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RESEARCH POINTS THE WAY TO BETTER UNDERSTANDING OF HIGH BLOOD PRESSURE IN KIDNEY DISEASE PATIENTS

DALLAS--Researchers at The University of Texas Southwestern Medical Center at Dallas have discovered one important factor that may lead to high blood pressure in kidney disease victims. Results of the study could lead to more effective treatment.

Their work was reported in the Dec 31, 1992, New England Journal of Medicine.

Eighty percent of the more than 150,000 patients with kidney failure nationwide suffer from high blood pressure--which can lead to strokes, heart attacks and other heart disease. Altogether, cardiovascular disease is the most frequent cause of death in victims of kidney failure.

"Dialysis prevents death from kidney failure, but the patients are 100 times more at risk of heart attacks and 250 times more at risk of strokes than the general population," said Dr. Ronald G. Victor, associate professor of internal medicine at UT Southwestern and senior author of the report.

The study showed that failing kidneys seem to produce a neural signal that causes an overactivity of the body's sympathetic nervous system--the part of the nervous system that controls blood pressure. When this happens, the blood vessels begin to constrict, increasing a patient's blood pressure.

The researchers studied 34 patients over a three-year period at UT Southwestern Medical Center and at the Cleveland Clinic Foundation

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in Cleveland, Ohio. Twenty-three of the patients were undergoing long-term hemodialysis; five of them had had their kidneys removed. The other 11 subjects had normal kidney function.

The rate of sympathetic-nerve firing was more than two times higher than normal in the hemodialysis patients, except in those in whom the diseased kidneys had been removed. In the latter group, the nerve firing was normal.

"Our study indicates that overactivity of the sympathetic nervous system is one of several important factors that may cause hypertension in kidney disease patients," Victor said. "This makes the blood vessels constrict or get smaller. It's similar to what happens when you step on a garden hose--the water pressure builds up inside the hose."

While the sympathetic-nerve theory has been hypothesized for at least 20 years, Victor said, the evidence has been inconclusive until now because researchers had no means of directly measuring the neural activity. Recent technological advances have made it possible for scientists to place recording electrodes inside nerves in human patients, he added.

Victor expects the results of the study to lead to more effective treatment for hypertension. "The search is under way for newer and better drugs that lower blood pressure by correcting the abnormality in the nervous system," he said.

The study was supported by funding from the Extramural Grant Program of the Renal Division of the Baxter Healthcare Corporation under the direction of Dr. Lee Henderson.

Collaborating with Dr. Victor at UT Southwestern Medical Center were Dr. Richard L. Converse Jr., principal researcher and cardiology fellow; Dr. Tage

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N. Jacobsen and Dr. Charles M.T. Jost, cardiology fellows; and Dr. Robert D. Toto, associate professor of internal medicine. Researchers participating at the Cleveland Clinic Foundation were Dr. Fetnat Fouad-Tarazi, a staff member in the Department of Cardiovascular Biology, and Dr. Frank Cosentino, a staff member in the Department of Nephrology and Hypertension.

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NOTE: The University of Texas Southwestern Medical Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences, Southwestern Allied Health Sciences School, affiliated teaching hospitals and outpatient clinics.