

HEALTHCARE HORIZON

The Newsletter of the Minneapolis Medical Research Foundation

Working to Improve the Lives of Lupus Patients

Your immune system is an incredibly sophisticated defense system. It tirelessly defends your body from an onslaught of attacks from bacteria, viruses, fungi, pollen, and other foreign invaders. Through biochemical signaling, it is able to tell which things in your body pose a threat and which do not. Most of the time, your immune system does a remarkable job of keeping you healthy. Without it, your body would quickly be overrun with pathogens and you would die in a short amount of time.

Now, imagine that your immune system has been alerted of a threat and has begun to attack the problem. Only this problem is not a foreign invader, but a protein or molecule that is normally present in your own body. The immune system has begun to attack your body's own cells and tissues, causing inflammation and damage.



Lupus is an autoimmune disease that commonly affects young women. Autoimmune diseases cause the body to attack its own tissues, leading to inflammation and pain. Lupus produces many symptoms that lessen the quality of life of those with the disease.

This overreaction of the immune system is characteristic of autoimmune disease. There are many autoimmune diseases, but they all have one core factor in common. For some reason, the immune system has become activated and begins to attack its own body's tissue.

Autoimmune diseases can cause the body to attack any of its tissues. One of the most common of these diseases is called systemic lupus erythematosus, or lupus for short. In lupus, the immune system can attack many different organs and tissues, causing inflammation, damage, and pain. Lupus predominantly affects young women, especially women of color. Nine out of ten lupus patients are women.

Barbara Segal, MD, has been researching lupus and other autoimmune diseases for her entire medical career. She recently arrived on the Hennepin campus from the University of Minnesota to start a new lupus clinic at Hennepin County Medical Center. She both treats patients with lupus and researches the disease in hopes of finding new treatments for it.

Dr. Segal describes lupus as being very disruptive to those who live with the disease. It often seems to appear suddenly, manifesting with any number of persistent symptoms which can include rashes, joint pain, anemia, fatigue, and headache, among many others. Symptoms may flare up for a period of time, and then subside again only to reappear later. Because of the wide variety of symptoms and their unpredictability, it can be years before a patient is accurately diagnosed with lupus.

The symptoms of lupus can disrupt every part of a person's life. Persistent fatigue can cause problems at work and at home. Rashes on the face and body can be embarrassing and affect a person's social well-being. Neurologic symptoms and pain can also interfere with being able to work and carry on normal activities.

The impact of lupus' symptoms can be minimized if they are carefully and consistently managed by healthcare professionals. Unfortunately, current treatments are not entirely successful in controlling the disease. Side effects do occur in some cases and can be very severe. Dr. Segal says, "The biggest hurdles to minimizing the impact of

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Sjögren's Syndrome

This little known autoimmune disease affects up to 4 million Americans. Now one MMRF researcher is unveiling the root cause of the disease.

Sjögren's syndrome, pronounced "SHOW-grin's," is an autoimmune disease that causes a reduction in the production of tears and saliva and creates feelings of emotional distress and depression. Sjögren's syndrome is not nearly as well known as lupus, but in the US it affects as many as 4 million people. Ninety percent of Sjögren's patients are women. The onset of the disease typically happens when the woman is in her 50s. However, diagnosis is often delayed for seven to ten years after symptoms first emerge.

In Sjögren's syndrome, the immune system attacks the glands in the endocrine system including those that produce tears and saliva. Dry mouth and lack of tears are the most apparent symptoms of the disease, although joint and muscle pain are also very common. In addition to persistent fatigue, Sjögren's syndrome can cause a variety of psychological symptoms, including numbness and burning pain in the extremities, headaches, memory problems, and depression. Swelling of the lymph nodes and salivary glands, dry skin, rashes, blood problems and occasionally problems of the liver, lungs, and kidneys can also be features of Sjögren's syndrome. As with other autoimmune diseases, it can be difficult to diagnose Sjögren's syndrome. However, if it is suspected, a multidisciplinary team approach including an evaluation by a dentist, ophthalmologist, and rheumatologist are necessary to determine more concretely if the patient is suffering from it.

Barbara Segal, MD, diagnoses and treats patients and conducts research on Sjögren's syndrome at her clinic at Hennepin County Medical Center. She is working to tease out the physiological changes that lead to this disease. Currently, it is not well understood what processes or physical changes in the nervous system contribute to the psychological symptoms suffered by patients with Sjögren's syndrome.

Using imaging technology, Dr. Segal is peering deep into the brain to see what might be happening in Sjögren's syndrome patients. Recent advances in MRI technology have made it possible to look with much greater detail at a living brain. She recently completed a study using high resolution MRIs to look at brain tissue of Sjögren's patients and search for clues for the causes of the memory and attention problems they experience.

Dr. Segal's research results have been revealing. Using data from the high resolution MRIs, she has found subtle white matter differences in the brains of Sjögren's syndrome patients. These abnormalities occur in the brain tissue that is associated with processing memory and emotion.

In particular, she has found that Sjögren's syndrome patients have abnormalities in the area of the brain called the inferior frontal cortex. This part of the brain adds emotional tone to our memories, specifically memories that have negative emotions attached to them. Her findings suggest that the altered structure in this area of the brain is a characteristic of the cognitive symptoms suffered by Sjögren's syndrome patients.

Dr. Segal plans to probe further into the possible link she has found among brain structure, negative emotions, and the neurological symptoms of Sjögren's syndrome. Her long term hope is that by advancing our understanding of the underlying physiological changes associated with Sjögren's syndrome, her research will lead to new treatments to improve the lives of those who suffer with it. ■

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Lupus are getting an accurate diagnosis of the disease and then getting the person to stick to their prescribed care regimen.”

Lupus disproportionately affects young women of color. Studies looking at the effect of ethnicity and socioeconomic status have suggested that the risk of kidney failure and death from lupus is higher among persons with lower household income and lower education. Among ethnic groups, previous research has shown that African American women with lupus are the most likely to be lost to follow up after the diagnosis of lupus.

Dr. Segal is exploring possible reasons why this is. One of her research projects looks at the cultural beliefs, lifestyle practices, and socioeconomic status of a diverse group of patients seen at the Hennepin County Medical Center to determine how these factors may be contributing to the increased likelihood of poor outcomes among young women with lupus. Dr. Segal notes that lupus education can be vital to successfully managing the disease. “A perception exists for some patients that medicines are poisons that will do more harm than good. Educating patients on the importance of taking medicine and understanding how their medicines work are crucial to getting their lupus symptoms under control.”

Lupus has a profound effect on a person's ability to work and to carry on as heads of households. It can be very challenging to keep a job or function well as a caregiver if you are suffering from lupus. The impact of this disease is especially hard on young families because it predominantly affects women in their prime working and motherhood years. The economic costs of lupus are enormous. Two out of three lupus patients report partial or complete loss of income and 25 percent are completely disabled.

Dr. Segal is conducting research that examines the

importance of holistic management of lupus; helping women take control of the disease from medical, social, and economic perspectives. “It's very important that these young women have resources made available to them so their disease doesn't evolve from manageable symptoms to more severe complications of the disease.”

Fortunately, researchers are beginning to discover the underlying biological processes at work in lupus. A deeper understanding of the disease promises to spur development of new drugs that can improve the way lupus patients manage their symptoms. Researchers have found that certain genes, specifically those involved in the immune response called interferons, are significantly more active in lupus patients as well as in other autoimmune disorders like Sjögren's syndrome.

With this knowledge, new biologic drugs have been developed for lupus patients. Recently, a highly successful clinical trial was completed for a biologic drug called belimumab (Benlysta) which helps to control the hyperactive immune response in lupus. Results from the Benlysta trial were announced recently. They showed significant reduction in disease activity, disease flares, and improvement in fatigue in lupus patients. Approval by the FDA of this new drug is expected early next year. New data has also been reported recently on the safety and efficacy of mycophenolate (Cellcept), which is another drug active against the immune system. Cellcept has fewer side effects than older drugs for controlling lupus and appears to be equally effective.

Even with these new drugs in the pipeline, Dr. Segal stresses that the biggest challenge to getting lupus under control is disease management. “You absolutely have to get patients to understand how important it is to take their medications consistently. To successfully treat lupus, you need to take a holistic approach - addressing the social and economic reasons that might prevent people from taking medicines as well as simply addressing the immediate symptoms of the disease.” ■

Research Center Investigates Diseases That Impact Older Women

A number of chronic diseases and conditions affect women later in life. These include diabetes, cancer, cardiovascular disease, and osteoporosis. In developed countries, these diseases are the greatest contributor to decline in quality of life and the greatest cause of death of older women. As the US population becomes increasingly overweight and inactive, the impact of these diseases will grow considerably.



Chronic disease is the greatest health threat faced by older women. For 43 years, the Berman Center at MMRF has been conducting clinical trials research on the diseases that impact older women, including diabetes, cancer, and cardiovascular disease.

The Berman Center at MMRF is actively studying chronic diseases and exploring ways to improve the lives of women living with them. Researchers there oversee clinical trials and health outcomes research. They were actively involved in the National Institutes of Health's ground-breaking Women's Health Initiative. This 15 year research program examined how dietary modifications

and hormone therapy affected rates of cardiovascular disease, cancer, and osteoporosis in postmenopausal women.

Insights from this study provided a telling picture of women's health in the US. Some of the most surprising study results showed that an eating pattern lower in total fat did not significantly reduce the incidence of breast cancer, heart disease, or stroke and did not reduce the risk of colorectal cancer in healthy postmenopausal women.

It also changed the way physicians approach health care for older women. Before this study it was common practice to put postmenopausal women on hormone replacement therapy. However, results from the study found that this practice increased the rates of cancer and other health problems for women. Now, physicians are much more careful before putting postmenopausal women on hormone replacement therapy.

Our population as a whole is aging, which is leading to an increase of age-related chronic diseases in women. This phenomenon is happening all over the developed world. This demographic and disease shift will present enormous challenges to our healthcare system, making the Berman Center's research on chronic disease especially timely. To take advantage of the information and insights that can be gained by sampling a broad population, they have begun developing international research partnerships with groups in other developed countries.

One of these innovative research partnerships is with an Australian group. They will work together to see if a common, inexpensive medicine can improve the health of older women and men. This collaboration is a clinical trial called ASPREE, and is sponsored by the National Institutes of Aging. It will recruit thousands of participants and examine whether a low, daily dose of aspirin reduces the incidence of disease and conditions such as heart attack, stroke, cognitive decline, physical decline, and cancers such as bowel cancer.

Of all the chronic diseases and conditions, type 2 diabetes is arguably one of the most problematic. Once

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The epidemic has not gone away.

Women are contracting HIV at faster rates than ever before.

"I don't hear much about HIV anymore. Is it going away?"

The medical professionals at the Positive Care Center hear this frequently. Their response is always a firm "NO" as they go on to describe how HIV infection is on the rise in all communities.

The Numbers

The Minnesota Department of Health estimates 6,220 persons are living with HIV/AIDS in Minnesota. In the first six months of 2009, Minnesota had a 24 percent increase in HIV diagnoses (male and female) compared to the first six months of 2008. HIV diagnoses in the African American community was up 85 percent; 46 cases in the first six months of 2009 compared to 25 cases in the first six months of 2008. It is unclear if the rise in HIV diagnoses is a result of increased HIV testing or more transmission of the virus. Regardless of the reason, the numbers suggest HIV is NOT going away. The public needs to know we need to raise awareness about HIV.

Women

Women accounted for approximately 27 percent of new HIV infection diagnoses in Minnesota in 2008. Within this 27 percent of women, HIV is disproportionately burdening the African American and African female communities. In 2008, African American women accounted for 31 percent of new HIV infections in Minnesota; yet, African American women only represent

3 percent of all females in Minnesota. Similarly, African born women account for one percent of females in Minnesota but 11 percent of new HIV infections in 2008 were in African born women.

Testing

HIV testing is essential for decreasing the transmission of HIV. Knowing your HIV status and your partner's HIV status should be part of routine healthcare services.

To increase HIV testing and raise awareness about HIV, the Positive Care Center provides The HOPE (HIV Outreach, Prevention & Education) program. HOPE is a confidential, free, incentive-based HIV rapid testing service offered in the Positive Care Center to provide partners and friends of persons living with HIV knowledge of their own HIV status. HOPE HIV rapid testing is encouraged by Positive Care Center's clinic providers, case managers and clinic social workers for partners of HIV positive persons on a routine basis.

Additionally, HERR (Health Education & Risk Reduction) services are utilized in tandem with HIV testing and provide an opportunity for in-depth HIV education and risk reduction planning while clients are waiting for their test results. This increases the capacity for educational and risk reduction activity for both persons living with HIV/AIDS and their partners. ■

This article was contributed by Rachel Prosser PhDc, RN, CNP. She conducts research and sees patients at the Positive Care Center at HCMC.

Clinic Offers One Stop Comprehensive Care for Autoimmune Diseases

A new clinic dedicated to the care of patients with lupus is now available at Hennepin County Medical Center. Although lupus is a relatively common autoimmune disease, diagnosis is often delayed and care in the community tends to be fragmented, making it difficult for patients who have a complex, multi-system disease to receive the timely care that is optimal to prevent complications.

The clinic is run by Barbara Segal, MD. She described the goal of the clinic: “We wanted to make it as easy as possible to facilitate quality medical care and follow through with our patients. Because people with lupus face a variety of health concerns – from cardiovascular disease to disabling pain, skin rashes, and other serious health problems – our specialists are now available in one place, with one phone call, to care for these patients.”

The Lupus Clinic provides patients:

- 1) Coordinated care among specialists to provide comprehensive service and maximum convenience for patients.
- 2) Access to investigational clinical trials for patients with challenging problems that have been resistant to conventional treatments.

- 3) A comprehensive program of needs assessment and support for patients who may be suffering from pain, fatigue, and stress of chronic illness.

The Lupus Clinic is located in the heart of downtown Minneapolis at the Hennepin County Medical Center campus. It is a part of the Rheumatology Clinic, which is open five days a week. The Lupus Clinic is open Tuesday mornings and features specialized care and reserved appointments for lupus patients. In addition, Thursday afternoons the new clinic offers treatment for patients with sicca symptoms (dry eyes and dry mouth), which are often a feature of Sjögren’s syndrome.

“Our clinic focuses on the whole individual, because in addition to physical symptoms, lupus affects social functioning. We want to know how patients are coping with the everyday aspects of life, and how we can help,” says Dr. Segal.

For more information about the Lupus Clinic or to schedule an appointment, call 612.873.2700. ■

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a person has developed diabetes, it strongly increases the risk for many other chronic diseases, including cardiovascular disease and stroke. Unfortunately, postmenopausal women have an increased risk of developing type 2 diabetes because the physical changes that accompany menopause can lead to weight gain and a decrease in physical activity – risk factors strongly related to developing diabetes.

It’s hard to over-emphasize the seriousness of developing this disease. Patients with Type 2 diabetes die of cardiovascular disease at rates two to four times higher than non-diabetic people with similar ethnic and social backgrounds.

To address this serious trend, the National Heart Lung and Blood Institute is sponsoring a large clinical study

that examines the relationship between Type 2 diabetes and cardiovascular disease in both women and men. It is called the ACCORD study. The Berman Center is a Regional Coordinating Center overseeing five sites in Minnesota and Iowa as well as a clinical site involved in conducting this study. The ACCORD study tests different treatment approaches to determine the best ways to decrease the rate of major cardiovascular events, like heart attack and stroke, among patients with type 2 diabetes. Researchers plan to report the final results from this study in 2010.

Chronic diseases will become an increasingly common problem for women as our population ages. Thankfully, researchers like those at the Berman Center will continue to conduct studies and trials to find new ways of managing and treating chronic diseases. ■

MMRF Welcomes New Researcher

MMRF is pleased to announce that Mark Linzer, MD, will be conducting research at MMRF. Dr. Linzer recently accepted a position as Division Director of General Internal Medicine at HCMC. He comes to us from the University of Wisconsin School of Medicine and Public Health and also served as the Chief of General Internal Medicine Scholars Program at the University.



Dr. Mark Linzer

Dr. Linzer is interested in researching the work environment conditions experienced by physicians and medical professionals and how they impact patient care.

He was awarded a grant from the Agency for Healthcare Research and Quality for his research. With this funding, he will examine how changing a medical work environment can improve overall quality of healthcare. He will examine the impact of these work conditions:

- 1) time pressure during office visits,
- 2) lack of work control,
- 3) chaotic or fast paced workplaces, and
- 4) lack of alignment of values between clinicians and leaders.

Dr. Linzer hopes his research will lead to improvements in work environments for medical professionals. He and his national research team will test the hypothesis that improving work environments will improve quality of care and patient outcomes. We wish you success in your research Dr. Linzer! ■

Season's Greetings from MMRF!

As 2009 draws to a close, MMRF would like to thank all of its supporters who have helped make 2009 another successful year for our medical research programs. Your continued support has helped us advance our mission of improving patient care and the health of our community through research and education.

Despite the extraordinary economic challenges of 2009, MMRF's position has remained strong and we have maintained all of our major research programs. Challenges remain as we travel the road to economic recovery, but with your continued support, they are surmountable.

2010 promises to be an exciting year as MMRF welcomes new researchers and expands active research programs. We continue to focus on making scientific discoveries and translating them into medical practices that physicians can use every day to improve the lives of their patients.

In the next year, we look forward to working towards our shared goal of improving patient care both here and around the world. Wishing you and yours all the best in 2010! ■

