

Editorial  
Neuroscience



# A Nationwide Cohort Study of Mortality of Deep Brain Stimulation Surgery in Parkinson's Disease

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Parkinson's disease (PD) is the most prevalent neurodegenerative disorder, accounting for 0.5–5% of the population older than 65 years.<sup>1</sup> The prevalence increases with age. Motor symptoms, such as bradykinesia, rigidity, tremor, and gait disturbance are the main symptoms of PD. Together with these motor symptoms, nonmotor symptoms, such as depression, insomnia, constipation, neurogenic bladder, and cognitive dysfunction, also manifest in most patients with PD.<sup>2,3</sup> With the advancement of disease, most patients experience drug-induced dyskinesia and fluctuation of drug effects. Deep brain stimulation (DBS) surgery is an effective therapy for these patients.

What is the long-term prognosis of PD? In a well-known epidemiological study, 100 of 136 PD patients (74%) have died after 20 years follow-up.<sup>4</sup> Dementia was present in the 83% of 20-year survivors. In PD patients undergoing DBS surgery, previous studies reported an overall mortality of 8.2% to 34.0%. In this issue, Kim et al.<sup>5</sup> report a large nationwide cohort in Korea. They investigated the long-term mortality after DBS in patients with PD and causes of death, the factors influencing mortality, and the comorbidities affecting mortality. The summary of results is as follows. From 2005 to 2017, 1,079 patients underwent DBS surgery, and 251 (23.3%) had died by 2019 with a mean follow-up period of 10.55 ± 0.21 years after surgery; the mean age at death was 67.19 ± 9.77 years. The most common cause of death was PD (47.1%). The higher age at diagnosis and surgery, the men and medical aid groups, and the PD dementia and fracture were risk factors for mortality.

One of the values of Kim et al.'s study is that it includes a whole country that adopts a mandatory nationwide health insurance system. Another value lies in the fact that it investigates the long-term outcomes for a long duration of 10 years after DBS surgery. The mortality risk of dementia suggests that the decision for DBS surgery be made carefully in cognitively impaired patients and more intensive and comprehensive care is needed for patients that develop cognitive decline after surgery. As for the mortality risk of fracture, efforts for preventing falls are very much needed. To this end, interdisciplinary and cooperative approaches between rehabilitation specialists and nutrition experts, as well as movement disorder physicians and neurosurgeons.

Future studies are necessary to investigate the mortality of DBS surgery according to the severity of disease. From Kim et al.'s study, we once again realize that the data obtained from excellent research on long-term prognostic factors can also be used as an important guide finding better treatments in the future.

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