Study examines association between Parkinson disease, cancer

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A study that used a Utah genealogic database and a statewide cancer registry to examine the relationship between Parkinson disease (PD) and cancer suggests an increased risk of prostate cancer and melanoma in patients with PD and their relatives, according to a report published Online First by *Archives of Neurology*.

Neurodegenerative diseases, in particular PD, may share common pathogenic mechanisms with some cancers, according to the study background.

"Identifying a genetic relationship between PD and cancer is critical to understanding underlying pathophysiologic changes in both diseases. Understanding this relationship could allow clinicians to provide proper assessment of cancer risk in patients with PD and might also have implications for the counseling of relatives of patients," the authors note in the study background.

Seth A. Kareus, M.D., and colleagues from the University of Utah, Salt Lake City, estimated relative risks (RRs) for cancer in individuals with PD listed on their death certificate, and in their relatives. The study identified 2,998 patients with PD listed as their cause of death from 1904 to 2008 and also included information from the Utah Cancer Registry on 100,817 patients diagnosed with cancer.

To validate their observed associations, researchers also estimated the reciprocal RR for PD death among patients diagnosed with melanoma

and their relatives, and estimated the RRs for death with PD among patients diagnosed with prostate cancer and their relatives.

"A significantly increased risk for prostate cancer was observed in the PD population as well as among their relatives. A reciprocal significantly increased risk for PD was also found in the 22,147 prostate cancer cases and their relatives," according to the study results.

The study also notes that "a significantly elevated risk for melanoma was found in the Utah PD population as well as in their relatives. A reciprocal significantly increased relative risk for PD was found in 7,841 Utah melanoma cases and their relatives," the study results indicate.

Among the individuals with PD who died, the authors observed 48 cases of melanoma. The estimated RR for melanoma in patients with PD who died was 1.95; and an increased risk for death with PD was noted among the patients with melanoma (RR, 1.65). Researchers also found prostate cancer in 212 patients with PD who died (RR, 1.71) and an increased risk for death with PD was found among the prostate cancer patients (RR, 1.39), according to the results.

"Thus, these data argue strongly for a significant shared genetic risk for specific cancers on the one hand and neurodegeneration on the other. ….These studies provide a framework for future definition of the precise nature of shared genetic variation leading to neurodegeneration in some individuals, but skin or prostate cancers in others, and they may influence strategies for skin and prostate cancer screening," the authors conclude.

In an editorial, Walter A. Rocca, M.D., M.P.H., of the Mayo Clinic, Rochester, Minn., writes: "The findings from Kareus et al, combined with previous findings in the literature, suggest that some families have a genetic predisposition that can manifest as PD, as other types of

parkinsonism, as essential tremor, as cognitive impairment or dementia, as amyotrophic lateral sclerosis, as anxiety disorders, as depressive disorders, or as nonneurological conditions such as melanoma and prostate cancer."

"If the mechanisms are primarily genetic, as suggested by Kareus and colleagues, then it may be possible to identify genetic variants that predispose to accelerated neurodegeneration and to increased oncogenesis in the same individual or among members of some particular families," Rocca continues.

"On the other hand, if PD is multifactorial at the individual level, dimorphic in men and women, and heterogeneous at the population level, the search for one or several genetic variants may not be productive," Rocca concludes.

More information:

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