



## **Depression in Parkinson's disease**

Mohammed A. Rana, Kevin Hafez\*

*Parkinson's Clinic of Eastern Toronto, Toronto, Canada*

Parkinson's disease (PD) has both motor and non-motor symptoms. There is growing evidence that some of the non-motor symptoms may antedate the motor symptoms and can cause increasing disabling as the disease progresses. Depression is one of the important symptoms of PD.<sup>1</sup> About 40 percent of patients with PD may have anhedonia, lack of initiative and assertiveness. The majority of the patients have dysthymia; however, some patients may meet the DSM-IV criteria for major depression. Nonetheless, loss of interest, fatigue, irritability, lack of energy, indecisiveness and sadness are more frequent in PD. Depression may precede the onset of motor symptoms of PD by many years in some cases.<sup>2</sup>

The exact neurophysiological mechanism of depression in PD is not clear; however, it may involve a deficiency of multiple neurotransmitters in mesocortical monoaminergic systems, including dopaminergic projections, noradrenergic and serotonergic projections. Loss of dopaminergic neurons in the ventral tegmental and orbitofrontal area leads to apathy and abulia which is often seen in PD. Studies have demonstrated a decrease in the 5 HT1A receptor binding in the limbic cortex, as well as the frontal and temporal cortical areas in depressed patients who also have PD. Therefore,

depression in PD is believed to be multifactorial and due to underactivity of the orbitofrontal and limbic cortical areas.<sup>3</sup>

Patients may have depressive episodes during off periods and levodopa has been shown to improve symptoms of anxiety and depression in these patients. Tricyclic antidepressants have been reported to have a beneficial effect in depression in PD but the use of SSRIs such as sertraline, fluoxetine and paroxetine is usually first line treatment.<sup>4</sup> Also, SSNIs such as Bupropion have demonstrated great effect.<sup>5</sup> Electro Convulsive Therapy (ECT) has been used previously to treat depression but there is insufficient evidence about the safety and efficacy of ECT in PD.<sup>6,7</sup> In PD patients with OFF period depression, the optimizing dopaminergic therapy and adding selective serotonin reuptake inhibitors is current practice in most centers. Patients may not volunteer to express the fact that they feel depressed but may simply appear to be withdrawn or unkempt. Thus, it is important to screen PD patients for depression.

### **REFERENCES**

1. Lemke MR. Depressive symptoms in Parkinson's disease. *Eur J Neurol* 2008; 15 Suppl 1: 21-25.
2. Starkstein SE. Apathy in parkinson's disease: Diagnostic and etiological dilemmas. *Mov Disord* 2012; 27 (2): 174-178

\*Correspondence to: Dr. Kevin Hafez. Department of Family Medicine, 2500 University Dr. NW, Calgary, Alberta T2N 1N4.

3. Gallagher DA, Schrag A. Psychosis, apathy, depression and anxiety in Parkinson's disease. *Neurobiol Dis.* [in press]
4. Barone P. Treatment of depressive symptoms in Parkinson's disease. *Eur J Neurol* 2011; 18 Suppl 1:11-15
5. Raskin S, Durst R. Bupropion as the treatment of choice in depression associated with Parkinson's disease and its various treatments. *Med Hypotheses* 2010; 75(6): 544-546.
6. Popeo D, Kellner CH. ECT for Parkinson's disease. *Med Hypotheses* 2009; 73(4): 468-469.
7. Atre-Vaidya N and Jampala VC. Electroconvulsive therapy in Parkinsonism with affective disorder. *Br J Psychiatry* 1988; 152: 55-58.