Reviewer's report

Title: When battery exhaustion lets the lame walk: A case report on the importance of long-term stimulator monitoring in deep brain stimulation

Version: 2
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Reviewer: alessandro tessitore

Reviewer's report:

The aim of this case report was to underline the need to repeatedly monitor not only battery capacity, but also stimulator-related side-effects after DBS implantation.

Major Compulsory Revisions

1) The case description is somehow confusing. In the abstract, the authors report a selective gait improvement only when the stimulator battery was exhausted, suggesting that was the stimulator itself the cause of clinical worsening. In the manuscript, (background and case presentation) authors state that both gait and speech improvement were related to postoperative stimulator re-programming. Please clarify this point.

Moreover, why the authors did not stimulate more ventral contacts of the STN using a low frequency (60-80 Hz) during the stimulator re-programming phase? As demonstrated by several reports (Brozova et al., 2009, Ricchi et al., 2011; Sidiropoulos et al., 2013), this strategy might be helpful in controlling axial signs (i.e. imbalance, falls and hypophonia) of PD.

2) If gait and speech were improved by battery exhaustion, it would be interesting to know why no other clinical changes were observed when the device was transiently switched off (first visit) and when the stimulator was left off. It is likely that motor fluctuations in this patient might be also related to the long disease duration, dementia or visual hallucinations. The authors should comment on this point.

3) Authors state that “when the battery was exhausted the patient was able to speak intelligibly with some hypophonia”. Speech problems are well known complications after DBS, especially in those patients with long disease duration and cognitive impairment. Have the authors scored speech dysfunction before and after DBS using validated scales?

4) Finally, the authors state that when the battery was exhausted “rising from chair was fast, but postural responses were markedly reduced, resulting in a very unsteady gait”. However, the UPDRS motor score (24/108) did not change before and after the battery exhaustion. Authors should better clarify this point. It might helpful to show videos of the patient, if available.

5) This clinical case could be a good example of the complex interplay between axial motor deterioration and cognition in PD. In this patient speech, gait and
postural stability worsened together with long disease duration and the appearance of visual hallucinations and dementia. Moreover, several reports (Krack et al., 2003; Funkiewiez et al., 2004; Schupbach et al., 2005; Contarino et al., 2007; Wider et al., 2007) have highlighted that although the beneficial effects of DBS procedure are maintained at 5 years, axial motor features and cognitive decline may occur over time after implantation. Authors should comment in the discussion section the possibility that also the progression of the disease and the appearance of medication- and stimulation-resistant symptoms may play a role in this clinical case.

Minor Essential Revisions
1) “patient’s wife” should be “his caregiver”
2) “some hypophonia” should be “mild hypophonia”

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests