Deep Brain Stimulation in Patients over 70 Years of Age

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Introduction

Deep brain stimulation (DBS) is an effective treatment for Parkinson's Disease (PD) and Essential Tremor (ET). There have been concerns that stimulation could negatively impact cognitive function in elderly patients. Patients being over age 70 has been used as a relative contraindication to DBS implantation. We reviewed our outcomes for patients implanted over age 70 to determine if age was associated with a negative outcome.

Methods

We conducted a quality assurance review of our DBS database looking for older patients (age> 70). Standard post-operative outcome measures were change in medication use, patient self-report of symptom change, and neuropsychological evaluation with the Dementia Rating Scale (DRS-2), Mini-Mental Status Exam (MMSE), and Trailmaking Tests A and B (Trails A&B). These objective neuropsychological measures were administered at the pre-operative baseline and were compared to assessment at 3, 6, and 12 months postoperative for differences in older (age > 70years) versus younger (age<70) using repeated measures analysis based on the generalized estimating equation (GEE) method.

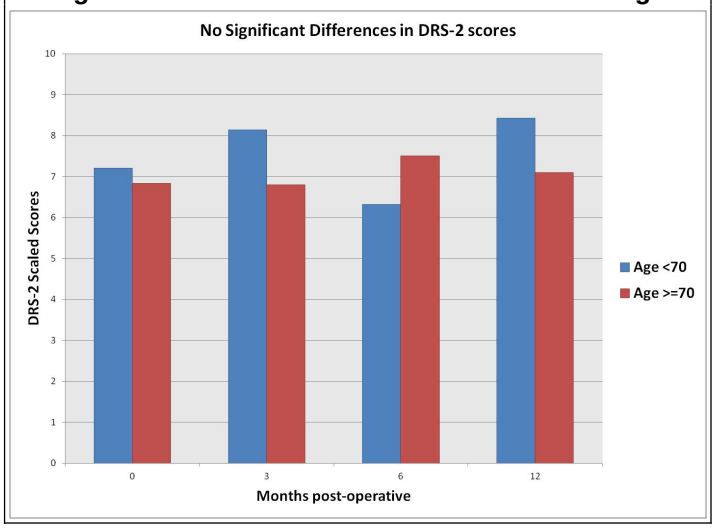
Results

Of 235 patients implanted for PD or ET, 212 patients were evaluable (age and at least one outcome available). Of these, 44% (93 patients) were over age 70, (66 PD, 27 ET).

There were no significant differences between age groups on improvement in symptoms or reduction of medications. 89% of the older patients and 91% of the younger patients reported improved symptoms at 3 months. 62% of younger patients and 60% of older patients reported decreasing medications.

Neurocognitive scores generally improved following surgery. On the DRS there were no significant neurocognitive differences between groups (p=0.21) or change over time (p=0.49)(see Fig 1). MMSE were also not significantly different between the age groups (p=0.26). Finally, there were no significant differences in age groups on Trails A (p=0.216) or Trails B (p=0.10). Interestingly, in both groups, Trails B tended to worsen at 3 months and then improved at 12 months (p=0.235), although still no significant difference between age groups (p=0.10)

Figure 1. No Differences in Outcomes due to age



Conclusions

Older patients had similar outcomes, with improved symptoms in most cases, medication reduction in many cases, and no differences in neurocognitive changes at 3,6, and 12 months postoperatively, compared to younger patients. We believe appropriately selected patients over 70 can benefit from DBS implantation.

Learning Objectives

By the conclusion of the session, participants should be able to describe the outcomes seen in older patients treated with deep brain stimulation for either Parkinson's Disease or Essential Tremor