

Improvement of cognitive impairment and hallucination by pharmacological and non-pharmacological therapies for a parkinsonism's disease with dementia

Abstract

We reported a case of 80-years-old man with Parkinsonism Disease Dementia (PDD) who experienced an improvement of hallucination with decreasing dose of madopar and non-pharmacological therapies. The patient was initially diagnosed as Parkinson's disease (PD) 15 years ago, and was medicated with madopar (dose of 250mg per day). The dose of madopar was gradually increased to 375mg per day during last 15 years because of decreasing curative effect. New symptoms of frequent visual hallucinations and aggressive behavior have emerged. After that, he was hospitalized to our department three months ago with diagnosis of PDD; we adjusted the dose of madopar to 250 mg per day. Selegiline was later added to help managing the subsequent aggravation of his Parkinsonism. Quetiapine fumarate (25mg a day) was used to control his visual hallucinations and aggressive behavior. The frequency of visual hallucinations and attacking behaviours has been decreased gradually after drug treatment. We also prescribed the non-pharmacological therapies for the patient by means of musical therapy and cognitive psychotherapy. Two months later, the severity of his hallucination was alleviated. Furthermore, his NPI evaluating scores decreased from 42 to 12, and MMSE evaluating scores increased from 15 to 22. The pharmacological and non-pharmacological therapies may be good choices for PDD patient suffering from extrapyramidal symptoms and dementia.

Keywords: Parkinsonism's disease with Dementia, visual hallucinations, Non-pharmacological therapy

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Abbreviations: PDD, Parkinsonism's Disease with Dementia; PD, Parkinson's Disease; MMSE, Mini Mental State Examination; UPDRSm, the motor subscale of the Unified Parkinson's Disease Rating Scale; NPI, Neuropsychiatric Inventory; MCI, Mild Cognitive Impairment; MRI, Magnetic Resonance Imaging

Introduction

Patients with Parkinson's Disease (PD) are at a six-fold increased risk for developing Parkinsonism's Disease with Dementia (PDD) relative to elderly controls. Many PD patients went through a stage of mild cognitive impairment (MCI) before progressing to dementia. Besides the originally common neurodegenerative movement disorders, which are characterized clinically by four cardinal motor symptoms: rigidity, tremor, bradykinesia and postural instability, the clinical features of PDD appear incognitive decline and executive dysfunction. Patients with PDD may also suffer from neuropsychiatric symptoms including depression, anxiety, apathy, hallucinations and delusions.^{1,2} The clinical treatments of PDD consist of management of cognitive impairments, motor parkinsonisms, neuropsychiatric symptoms and automatic dysfunctions.³ Anti-parkinsonian agents such as madopar have the potentiality to lead to psychotic symptoms (hallucinations and confusion). If anti-psychotic agents are used to improve the psychotic symptoms, motor problems may also emerge. There are many clinical conflicts in the treatments of PDD. Non-pharmacological interventions have the potentiality to alleviate cognitive decline and improve psychosocial aspects in mild cognitive impairment and Alzheimer's dementia. These interventions rang from cognitive training and music therapy to biographical approaches and sensory stimulation.⁴ Particular music intervention has specific effects

on patients' emotional well being, and offering promising methods to improve the quality of life for patients with AD.⁵

Case report

A 80-years-old man was hospitalized to our department on Feb 2014 for memory loss, behavioral and psychological symptoms. He had a history of Parkinsonism Disease for 15 years. In the last 6 months, he had already been experienced aggravating rigidity, resting tremors and postural instability, as well as visual hallucinations, aggressive behavior and orthostatic symptoms. One day he hurted his wife with a sword, so his family members felt that he was very dangerous and was not appropriated for staying at home. Based on the fore mentioned symptoms, we diagnosed this patient as Parkinsonism Disease Dementia (PDD). UPDRS motor subscale was used to measure the motor symptoms of Parkinsonism, and MMSE for cognitive impairment, NPI for psychiatric symptoms. His brain Magnetic Resonance Imaging (MRI) scans revealed several lacunars infarctions in the bilateral basal ganglia. The dose of madopar was 375mg per day when the patient was admitted to our department. Because the levodopa may lead to hallucinations, we adjusted the dose of levodopa to 250 mg per day, and selegiline was later added with the dose of 10 mg per day. Donepezil was used at the dose of 5 mg per day for management of memory loss.

One week later, quetiapine fumarate was used at the dose of 25 mg per day because of aggravation of psychiatric symptoms. We also prescribed non-pharmacological therapies such as musical therapy and cognitive psychotherapy. Soothing music was choosed to alleviate his mania and un peaceful mood for at least one hour every day. As the treatment regimens going on, his visual hallucinations and attacking

behaviours have gradually improved. Three months later, the slight relieves of motor symptoms was observed (UPDRSm from 15 to 10), as well as psychiatric and cognitive impairment were released (NPI scores from 42 to 12, MMSE scores from 15 to 18). The evaluating scales of psychological status in the course of treatment can be seen in Figure 1.

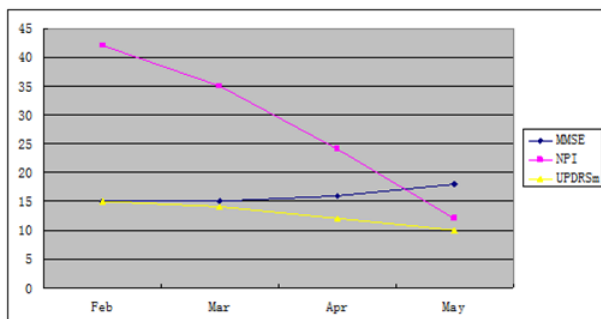


Figure 1 Clinical course.

Discussion

PDD is the final stage of Parkinson's disease, which is presented in 83% of 20-year survivors. There are a series of neuropsychiatric disturbances, including cognitive impairments, hallucinations, sleep disorders, anxiety and depression. Psychiatric symptoms accompanying dementia symptoms constitute the most difficult treatment challenges in advanced Parkinson's disease with dementia. In this case of PDD patient, we observed that pharmacological and non-pharmacological therapy may improve the visual hallucinations and aggressive behaviors, as well as the cognitive dysfunction. The non-pharmacological strategy for PDD include memory recovery, music therapy, daily life training and so on.⁶

Safe pharmacological approaches must be considered for the behavioral and psychological symptoms of dementia.⁷ Many studies have shown that acetylcholinesterase inhibitors can improve cognition and ability to performance of daily living in PDD, but it can also worsen motor symptoms and conversely aggravate the symptoms of PDD. Dopamine agonists administration to treat motor symptoms may worsen cognition, which have the potential risk of suffering psychiatric disorder. This patient has showed obvious hallucinations and attacking behaviors after using the levodopa (dose of 325mg). So the dose of levodopa for PDD must appropriate. As for this patient, I adjusted the dose of levodopa and add the atypic antipsychotic drug such as quetiapine fumarate to treat his hallucinations and attacking behaviors. Finally his hallucinations and aggressive behaviors were alleviated gradually.

Open trials indicate that treatment of psychosis in PDD with quetiapine was safe. Cholinesterase inhibitors combined quetiapine can be used to treat both psychotic and cognitive symptoms. But some people reported that anticholinergic drugs induce delirium in demented patients and therefore should be avoided.⁸ In our observation, anticholinergic drugs should be prescribed with the minimum dose for the PDD patients.

Non-pharmacological therapy was often chosen to treat the cognitive impairment and psychotic symptoms in AD. Music therapy has many benefits for Alzheimer's disease. It may help soothing an agitated person, sparking memories, engaging the mind even in the later stages of disease, improving eating in some cases. In this case, musical therapy was chosen to relieve the symptoms of hallucinations and aggressive behaviors. Singing along, or swaying or clapping hands with the music should be encouraged. Music therapy may awaken the desire to dance, which can be benefic for patients. A patient's enjoyment is typically increased when they move or sing with the music. Music therapy can also be linked to other memory-stirring activities such as looking at photographs. DASSA reported that music carefully selected from the participants' past can encourage conversation.⁹ As for this patient, he liked Beijing Opera very much, so we chose some classical Opera for him. We felt that he could calm down and relax from stress and tension when he was indulged in the music. We also observed that group members' responses to each other occurred spontaneously in the process of musical therapy.

Acknowledgments

None.

Conflicts of interest

None.

References

1. Arnaldi D, Morbelli S, Morrone E, et al. Cognitive impairment in degenerative parkinsonisms: role of radionuclide brain imaging. *Q J Nucl Med Mol Imaging*. 201256(1):55–67.
2. Emre M, Aarsland D, Brown R, et al. Clinical diagnostic criteria for dementia associated with Parkinson's disease. *Mov Disord*. 200722(12):1689–1707.
3. Aarsland D, Karlsen K. Neuropsychiatric aspects of Parkinson's disease. *Curr Psychiatry Rep*. 19991(1):61–68.
4. Narme P, Tonini A, Khatir F, et al. Non pharmacological treatment for Alzheimer's disease: comparison between musical and non-musical intervention. *Geriatr Psychol Neuropsychiatr Vieil*. 201210(2):215–224.
5. Holt FE, Birks TPH, Thorgrimsen LM, et al. Aroma therapy for dementia. *Cochrane Database Syst Rev*. 2003;(3).
6. Fan Z, Aman Y, Ahmed I, et al. Influence of microglial activation on neuronal function in Alzheimer's and Parkinson's disease dementia. *Alzheimers Dement*. 2014pii:S1552–5260(14)02501–1 doi:10.1016/j.jalz.2014.06.016.
7. Rolinski M, Fox C, Maidment I, et al. Cholinesterase inhibitors for dementia with Lewy bodies, Parkinson's disease dementia and cognitive impairment in Parkinson's disease. *Cochrane Database Syst Rev*. 2012;3:CD006504.
8. Drach LM. Drug treatment of dementia with Lewy bodies and Parkinson's disease dementia—common features and differences. *Med Monatsschr Pharm*. 2011;34(2):47–52.
9. Dassa A, Amir D. The role of singing familiar songs in encouraging conversation among people with middle to late stage Alzheimer's disease. *J Music Ther*. 201451(2):131–153.