

## WHAT IS THE BEST TREATMENT IN ADVANCED PD? – DBS

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The management of Parkinson's disease (PD) becomes challenging when motor complications (e.g. motor fluctuations including loss of medication effects such as 'wearing off', end-of-dose effect, 'sudden off', and dyskinesia) can no longer be controlled adequately by changes in oral medication. In this situation three options may be available based on the characteristics of an individual patient: deep brain stimulation, apomorphine infusion or intrajejunal levodopa infusion.

The current evidence best supports deep brain stimulation (DBS), with more well designed, i.e. prospective, randomized controlled trials (RCTs) compared to infusion therapies. In addition, class I and II studies directly compared DBS with best medical (pharmacological) treatment (BMT), which sometimes included apomorphine<sup>1</sup>. Most recently, the EARLYSTIM study demonstrated, that in young patients with early motor complications DBS may lead to better improvement in quality of life than optimized medical therapy<sup>2</sup>. Moreover, DBS has the highest adherence of all three therapies in real clinical practice, while infusion therapies have a high drop out rate of up to 30-50% within the first few years. This underlines the efficacy and tolerability of DBS.

There are, however, a number of exclusion criteria, which limit the application of DBS to a relatively restricted subgroup of PD patients. DBS is most effective in patients with an excellent levodopa response, in particular without any axial signs of Parkinsonism in the ON-state. The patients must not suffer from eminent or overt dementia, unstable psychiatric conditions or general frailty<sup>3</sup>. These prerequisites are best fulfilled by younger patients.

Because the window of opportunity is limited for DBS within the course of Parkinson's disease, I am suggesting to offer this therapy first line to suitable candidates. Infusion therapies should be reserved to candidates not suitable for DBS or those, who refuse a surgical intervention.

### References

1. Volkmann J, Albanese A, Antonini A, et al. Selecting deep brain stimulation or infusion therapies in advanced Parkinson's disease: an evidence-based review. *J Neurol.* 2013; **260**(11): 2701-14.
2. Schuepbach WM, Rau J, Knudsen K, et al. Neurostimulation for Parkinson's disease with early motor complications. *N Engl J Med.* 2013; **368**(7): 610-22.
3. Volkmann J, Deuschl G. Deep brain stimulation. *Handb Clin Neurol.* 2007; **84**: 261-77.