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Letter to the Editor Regarding "Statistical Shape Analysis of Subthalamic Nucleus in Patients with Parkinson's Disease"

LETTER:

It is with great interest that we read the recent research article by Kaya et al.[1] entitled "Statistical Shape Analysis of Subthalamic Nucleus in Patients with Parkinson's Disease."

In their article, the authors sought to estimate subthalamic nucleus (STN) shape changes as it relates to Parkinson's disease (PD) duration. They found the variability in the shape of STN was 0.096 on the left and 0.049 on the right in 43 individuals living with PD. In Table 1 and Figure 2 of the article, the authors report the boundaries used to define the STN. However, these boundary points are positioned on the substantia nigra and not the STN.

Referencing the Schatenbrand and Wharen stereotactic atlas,[2] the axial view from Figure 2 of the article can be found on plate 55 at H.v. -6.0. This position is confirmed by the well-formed mammillary bodies and the anterior aspect of the red nucleus pointing toward midline. **Figure 1** in this response letter depicts a 7T stereotactic atlas[3] (available for download at http://www.nitrc.org/projects/deepbrain7t/), where panels A and C are at the level described by Kaya et al.[1] Positioning the crosshairs at fiducial point 3, this point is substantia nigra pars reticulata and not STN (as described by the authors). Thus, the fiducial points outline the borders of substantia nigra and not the STN.

In **Figure 1B and D**, the longest anterior-posterior aspect of the STN is depicted. We implore the authors to measure the size of their defined STN and compare with previous published reports on STN size. The STN has most commonly been reported to have the dimensions 12.0 mm (anterior–posterior), 3.0 mm (mediolateral) and 5.0 mm (dorsoventral).[4,5] We would expect the anterior–posterior aspect of their defined STN to be in excess of these values. Given the position of the fiducial points described by Kaya et al.,[1] it appears the volumetric analysis included substantia nigra as well as STN.

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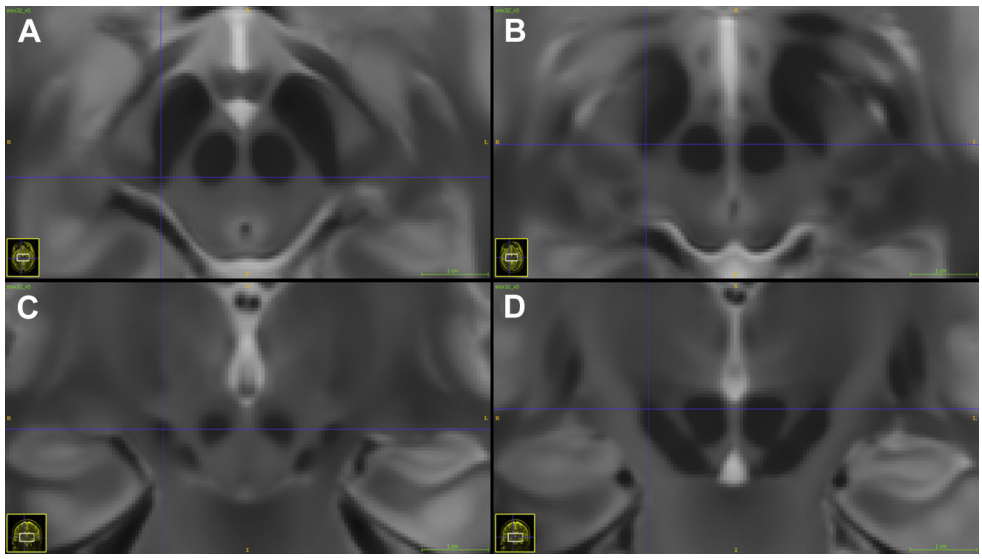

Figure 1. Subthalamic nucleus (STN) and substantia nigra visualization on a 7T atlas.[3] **A** and **C** are at the horizontal axis indicated in Figure 2 of the article. The crosshairs are at fiducial point 3 (described by the authors to be the posterior border of the right STN). On the coronal view (**C**), fiducial point 3 is located on the substantia nigra pars reticulata. The longest anterior–posterior aspect of the STN is depicted in **B** and **D**. The crosshairs are placed at the posterior border of the right STN.