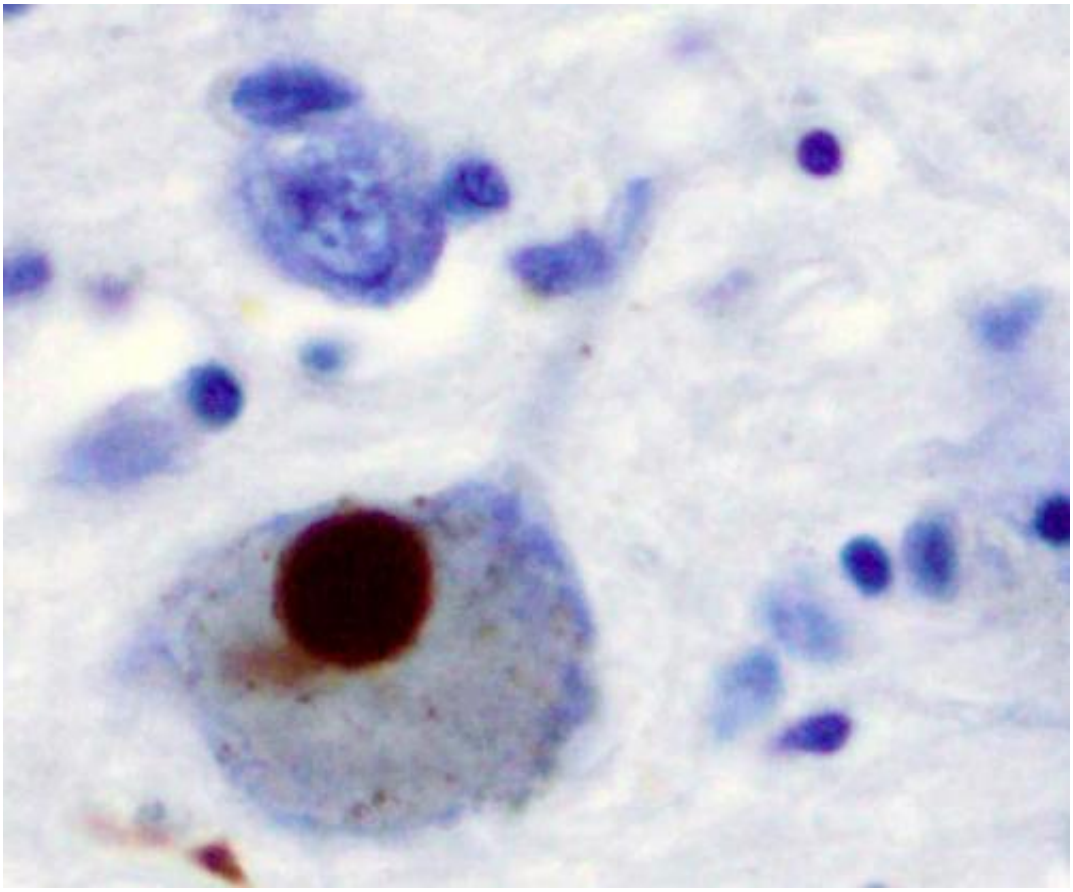
Long-term effect of deep brain stimulation on pain in patients with Parkinson's disease

March 23 2015



Immunohistochemistry for alpha-synuclein showing positive staining (brown) of an intraneural Lewy-body in the Substantia nigra in Parkinson's disease. Credit: Wikipedia

Patients with Parkinson disease who experienced pain before undergoing

subthalamic nucleus deep brain stimulation (STN DBS) had that pain improved or eliminated at eight years after surgery, although the majority of patients developed new pain, mostly musculoskeletal, according to an article published online by *JAMA Neurology*.

Pain is a common nonmotor symptom in patients with Parkinson disease and it negatively impacts quality of life.

Beom S. Jeon, M.D., Ph.D., of the Seoul National University Hospital, Korea, and coauthors evaluated the long-term effect of STN DBS on pain in 24 patients with Parkinson disease who underwent STN DBS. Assessments of pain were conducted preoperatively and eight years after surgery.

Of the 24 patients, 16 (67 percent) experienced pain at baseline when not taking their medication and had an average pain score of 6.2, on a scale where 10 was maximal pain. All baseline pain improved or disappeared at eight years after surgery, according to the results. However, the authors discovered new pain developed in 18 of 24 patients (75 percent) during the eight-year follow-up. New pain impacted 47 body parts and the average pain score for new pain was 4.4. In most of the patients (11), new pain was musculoskeletal characterized by an aching and cramping sensation in joints or muscles, the authors note.

"We found that pain in PD [Parkinson disease] is improved by STN DBS and the beneficial effect persists after a long-term follow-up of eight years. In addition, new pain developed in most of the patients during the eight-year follow-up period. We also found that STN DBS is decidedly less effective for musculoskeletal pain and tends to increase over time. Therefore, musculoskeletal pain needs to be addressed independently," the study concludes.

In a related editorial, Richard B. Dewey, Jr., M.D., and Pravin Khemani, M.D., of the University of Texas Southwestern Medical Center, Dallas, write: "Because previous studies on pain following STN DBS for PD are of short duration, the durability of the procedure's effect on pain is not well established. The chief strength of the work by Jung and colleagues is the long follow-up period, which suggests that, although DBS may relieve pain for a time, this is not a durable effect owing to the onset of new, primarily musculoskeletal pain."

"Despite its limitations, the study by Jung and colleagues provides a novel perspective on the durability of the pain-relieving properties of STN DBS in PD. The authors direct our attention to the fact that musculoskeletal pain may emerge years after DBS, warranting individualized treatment," they continue.

"Although there is growing consensus that STN DBS decreases the level of pain in people with PD, the literature is mixed on the subtypes of pain that are responsive to DBS, and the study by Jung and colleagues shows that new pain arising years after the procedure is common. This underscores the importance of performing future trials with larger cohorts, longer observational periods and standard methods to enable effective interpretation of outcomes. For now, we have learned that STN DBS does not take the ouch out of PD in the long run," the editorial concludes.

More information: JAMA Neurol. Published online March 23, 2015. DOI: 10.1001/jamaneurol.2015.8
JAMA Neurol. Published online March 23, 2015. DOI: 10.1001/jamaneurol.2015.36