Getting an accurate read on Parkinson's

June 29 2011

Parkinson's Disease, brought to public awareness by figures such as Michael J. Fox, is not just difficult to diagnose. It's also difficult to accurately estimate how many people actually suffer from the disease. Current statistics come from small-scale studies, usually based on information from hospital clinics, and no registries or formal databases exist to track how many people have the disease.

Dr. Chava Peretz of Tel Aviv University's School of Public Health at the Sackler Faculty of Medicine, Ph.D. student Orly Chillag-Talmor from Haifa University and researchers from Tel Aviv Sourasky Medical Center and Maccabi [Healthcare Services](#) have devised a unique algorithm to more precisely determine the size of a population that suffers from the disease. This will permit researchers to better prepare for the consequences to public health, and provide more realistic estimates on how much it will cost to treat this growing number of patients.

The researchers have developed a refined drug-tracer algorithm. Based upon a patient's medication history, it assigns them to one of three potential categories of Parkinson's sufferers: those who definitely have the disease, those who probably have it, and those who only possibly have it. The algorithm identifies patients in each of these categories with 95 percent accuracy. The results of the research recently appeared in the *Journal of Parkinson's Disease*.

Sifting through a decade of prescriptions

It has been estimated that one percent of the population over the age of 60 suffers from Parkinson's, but Dr. Peretz questioned this estimate, believing that the numbers might be far greater.

Their algorithm is based on four factors: the kind of anti-Parkinson drug prescribed; the age at which the patient was first entered into the system; the length of the follow-up period; and the number and continuity of drug purchases. They then compared her results to the database of purchased pharmaceuticals from Israel's second largest HMO, Maccabi Health Care. This database comprises ten years' worth of prescriptions, representing about 25 percent of the population.

Researchers were searching for both prevalent cases (the number of people currently living with Parkinson's) and incident cases (the number of people each year newly diagnosed with the disease). "Based on this algorithm," Dr. Peretz explains, "we identified about 7,000 Parkinson's disease prevalent cases and about 5,000 incident cases in the study period."

These results, notes Dr. Peretz, represented a departure from previously accepted statistics and confirmed her suspicions. The team determined that the prevalence rate for the population was one percent for patients over 50 years of age, two percent for those over 60, and three percent for ages 70 and above — twice the previous estimation. In addition, the mean age at time of first diagnosis was found to be around 70 years, rather than 60 years.

To confirm the results, Dr. Peretz and her fellow researchers carried out a validity test with Maccabi patients at the Tel Aviv Sourasky Medical Center's Movement Disorder Clinic. The algorithm managed to accurately identify 95 percent of the patients, she says.

A warning for public health professionals

Dr. Peretz points to misdiagnoses as one of the causes of poor information on Parkinson's. Not only is the prevalence rate of Parkinson's higher than previously thought, but the rate is growing by six percent yearly. There are on average 33 new cases for every 100,000 people per year. This spells trouble for governmental public health agencies, which will shoulder a heavier burden than they expected in the coming years. "It's a disease that costs a lot, the expectation of life is growing, and we have to prepare," warns Dr. Peretz. "Public health institutions have a responsibility to be aware that these needs will arise."

However, these results also bring good news for those who research the causes of the disease. With more accurate statistics, explains Dr. Peretz, other researchers can explore various determinates of the disease and possible risk factors, such as those related to environmental exposure, occupation and lifestyle.

Provided by Tel Aviv University