Diet supplements and gene therapy tried for Parkinson's disease

Janice Hopkins Tanne *New York*

Two new experimental approaches—dietary supplements and gene therapy—might be useful in the treatment of Parkinson's disease, scientists from the United States and New Zealand said last week.

Functional decline in early Parkinson's disease may be slowed by dietary supplementation with the coenzyme Q_{10}, a naturally occurring compound, says a report in the *Archives of Neurology* (2002;59:1541-50), while the Food and Drug Administration has just approved the first gene therapy trial for advanced Parkinson's disease. The FDA's decision comes after the report of a successful experiment in gene therapy carried out in rats (*Science* 2002;298:425-9).

Coenzyme Q_{10} (ubiquinone), a compound found in mitochondria, is involved in the conversion of nutrients to energy and is also an antioxidant. Patients with Parkinson's disease have impaired mitochondrial function, and tissue concentrations of coenzyme Q_{10} fall with age.

In a national, randomised, placebo controlled, double blind trial of 80 patients with untreated early disease, the Parkinson study group found that the highest dose of coenzyme Q_{10} combined with vitamin E slowed deterioration by 44%. The greatest benefit was in daily activities such as feeding, dressing, bathing, and walking.

Patients were randomised to receive coenzyme Q_{10} four times a day for 16 months as a wafer at a dose of 300, 600, or 1200 mg or to receive a placebo. They were evaluated on the unified Parkinson disease rating scale at seven visits. By the eighth month patients taking the highest dose scored significantly better than the placebo group.

Lead author Dr Clifford Shults, professor of neurosciences at the University of California, San Diego, said the trial gave "tremendous encouragement" in slowing functional decline.

Meanwhile, the first approved study of gene therapy for Parkinson's disease will soon begin. Twelve patients who have had Parkinson's disease for at least five years and for whom current drugs no longer work will be treated in a phase I trial.

In an animal study in *Science*, researchers from the University of Auckland, New Zealand, and the Weill Cornell Medical College, New York, reported that injection of the gene GAD into the subthalamic nucleus quiets overactivity and greatly reduces symptoms.

AP/KENNETH LAMBERT

Boxer Muhammad Ali and actor Michael J Fox testify at a Senate subcommittee hearing on Parkinson's disease

The GAD gene produces γ-aminobutyric acid (GABA), released by nerve cells. "GABA acts locally to quiet activity. It's the brain's major brake, and it actually frees up movement in Parkinson's patients, who have tremor and rigidity," said Dr Matthew During, professor of molecular medicine at the University of Auckland.

Later this year Dr During and Dr Michael Kaplitt, director of stereotactic and functional neurosurgery at Weill Cornell Medical College, will begin the FDA approved trial. Dr Kaplitt will inject 50 µl of synthesised GAD gene, packaged in an adeno-associated virus, into patients' subthalamic nucleus. □

More women than men become living organ donors

Roger Dobson *Abergavenny*

Women are more likely to be living organ donors than men, and one explanation is that they may be more vulnerable to subtle pressures.

Fathers, sons, brothers, or other male family members are all less likely to donate than their female counterparts, and a new report has called for the predominance of women donors to be investigated urgently.

"Instead of simply congratulating women on their altruism, we need to ask about possible reasons for the existing gender imbalance and check it for matters of fairness and undue pressure on a vulnerable group," says the report in *Medicine, Health Care and Philosophy* (2002;5:199-203).

It says that living organ donation is expanding. In Germany, for example, 17% of kidney transplants in 1999 were from living donors compared with only 3% in 1991. In the United States, living donor transplants account for more than a third of all transplanted kidneys.

"The expansion of living organ donation has been accompanied by an increasing gender imbalance among donors. In 1988 the female to male-donor ratio in the USA was 1.2 (55% female vs 45% male donors), and has since then risen steadily to a 1.4 in 1998 (58% female vs. 42% male donors)," says the report, which was written by Dr Nikola Biller-Andorno of the department of medical ethics, University of Göttingen.

The report points to a study at a large Canadian transplant centre that found that 36% of wives who were acceptable for donation did in fact donate, compared with 6.5% of husbands. Data from Germany on kidney transplants shows that women are about twice as likely to donate to their husbands as the men are to their wives. But although women donate more organs, more men than women are recipients.

The report says that economic, attitudinal, or psychosocial factors are the most likely explanations for the sex differences in organ transplantation. □

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