing determination to be as healthy as . she can possibly be.

Dusty has an interesting and informative Addison's website at http://www.addisonssupport.com, and you can reach her blog from there.

All of us here at COAST wish Dusty the best in her upcoming 50-mile race!

Still more research

Naturally-produced steroids don't inhibit immune system

While corticosteroids such as prednisone and cortisone reduce inflammation, they also inhibit the body's immune system -- a person taking prescription steroids beyond the normal Addison's replacement dosage is more susceptible to infection. A research team at Michigan State University found that corticosteroids produced naturally in the body don't have this same immunosuppressive effect.

> *"It may be worthwhile for pharmaceutical companies to investigate synthesizing natural versions of the steroids."*

The healthy adrenal cortex secretes corticosteroids when a person is under stress, both psychological and physical. Cortisol (also called hydrocortisone) is the most abundant corticosteroid in the body, but it is not produced by those with Addison's Disease. These steroids' anti-inflammatory effects are well-known and pharmaceutical companies have been making versions of them for more than 50 years. But people taking steroids are warned that cuts and bruises may be slow to heal because of steroids' effects on the immune system. While most Addisonians are simply replacing the amount of steroids a healthy adrenal gland would produce, it is sometimes difficult to find that ideal replacement dose. It seems to be more common to over-replace than underdose.

The MSU discovery that the naturally-produced versions of the steroids don't affect the immune system like the pharmacological versions is the first time this has been observed.

"With the pharmacological versions of steroids, you lose some immune function," explained Pamela Fraker, MSU professor of biochemistry and molecular biology and lead scientist for the project. "With the natural versions, you retain neutrophil [a type of white blood cell] function. It may be worthwhile for pharmaceutical companies to investigate synthesizing natural versions of the steroids."

The study is reported in the online edition of the Proceedings of the National Academy of Sciences for the week of February 4, 2008.

The researcher project is supported by the National Institutes of Health and the Michigan Agricultural Experiment Station.

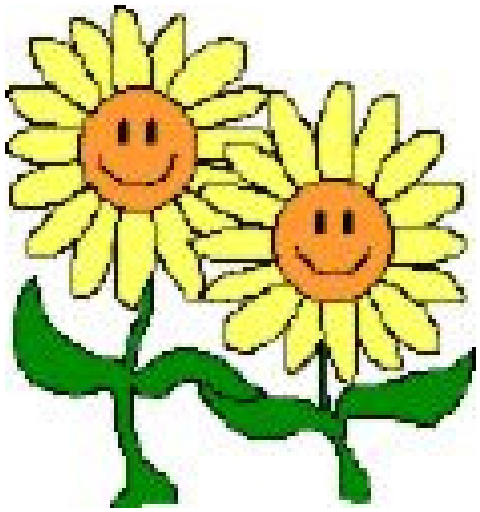
Share with others

Should you tell your employer you have Addison's Disease?

Although this issue of COAST News is primarily about research, its purpose is sharing among people with Addison's Disease. So here's something to share: Should you tell your employer that you have Addison's?

If you are employed (or you've been employed in the past) have you told your employer that you have Addison's? Why or why not? If so, did it change your employer's attitude toward you? What were the advantages or disadvantages of either telling or not telling?

Please jot down your thoughts on this subject and either email them to COAST@columbus.rr.com, or mail them to 97 Lawrin Court, SW, Pataskala, OH 43062. We'll publish them in the summer issue of COAST News. Thanks!



Have a Healthy Spring!

COAST
CENTRAL OHIO ADDISON'S SUPPORT TEAM

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Next COAST Meeting:

1 p.m. Saturday, April 12, 2008

Pass the Salt, Please!

Supreme Spinach

It's spring! It's time for warmer days and lighter meals. And no one wants to spend time in the kitchen when the daffodils are blooming, warm breezes are blowing, and newly–arrived birds and butterflies are flitting around in the great outdoors. This recipe is about as simple as they come, yet includes plenty of healthy vitamins and minerals. It's tasty, too!

Makes 5 half- cup servings

2 packages (9-10 oz. each) frozen spinach
1 15-ounce can chickpeas, rinsed and drained
½ cup feta cheese, crumbled (more if desired)
1 oz. Sliced pimientos or 1 chopped red bell pepper
Salt and pepper if desired

Heat and drain the spinach, then mix in the remaining ingredients. That's it.