



Letter to the Editor

Treatment of depression in Parkinson's disease



ARTICLE INFO

Keywords:

Parkinson disease
Non-motor symptoms
Depression
Dopamine agonist

Dear Editor,

Parkinson's disease (PD) is the second most common neurodegenerative disease with an incidence of 1 in 100 people over 50 years of age. Most common symptoms seen in this population are related to the motor system, but with increased awareness of non-motor symptoms (NMS), such as anxiety, depression, stress, fatigue, behavioral changes, sensory and sleep abnormalities are also being reported frequently, including anxiety, depression, stress, fatigue, behavioral changes, sensory and sleep abnormalities have been reported [1]. These symptoms need special consideration as these symptoms may exaggerate the motor symptoms. We are grateful to Espay et al. [2] for their recently published article entitled, 'Lack of independent mood-enhancing effect for dopaminergic medications in early Parkinson's disease' in *Journal of the neurological sciences*. They found that motor symptoms can get exaggerated with depression in these patients, dopamine agonist (DA) have no beneficial effect in the treatment of depression, and need of an additional medication class to treat depression in this population. This research is a significant contribution to science literature.

The dual therapeutic benefit of DA has been debated for a long time in the treatment of depression and motor symptoms of PD. The role of dopamine in depression is being studied in patients with PD and in the general population. It is hypothesized that there is secondary dysfunction of serotonergic cell bodies due to degeneration of mesolimbic and mesocortical neurons as one of the mechanisms of depression in PD. Remy et al. [3] also demonstrated that the loss of dopamine and nor-adrenaline in the limbic system is associated with depression. It is also noted that in depressed patients with PD there is hypometabolism of glucose in the frontal region compared to non-depressed patients.

There are significant discrepancies in the selection of anti-depressant drug in PD depression. Schaeffer et al. [4] in their review found that certain NMS of PD respond well to dopaminergic drugs. Dalle et al. [5] proposed the same concept that DA has an anti-depressant impact and confirmed with neuroimaging that dopamine

plays a major role in depression. Zhou et al. [6] found in their meta-analysis that DA and monoamine oxidase inhibitors (MAOI) are more effective in treating other symptoms than depression and selective serotonin receptor inhibitors (SSRIs), serotonin-norepinephrine receptor inhibitors (SNRIs) and a tricyclic antidepressant (TCAs) has good efficacy in improvement of depression. Xie et al. [7] highlighted the importance of cognitive behavioral therapy (CBT) in improving depression symptoms in PD patients in their meta-analysis.

We still have no guidelines for strict adherence to the treatment of depression in PD. All of these treatments are linked to the pathogenesis and in some trials clinical efficacy has been proven, so we cannot exclude any medication mentioned above. DA can be a dual sword, therefore we need more clinical trials in a large population to conclude that it has no effect in improving depression in patients with PD, as pathogenesis negates this concept. More studies like Espay et al. can be helpful to clearly comprehend each medication's pathogenesis and their clinical effectiveness in order to improve the quality of life in patients with PD.

Financial funding

There is no funding received from any institute.

Declaration of Competing Interest

The authors declare no competing interests.

References

- [1] M.H. Timmer, M.H. van Beek, B.R. Bloem, R.A. Esselink, What a neurologist should know about depression in Parkinson's disease, *Pract. Neurol.* 17 (5) (2017) 359–368, <https://doi.org/10.1136/practneurol-2017-001650>.
- [2] A.J. Espay, E.D. Foster, C.S. Coffey, L. Uribe, C.J. Caspell-Garcia, D. Weintraub, Parkinson's Progression Markers Initiative, Lack of independent mood-enhancing effect for dopaminergic medications in early Parkinson's disease, *J. Neurol. Sci.* 402

- (2019) 81–85, <https://doi.org/10.1016/j.jns.2019.05.009>.
- [3] P. Remy, M. Doder, A. Lees, N. Turjanski, D. Brooks, Depression in Parkinson's disease: loss of dopamine and noradrenaline innervation in the limbic system, *Brain* 128 (6) (2005) 1314–1322, <https://doi.org/10.1093/brain/awh445>.
- [4] E. Schaeffer, D. Berg, Dopaminergic therapies for non-motor symptoms in Parkinson's disease, *CNS Drugs* 31 (7) (2017) 551–570, <https://doi.org/10.1007/s40263-017-0450-z>.
- [5] E. Dallé, M.V. Mabandla, Early life stress, depression and Parkinson's disease: a new approach, *Mol. Brain* 11 (1) (2018) 18, <https://doi.org/10.1186/s13041-018-0356-9>.
- [6] C. Zhuo, R. Xue, L. Luo, F. Ji, H. Tian, H. Qu, X. Lin, R. Jiang, R. Tao, Efficacy of antidepressive medication for depression in Parkinson disease: a network meta-analysis, *Medicine* 96 (22) (2017), <https://doi.org/10.1097/MD.0000000000006698>.
- [7] C.L. Xie, X.D. Wang, J. Chen, H.Z. Lin, Y.H. Chen, J.L. Pan, W.W. Wang, A systematic review and meta-analysis of cognitive behavioral and psychodynamic therapy for depression in Parkinson's disease patients, *Neurol. Sci.* 36 (6) (2015) 833–843, <https://doi.org/10.1007/s10072-015-2118-0>.

Sidra Saleem*, Arsalan Anwar

Dow Medical College, Karachi, Pakistan

E-mail address: sidra.msaleem@gmail.com (S. Saleem).

* Corresponding author.