Study reveals new genetic link to scleroderma

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An international research consortium including scientists from The University of Texas Health Science Center at Houston (UTHealth) has identified a new genetic link to the systemic form of scleroderma. Researchers believe a thorough understanding of the genetic nature of the disease is crucial to developing a cure.

Systemic scleroderma is a profoundly disabling autoimmune disease that affects about 100,000 people in the United States. Autoimmune diseases are caused by malfunctioning immune systems, which attack their own cells.

In the May print issue of Nature Genetics, scientists report they found a new region of the human genome associated with increased systemic scleroderma susceptibility. "With our latest discovery, we are probably a quarter of the way to finding the genes and pathways responsible for systemic scleroderma," said Maureen D. Mayes, M.D., one of the study's senior authors and a professor of rheumatology at The University of Texas Medical School at Houston, which is a part of UTHealth. "Once most of the important genes are found, we will be able to focus on developing interventions to block their activity."

In the study, scientists used a genetic research technique called a genome-wide association study that allows researchers to detect genetic variations associated with a particular disease. It was the first large application of this technique to systemic scleroderma, she said.

A genetic comparison of 2,296 people with systemic scleroderma to

5,171 without the disease led scientists to a region of the genome known as CD247. "This region contains a gene that is central to immunity, which makes this very exciting," Mayes said.

Findings were confirmed during a second test involving 2,753 people with systemic scleroderma and 4,569 without systemic scleroderma. Participants were from the United States, Spain, Germany and The Netherlands.

Frank C. Arnett, M.D., one of the senior authors and professor at the UT Medical School at Houston, said research shows that scleroderma shares many susceptibility genes with lupus and other autoimmune diseases. This means that one day researchers may be able to more specifically target the causative pathways in each of these conditions, he said. He is the Elizabeth Bidgood Chair in Rheumatology and the Linda K. Finger Chair in Autoimmune and Connective Tissue Diseases at the UT Medical School at Houston.

The study also confirmed the link between systemic scleroderma and three other previously discovered areas of the genome - MHC, IRF5 and STAT4, Mayes said.

Building on this research, Mayes said scientists now plan to conduct a second study involving patients recruited from 10 scleroderma centers in the United States and Canada. "This will allow us to examine the findings more closely," she said.

According to the Scleroderma Foundation, the word "scleroderma" comes from two Greek words: "sclero" meaning hard, and "derma" meaning skin. Hardening of the skin is one of the most visible manifestations of the disease. The symptoms of scleroderma vary greatly from individual to individual, and the effects of scleroderma can range from very mild to life-threatening. The seriousness will depend on what

parts of the body are affected and the extent to which they are affected.

Peggy Brown, who is the vice president of the Texas Bluebonnet Chapter of the Scleroderma Foundation, is heartened by the research. "If they can figure out what causes it, they can find a cure," Brown said.

The president of the Texas Bluebonnet Chapter, Cindi Brannum, said that because healthcare providers do not know what causes scleroderma, treatments are focused on symptoms. "We're using other people's medicine to treat our disease. There is no specific scleroderma treatment," she said.

Forty-three-year-old scleroderma patient Shannon Abert, who was part of the study, said, "Scleroderma affects everyone differently. About the only thing we all share is Raynaud's syndrome, which is discoloration of the fingers, and acid reflux."

More information: The study, which is titled "Genome-wide association study of systemic sclerosis identifies CD247 as a new susceptibility locus," received support from the National Institutes of Health.

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