Non motor manifestations of Parkinson’s disease

Parkinson’s disease is gradually and inevitably progressive over several decades and it has serious motor and non-motor complications. Although the clinical manifestations of PD remain similar to those described by Parkinson in 1817, our knowledge of the associated findings has increased dramatically. This article discusses the non-motor problems of PD.

Dr Atef Michael
Consultant Physician and Geriatrician, Russell’s Hall Hospital, Dudley, UK
email: a.michael3@gmail.com

Parkinson’s disease (PD) is a neurodegenerative progressive disorder. It affects between one in 1000 and one in 600 of the British population.1 The natural history of PD has been confounded by various treatment modalities, some of which may slow the natural history of the illness, yet it remains a disease that is gradually and inevitably progressive over several decades.2 PD has serious motor and non-motor complications with significant impact on the individual’s health-related quality of life (HRQL) and health-related resource use.3 The aetiology of PD remains unknown, and the literature shows many possible risk factors. The cardinal features of PD are hypokinesia, rigidity, coarse resting tremors, and impaired righting reflexes. The diagnosis of PD is entirely clinical and until now there is no biological marker for PD. A number of diagnostic criteria have been formulated for diagnosis of PD; one set is the UK Parkinson’s Disease Society Brain Bank clinical diagnostic criteria, which are widely accepted in the UK. However the diagnosis of PD can be difficult as extra pyramidal symptoms are not uncommon in healthy older people.4,5

Although the clinical manifestations of PD remain similar to those described by Parkinson in 1817, our knowledge of the associated findings has increased dramatically.

Neuropsychiatric symptoms

Depression is the most common neuropsychiatric complication of PD.6 Studies of the frequency of depression in PD patients have shown figures ranging between 2-7% and 70%.7 The disparity was attributed to methodological differences between the different studies. In an analysis of the literature that focused on 45 PD depression studies conducted from 1922 through to 1998, the results indicate that the prevalence of depression is 31% for all PD patients.8 The clinical manifestations of PD depression include apathy, psychomotor retardation, pessimism, memory impairment, irrationality, and suicidal ideation without suicidal behaviour.8

Anxiety disorders, particularly generalised anxiety, panic, and social phobia, occur in up to 40% of patients with PD.9 Acute confusional states sleep abnormalities, hallucinations, and paranoid delusions (psychosis) are also common in PD.10 In addition, PD patients can experience psychotic symptoms, mild cognitive impairment, and dementia.11 Psychotic symptoms occur in 20–30% of PD patients receiving antiparkinsonian medications, and visual hallucinations with or without delirium and paranoid delusions are the most frequent symptoms.12 Barnes and David estimated that between 8% and 40% of PD patients receiving long term antiparkinsonian treatment will experience visual hallucinations during the course of the illness.13

In a study of 133 admissions of patients with Parkinsonism, 24% of the patients had a history of hallucinations, 18% had confusion, 21% had dementia. 25% of the admitted patients in this study were on antidepressants, 16% on anxiolytics, 7% on antipsychotics, and 3% on cholinesterase-inhibitors.14

The risk of developing dementia in patients with PD is at least doubled compared to age matched subjects without the disease.10 Dementia and hallucinations are the two main factors increasing the risk of admission to nursing homes of older people with PD.15 Neuropsychological investigations of PD patients have shown impairments that include deficit of behavioura
regulation and defective use of memory stores even in the early stages of the disease. Ross et al proposed three dementia syndromes in PD patients: one that is mild subcortical-type, a second that is more severe with a wider range of cognitive impairment however distinct from Alzheimer-type dementia and a third severe dementia with subcortical and cortical involvement that may reflect basal ganglia and Alzheimer-type pathology.

**Autonomic dysfunction**

PD may involve the peripheral autonomic system and can cause primary autonomic failure. The prevalence of autonomic dysfunction in idiopathic PD is controversial, varying from 23% to 80% in selected hospital attendees. Autonomic dysfunction may manifest as cardiovascular, gastrointestinal, or genitourinary symptoms. Postural hypotension is a cardinal feature of autonomic dysfunction. In PD patients, the prevalence of symptomatic orthostatic hypotension may be as high as 20%. Orthostatic hypotension may be induced or worsened by dopaminergic drugs.

**Gastrointestinal symptoms**

Gastrointestinal motility disorders are frequent in patients with PD. Features of gastrointestinal dysfunction include sialorrhea, dysphagia, gastroparesis, and constipation. Sialorrhea occurs in 75% of patients with PD, and dysphagia in about 50%. Aspiration due to dysphagia is a major cause of morbidity and mortality in PD. Gastrointestinal dysmotility may be mediated by central and enteric nervous system mechanisms. Lewy bodies have been found in the myenteric plexus of both the oesophagus and colon. This suggests that the PD process may also affect the enteric nervous system. The effect of antiparkinsonian medication is overestimated; however, it certainly has an influence on gastrointestinal motility.

Domperidone is the drug of choice for motility disorders of the upper gastrointestinal tract. In the lower gastrointestinal tract, conservative therapeutic options should be tried first. Non pharmacological measures include lifestyle modifications and dietary advice. High fibre content may be helpful. Medications include the different classes of laxatives; stool softeners, osmotic and stimulant laxatives. Enemas can be tried in refractory cases.

**Urinary symptoms**

Urinary symptoms are common in PD. They are mainly irritative (frequency, urgency, and urge incontinence) and are attributed to detrusor hyperreflexia. Obstructive symptoms (hesitancy and weak urinary stream) may be seen alone or combined with irritative symptoms. Obstructive symptoms may be due to anticholinergics, obstructive uropathy, or point to the presence of multiple system atrophy.

In a review of medical records from 5,986 subjects, aged 65 years and older, in northern California, there was an increased risk of newly recognised urinary incontinence following a diagnosis of PD, dementia and stroke. Urinary incontinence increased the risk of hospitalisation and the risk of admission to a nursing home, independently of age, gender and the presence of other disease conditions. Urinary catheterisation could well be a marker of more advanced Parkinsonism or coexisting comorbidity, and it is a marker for greater risk of institutionalisation.

**Respiratory symptoms**

The pattern of pulmonary function impairment in PD patients is consistent with neuromuscular disease. Parkinsonian syndromes can produce upper airway obstruction and abnormalities of ventilatory control. Not only Parkinsonian syndromes but also its medications can produce respiratory disease. A syndrome of levodopa-induced respiratory dysfunction has been described. Also the ergot-derived dopamine agonists can cause pleural and pulmonary fibrosis.

**Falls**

Impaired balance with an increased risk of falls is an ominous development in PD patients. In a community-based sample of 124 patients with PD the most frequently occurring complications of PD (64%) were axial features such as postural instability with falls. Similarly, when 109 subjects with idiopathic PD were prospectively followed up for one year, falls occurred in 68% of the subjects. Previous falls, disease duration, and dementia were independent predictors of falling.

The risk of fracture is additionally increased as a result of reduced bone mineral density. Pressley et al, using survey data of 24,831 elderly patients, found that patients with parkinsonism (n=791) had more
injuries resulting in broken bones, including broken hips, during the 5-year study. Broken hips were more prevalent among men and women with Parkinsonism compared to those without.31

Also in another study 100 patients with PD and five patients with progressive supranuclear palsy were questioned about falls. It found that 38% of Parkinsonian patients fell, and 13% fell more than once a week. It also found that 13% had broken bones, 18% were hospitalised, and 3% were confined to a wheelchair.32

Comorbid conditions

Patients with Parkinsonism have high rates of both associated and unrelated prevalent comorbid conditions.33 Comorbidity is an under-recognised contribution to higher resource use and expenditures.33

Patients with PD aged 70 years and other are more likely to die than their cohort.33 Patients with Parkinsonian syndromes have excess morbidity and mortality from respiratory causes.26

Postoperative morbidity and mortality

To study postoperative morbidity and mortality in PD patients who undergo elective surgery a retrospective cohort study was conducted. The study included 41,213 patients (234 patients with PD and 40,979 without) who underwent elective bowel resection, cholecystectomy, or radical prostatectomy.

Patients with PD had an average acute hospital stay 2.34 days longer than non-PD patients (p<0.001). However, the mortality difference did not reach statistical significance in this study. PD patients had significantly increased incidences of aspiration pneumonia, urinary-tract infection, and bacterial infections.34

Quality of life

In a population-based study, 124 patients with PD were asked to complete a Quality of life (QoL) battery including the EuroQoL 5D (EQ-5D), the Medical Outcome Study Short Form (SF 36), and the 39-item Parkinson’s Disease questionnaire (PDQ-39). The study showed that Quality of life and the physical summary of the SF 36 deteriorated significantly with increasing disease severity. The greatest impairment was seen in the areas related to physical and social functioning.35

Physicians know that medication-related complications may have more serious impact on the patients’ quality of life than the initial manifestations of PD.

I have no conflict of interest