

UT News

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September 23, 1987

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*****Parkinson's patient experiencing
dramatic improvement
after adrenal transplant surgery.

DALLAS--"It's like starting life over again," says Dan Covey of Plano, 38, about the improvements in his Parkinson's disease symptoms.

On July 31, Covey became the first Parkinson's patient in the north Texas area to undergo a radical new operation--an adrenal medulla transplant--to treat the disabling brain disease.

Covey's transplant operation was performed at Parkland Memorial Hospital by a clinical research team from The University of Texas Health Science Center at Dallas. Leading the ongoing adrenal transplant effort is Dr. Kemp Clark, professor and former chairman of the UTHSCD Division of Neurosurgery. Clark is president of the World Federation of Neurosurgical Societies.

Other members of the clinical research team include urologist Dr. Paul Peters, neurobiologist Dr. Dwight German, neurologist Dr. Ron Tintner, psychologist Dr. James Hom and psychiatrist Dr. John Sadler.

When Covey emerged from surgery, he had five pieces of adrenal gland tissue from his own abdomen implanted in his brain. Now back at his city utilities job, Covey says the difference in his symptoms is "like night and day."

His Parkinson's-induced depression, what he calls the worst part of the disease, has lifted. He now runs three miles a day, while before surgery he was too stiff to even walk around his block. And he is able to write with his right hand and work on his car for the first time in two years.

The adrenal medulla transplant procedure was pioneered by a medical team in Mexico City, where physicians were first to report the surgery's dramatic effects. Skeptical at first, United States doctors are slowly recognizing that the transplant operation does work to improve symptoms caused by a lack of dopamine in a specific region of the brain--the caudate nucleus. Parkinson's symptoms include tremor, muscle stiffness, slowness of movement, a stooped posture, impaired balance, lowered voice volume and depression.

The tissue for transplantation comes from one of the body's two adrenal glands, located in the back, directly above each kidney. Only the central medulla portion of one gland is used. Care is taken to clear away the adrenal's outer cortex since the cortex secretes a chemical that creates a rise in blood pressure.

While one surgical team removes the adrenal gland, another prepares a small cavity deep within the brain to receive the adrenal tissue. The portion of the brain to receive the transplanted tissue is the caudate nucleus. This structure serves as the brain's sensory/motor integration area. Five to seven tiny pieces of adrenal tissue are inserted into the caudate and held in place by a suture.

(More)

According to neurobiologist German, the adrenal gland doesn't normally make dopamine in its location above the kidney. Ordinarily it makes and secretes other chemicals that are closely related to dopamine--norepinephrine and epinephrine. However, it does produce dopamine when it is placed into the caudate. In addition, the adrenal tissue releases met-enkephalin, an opiate-like substance that produces pain-killing effects. This would explain why Covey awoke from anesthesia without pain either in the abdomen or in the head. Covey did not ask for pain medications at all during his hospital stay.

Much of German's research has been concerned with the effects of Parkinson's on the brain. His studies with the heroin-like, synthetic drug MPTP (similar in chemical structure to the pesticide paraquat), supports the theory that environmental toxins, such as the use of pesticides, cause the most common form of Parkinson's disease.

Covey, who experienced tremors as a child, attributes his symptoms to the spraying of pesticides on his parent's 75-acre orchard in northern California. He says that in the fertile area around his family home, people spray for insects all year round. Covey's mother has listed 25 different pesticides used by their family.

Covey is now a successful city utilities coordinator in spite of the Parkinson's diagnosis. He did begin having major difficulties with the disease about seven years ago, however, when his fine motor coordination started to deteriorate. Also, tremor in the right hand made writing with that hand impossible. Soon after that time, the severity of his symptoms forced him to seek a physician's help and a diagnosis of Parkinson's disease was made.

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NOTE: The University of Texas Health Science Center at Dallas comprises Southwestern Medical School, Southwestern Graduate School of Biomedical Sciences and the School of Allied Health Sciences.