

Botulinum Toxin Treatment for Refractory Sialorrhea in a Geriatric Patient with Parkinson's and Alzheimer's Disease: A Case Report

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Abstract

Sialorrhea, otherwise known as hypersalivation, is a symptom frequently observed in neurodegenerative diseases such as Parkinson's disease and dementia. This condition can have a significant impact on the patient's social life and quality of life. Pharmacological treatments frequently prove to be either ineffective or intolerable for elderly patients. In this case report, the efficacy and safety of botulinum toxin administration are presented in a 78-year-old male patient with diagnoses of Parkinson's and Alzheimer's disease who presented with complaints of profuse salivation from the mouth and nose.

Key Words: *Alzheimer's disease, Botulinum toxin, Geriatrics, Parkinson's disease, Sialorrhea*

Introduction

Sialorrhea is defined as a condition resulting from the accumulation of saliva in the mouth due to swallowing disorders in the oral and pharyngeal phases, rather than an increase in saliva production (1). The prevalence of sialorrhea in Parkinson's disease has been reported to reach up to 70% (2). In patients diagnosed with Alzheimer's disease, the development of sialorrhea is facilitated by cognitive decline, loss of swallowing coordination, and the cholinergic effects of concomitant medications (3).

In elderly patients, sialorrhea is not merely a physical problem but can lead to serious consequences such as social isolation, depression, risk of aspiration pneumonia, and increased care burden (4). Anticholinergics are frequently contraindicated in the geriatric population due to their systemic side effects; consequently, the importance of locally effective treatment options is increasing (5). In recent years, the injection of botulinum toxin into the major salivary glands has emerged as a leading treatment option due to its efficacy and safety (6).

Case Presentation

A 78-year-old male patient presented at the geriatric outpatient clinic with a complaint of progressively increasing drooling from

the mouth and nose over the preceding six months. The patient's family members reported that this condition had significantly limited his social life, rendered him unable to leave his house, and increased his need for care.

The patient's medical history included a 25-year history of type 2 diabetes mellitus, hypertension, a history of coronary stenting following a myocardial infarction five years prior, a seven-year history of Parkinson's disease, and a three-year history of Alzheimer's disease. The patient's medication regimen included a combination of donepezil and memantine, quetiapine, levodopa/benserazide, gliclazide, linagliptin, atorvastatin, mirabegron, pantoprazole, clopidogrel, metoprolol, and rasagiline.

A physical examination of the patient revealed that their general condition was satisfactory, with the patient displaying signs of alertness, cooperation, and adequate orientation. No pathological findings were identified during systemic examination. A comprehensive geriatric assessment revealed partial dependence in activities of daily living (ADL) and instrumental activities of daily living (IADL). The subject's Mini Nutritional Assessment (MNA) score was 12, indicating optimal nutritional status. The

Yesavage Geriatric Depression Scale (YGDS) score was 7, and the Mini-Mental State Examination (MMSE) score was 24.

Laboratory tests revealed no significant abnormalities other than mild normochromic normocytic anaemia. The erythrocyte sedimentation rate and C-reactive protein levels were found to be mildly elevated, consistent with the patient's age. Cranial magnetic resonance imaging revealed atrophy of the cerebral sulci, widening of the gyri, and gliotic areas suggestive of chronic ischemia.

It was evident from the patient's and family's history that they had visited the family physician on multiple occasions over the preceding six months. They had also used antibiotics and cold medications, but there had been no improvement in symptoms. Following the exclusion of infectious, allergic, and upper respiratory

tract causes, the sialorrhea was considered to be of neurological origin.

During a medication review, donepezil was discontinued due to its cholinergic effects, and treatment was switched to memantine alone. Following a period of one month, it was noted that the patient continued to experience elevated levels of salivation, accompanied by a deterioration in their depressive symptoms. Consequently, following consultation with the patient and their family, a course of botulinum toxin treatment was planned.

A plastic surgeon administered botulinum toxin injections into the bilateral parotid and submandibular glands under ultrasound guidance. The procedure was performed without incident. Clinical photographs demonstrating botulinum toxin injection into the bilateral parotid glands are presented in Figure 1.



Figure 1. Clinical photographs demonstrating botulinum toxin injection into the salivary glands for treatment of refractory sialorrhea in a geriatric patient with Parkinson's disease and Alzheimer's disease.

In the ensuing visit, conducted on the tenth day of treatment, the patient reported a substantial reduction in drooling. Furthermore, he noted that he was now able to go outside and that his social life had improved. The patient and his family expressed the highest levels of satisfaction with the treatment.

Discussion

This case demonstrates the deleterious effect of sialorrhea on quality of life and the efficacy of botulinum toxin treatment in a donepezil treatment indicates that sialorrhea is predominantly attributable to neurogenic mechanisms.

Anticholinergics (e.g. glycopyrrolate, atropine) should be used with caution in elderly patients due to the potential side effects of confusion, urinary retention and constipation (9). Botulinum toxin exerts a local and reversible effect on the salivary glands by obstructing acetylcholine release (10).

As demonstrated in the extant literature, the administration of botulinum toxin has been shown to result in a significant reduction in sialorrhea in patients diagnosed with Parkinson's disease, with the efficacy of this treatment lasting for a period of 3-6 months

geriatric patient suffering from Parkinson's and Alzheimer's disease. In the context of Parkinson's disease, sialorrhea emerges as a consequence of dopaminergic dysfunction, diminished swallowing frequency, and postural abnormalities (7).

In patients diagnosed with Alzheimer's disease, cognitive deterioration and the impact of cholinergic medications can serve to compound existing symptoms (8). In this particular instance, the continued presence of symptoms following the cessation of (11, 12). Furthermore, the minimal systemic side effects represent a significant advantage in the geriatric population (13).

Conclusion

Sialorrhea is a condition that is frequently disregarded in geriatric patients, yet it has been demonstrated to markedly impair quality of life. In the event of patients suffering from Parkinson's or Alzheimer's disease who present with complaints of drooling from the mouth and nose, botulinum toxin treatment should always be considered as a possible treatment option. This case supports the notion that botulinum toxin is an effective, safe, and quality-of-life-enhancing treatment option.

Availability of Research Data

The authors are available and ready to supply the data upon any request through the corresponding author.

Artificial Intelligence

No artificial intelligence-supported tools were used in any stage of the planning, data collection, analysis, interpretation, or manuscript writing process of this study.

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Author Contributions

A.Ö: Research hypothesis, management.

İ.T: Data collection/processing.

S.U: Literature review, sourcing information/equipment, writing, review.

Conflict of Interest

The authors have no conflicts of interest to declare.

Informed Consent

Written informed consent was obtained from the patient and his legally authorized representative/next of kin for the publication of this case report and the accompanying anonymized clinical images. The participant also provided informed consent before enrollment in this study.

Declaration of Helsinki

The study was conducted in accordance with the principles of the Declaration of Helsinki.

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