

Botulinum Toxin And Parkinson's Disease: A Powerful Therapeutic Agent When Used With Awareness

Marco Orsini^{1*}, Marcos RG de Freitas², Marco Antônio Araújo Leite², Eduardo Lima Trajano²
Débora Meireles Mesquita³, Monara Nunes⁴, Mauricio Santanna⁵, Victor Hugo Bastos⁴

¹Mestrado profissional em Ciências Aplicadas em Saúde- Universidade Severino Sombra.

²Universidade Federal Fluminense.

³Escola Superior de Ensino Helena Antipoff - Faculdades Pestalozzi.

⁴Universidade Federal do Piauí, Piauí, Brazil.

⁵Instituto Federal do Rio de Janeiro.

Accepted 6 March, 2017.

ABSTRACT

The botulinum toxin is an effective treatment modality for many neurological conditions, and could have a safe and useful role in the treatment of Parkinson's disease. When appropriate targets and doses are selected, botulinum toxin avoids drug interactions and side effects of new drugs associated with levodopa, the precursor of dopamine used in treatment for Parkinson's disease since 1970s. The application of botulinum toxin has shown good results in the treatment of abnormal movements and many other symptoms that are often challenging in Parkinson's therapy.

Keywords: Parkinson's disease, botulinum toxin, therapy drug.

Parkinson's disease (PD) is a lifelong chronic progressive neurodegenerative condition. There are a wide range of drug treatments for (PD). The choice of drugs depends on a combination of factors including the relative effectiveness and adverse effect profile of the agents, patient comorbidities, patients' employment status, clinician experience and patient preference. As the disease progresses, combination therapy is prescribed but there are gaps in clinical knowledge about when this should be initiated and what combinations of therapies are most effective. Levodopa, the precursor of dopamine, has been used as the mainstay of treatment for Parkinson's disease since the early 1970s. It is given with a dopa decarboxylase inhibitor (DDI) to reduce the peripheral availability of levodopa and thereby reduce the adverse effects associated with treatment (Halliday *et al*, 2011; Burn & Boulicault, 2015; Barnett, 2016).

Double blind, placebo controlled studies, as well as open label clinical trials, provide evidence that, when appropriate targets and doses are selected, botulinum toxin (BTX) temporarily ameliorates (PD) symptoms. When injected not more often than every three months, the risk of blocking antibodies is slight. Long term experience with this agent suggests that it is an effective and safe treatment not only for approved indications but also for an increasing number of off-label indications (Bruno *et al*, 2016).

(BTX) are an effective treatment modality for many neurological conditions, and could have a safe and useful role in the treatment of (PD) symptoms, such as: pain (dystonia or musculoskeletal), gait (freezing), dystonia (lingua protusion, cervical, foot, pisa syndrome), sialorrhea (drooling), tremor (hand and jaw), disfagia, lower urinary tract symptoms, postural deformities, camptocormia, blepharospasm|apraxia

of eyelid opening, bruxism and constipation. Other conditions associated with Parkinson's disease, which will not be reviewed here, but may benefit from botulinum toxin treatment include anterocollis (also known as dropped head syndrome), hyperhidrosis, seborrhea (Giladi *et al*, 2001; Jankovic, 2004; Sheffield & Jankovic, 2007; Barbero *et al*, 2016; Gupta & Visvanathan, 2016; Pandey & Garg, 2016; McDonald, Winge, Burn, 2017).

Parkinson's disease is usually managed with a combination of pharmaceutical agents, some of which are known to be associated with adverse effects. The range of drugs involved and the differences in severity and frequency of adverse reactions make it difficult to present universal advice for limiting harm across all potential combinations (Dupouy *et al*, 2016). Therapeutic education is an answer for PD patients who need to know and understand their disease and treatment (Jost, 2015; Bertram *et al*, 2015). Targeted treatment with (BTX) is essential in this context, as it avoided drug interactions and side effects of new drugs associated with levodopa, it was safe and well tolerated. Therapeutic education programs are always evolving (Dupouy *et al*, 2016).

In medicine, rarely has a therapeutic agent been found efficacious in the management of so many symptoms and in such a relatively short time as (BTX). This update highlights seminal contributions that have introduced the application of (BTX) in the field of movement disorders (PD), provides evidence-based contributions that have established the drug as an effective treatment for abnormal movements and other symptoms in (PD) patients. A 20-year experience with BTX treatment in parkinsonism and (PD) shows that injections are a safe and useful tool for the treatment of many symptoms that are often challenging to treat.

Corresponding Author: Marco Orsini^{1*}

Mestrado profissional em Ciências Aplicadas em Saúde- Universidade Severino Sombra.

Email: orsinimarco@hotmail.com

References

1. Halliday G, Lees A, Stern M (2011). Milestones in Parkinson's Disease--Clinical And Pathologic Features. *Mov Disord.* (6):1015-21.
2. Burn D, Boulicault D. UK (2015). Parkinson's Excellence Network: Time For A Paradigm Shift In Parkinson's Care. *Neurodegener Dis Manag.* 5(3):177-80.
3. Barnett R (2016). Parkinson's disease. *Lancet.* 387(10015):217. doi: 10.1016/S0140-6736(16)00049-0.
4. Bruno VA1, Fox SH1, Mancini D1, Miyasaki JM2 (2016). Botulinum Toxin Use in Refractory Pain and Other Symptoms in Parkinsonism. *Can J Neurol Sci.* 43(5):697-702. doi: 10.1017/cjn.2016.279.
5. Giladi N1, Gurevich T, Shabtai H, Paleacu D, Simon ES (2001). The Effect Of Botulinum Toxin Injections To The Calf Muscles On Freezing Of Gait In Parkinsonism: A Pilot Study. *J Neurol.* 248(7):572-6.
6. Jankovic J (2004). Botulinum toxin in clinical practice. *J Neurol Neurosurg Psychiatry.* 75(7):951-7.
7. Sheffield JK, Jankovic J (2007). Botulinum Toxin In The Treatment Of Tremors, Dystonias, Sialorrhea And Other Symptoms Associated With Parkinson's Disease. *Expert Rev Neurother.* 7(6):637-47.
8. Barbero P, Busso M, Artusi CA, De Mercanti S, Tinivella M, Veltri A, Durelli L, Clerico M (2016). Ultrasound-guided Botulinum Toxin-A Injections: A Method of Treating Sialorrhea. *J Vis Exp.*(117). doi: 10.3791/54606.
9. Gupta AD, Visvanathan R (2016). Botulinum toxin for foot dystonia in patients with Parkinson's disease having deep brain stimulation: A case series and a pilot study. *J Rehabil Med.* 48(6):559-62. doi: 10.2340/16501977-2094.
10. Pandey S, Garg H (2016). Postural and striatal deformities in Parkinson's disease: Are these rare? *Indian J Med Res.* 143(1):11-7. doi: 10.4103/0971-5916.178577. Review.
11. McDonald C, Winge K, Burn DJ (2017). Lower urinary tract symptoms in Parkinson's disease: Prevalence, aetiology and management. *Parkinsonism Relat Disord.* 35:8-16. doi: 10.1016/j.parkreldis.2016.10.024. Review.
12. Dupouy J, Ory-Magne Z, Brefel-Courbon C (2016). Other Care In Parkinson's Disease: Psychological, Rehabilitation, Therapeutic Education And New Technologies. *Presse Med.* pii: S0755-4982(16)30360-8. doi: 10.1016/j.lpm.2016.11.009.
13. Jost WH (2016). The Option Of Sonographic Guidance In Botulinum Toxin Injection For Drooling In Parkinson's Disease. *J Neural Transm* (Vienna). 123(1):51-5. doi: 10.1007/s00702-015-1416-2.
14. Bertram KL1, Stirpe P2, Colosimo C3 (2015). Treatment Of Camptocormia With Botulinum Toxin. *Toxicon.* 107(Pt A):148-53. doi: 10.1016/j.toxicon.2015.06.004.