The physical, social and emotional effects of bowel dysfunction in Parkinson’s disease

Constipation associated with Parkinson’s disease can damage wellbeing and restrict independence. Effective bowel care is essential to maximise people’s quality of life

INTRODUCTION
Some 60-80% of people with Parkinson’s disease (PD) suffer from constipation (Ueki and Otsuka, 2004). Bowel dysfunction in this group causes distress and disability and affects both self esteem and social participation.

PD is a common, progressive movement disorder affecting 3% of the population aged over 65 years (Ross et al, 2000). It is associated with the degeneration of dopaminergic neurons in the substantia nigra, leading to reduced levels of the neurotransmitter dopamine.

People with PD classically present with symptoms of bradykinesia, tremor, rigidity and rest tremor. These neurological symptoms may be referred to as parkinsonism or Parkinson’s syndrome, which is further characterised by hypokinesia and postural instability.

Parkinsonism can be caused by drugs as well as by conditions including multiple cerebral infarction and degenerative conditions such as progressive supranuclear palsy and multiple system atrophy (National Institute for Health and Clinical Excellence, 2006).

Although PD is predominantly a movement disorder, other impairments often develop, including depression and dementia.

The disease is incurable and associated with progressive disability and increased mortality. As it progresses, patients face a multitude of problems that affect bowel function, including immobility, functional dependence with associated functional incontinence, gastrointestinal problems and an inability to communicate.

People with PD may live for more than 30 years with worsening symptoms that are compounded by the natural ageing process.

QUALITY OF LIFE
Health related quality of life (HRQoL) is a concept used to quantify the physical, social and psychological functioning that may be impaired by disease. It is a subjective term associated with personal wellbeing.

There is a lack of consensus about the definition of HRQoL and against what criteria this should be assessed. Ideally, it should measure a condition from the patient’s perspective rather than from healthcare professionals’.

Irvine et al (2002) showed that constipation had a clinically significant detrimental effect on HRQoL. It has been suggested that the high prevalence of constipation and its adverse effect on quality of life make it a major public health issue (Dennison et al, 2005).

It appears that constipation affects patients’ overall wellbeing with symptom severity correlating negatively with perceived quality of life (Glia and Lindberg, 1997).

Understanding the physical, social and emotional effects of bowel dysfunction in PD may help healthcare professionals to develop a more therapeutic attitude towards bowel management.

DYSPHAGIA
The pathophysiology of the gastrointestinal tract in PD is complex, involving autonomic, central and enteric nervous system dysfunction. Patients often experience excessive amounts of saliva in the mouth (sialorrhea) due to dysphagia (impaired and infrequent swallowing). Studies suggest that dysphagia becomes more prevalent as the disease progresses (Pfeiffer, 2003). Dysphagia has a direct impact on nutritional and fluid intake, and poor fluid and fibre intake together with diminished mobility can lead to the development of idiopathic constipation.

The causes are outlined in Box 1. Inadequate nutrition and fluid intake can be addressed with the support of dietitians and speech and language therapists.

GASTROPARESIS
Nutritional and fluid intake can be compromised by gastroparesis (delayed gastric emptying), which has symptoms of early satiety, abdominal discomfort, bloating and nausea.

Pfeiffer (2003) suggested that the presence of gastroparesis poses a potential hurdle to effective pharmacological treatment of PD. Levodopa absorption occurs primarily in the proximal small intestine. Any delay in gastric emptying could result in a delayed response time to medication.

Delay in gastric emptying results in a weakened gastrocolic reflex. The large bowel has a peristaltic action only 5-6 times a day; these movements, known as gastrocolic reflex actions, are triggered by the distension of the stomach, usually occurring immediately after food has been ingested. The most powerful usually occur in the morning after breakfast and can help in the timing of defecation.

BOX 1. CAUSES OF IDIOPATHIC CONSTIPATION

Simple (idiopathic/primary) constipation
Associated with lifestyle:
- Reduced dietary fibre;
- Reduced fluid intake;
- Reduced mobility;
- Environmental changes (such as lack of privacy, poor toileting posture).

Most common among older people: often the result of reduced mental and physical function.

Dementia occurs in the latter stages of Parkinson’s disease but may parallel motor progression from the disease outset.

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Bowel dysfunction in Parkinson’s disease can lead to embarrassment, social isolation and admission to long term care. Nurses need to understand the reasons why bowel dysfunction occurs and how to assess patients for this problem.

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Unable to express the need to use the toilet

Effect on bowels
May be used during end stage Parkinson’s disease

Unable to get out of a chair independently or reach the toilet unaided

Poor vision

Unable to pull down zips or fasteners or adjust clothing in time

Communication difficulties

Unable to express the need to use the toilet

Cognitive impairment

Poor recognition or memory of the toilet location, or how/why to ask for assistance

Healthcare worker related

Unavailability of a healthcare worker or call bell

Unsuitable environment

Inaccessible toilets, poorly signed

Intra abdominal pressure can be further distinguished from diarrhoea because of its high mucus content and small, palpable scybala (rounded, hard masses of faeces). It also has a characteristic “sweet” offensive smell due to bacterial fermentation.

Diarrhoea from intestinal hurry has had minimal bacterial activity and decomposition
and therefore it has a sharp, acidic smell and often contains remnants of undigested food.

Constipation is the most important cause of faecal incontinence in frail older people with PD. Faecal impaction with overflow incontinence contributes to older people being moved into care homes (Harari, 2002) and can be a symptom of end stage dementia (Potter and Wagg, 2005).

Posture for defecation
Adopting the correct posture for defecation raises the intra abdominal pressure through contraction of the diaphragm and abdominal muscles.

Intra abdominal pressure can be further increased by initiating the Valsalva manoeuvre. This involves inhaling and forcing the diaphragm and chest muscles against a closed glottis to increase both the intra thoracic and intra abdominal pressure and causing pressure in the rectum to rise. At the same time, the pressures exerted by the internal and external anal sphincters decrease. This mechanism is important, as rectal pressure must be higher than anal pressure for defecation to be effective.

Relaxation of the puborectalis muscle then occurs, which widens and lowers the anorectal angle with perineal descent allowing faeces to pass more easily into the anal canal. Coordination between the abdominal contraction and pelvic floor relaxation is vital to the process of defecation.

Patients with PD have a less pronounced increase in abdominal pressure on coughing and during the Valsalva manoeuvre (Sakakibara et al, 2003), and experience a lack of synergy between the pelvic floor skeletal muscle (puborectalis muscle) and the anal sphincter muscle.

The inappropriate contraction of the puborectalis and external sphincter muscles results in excessive straining, sometimes accompanied by pain and often a sense of incomplete evacuation.

**TABLE 1. EXAMPLES OF FUNCTIONAL DISABILITY**

<table>
<thead>
<tr>
<th>Functional disability</th>
<th>Effect on bowels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced mobility</td>
<td>Unable to get out of a chair independently or reach the toilet unaided</td>
</tr>
<tr>
<td>Limited dexterity</td>
<td>Unable to pull down zips or fasteners or adjust clothing in time</td>
</tr>
<tr>
<td>Communication difficulties</td>
<td>Unable to express the need to use the toilet</td>
</tr>
<tr>
<td>Poor vision</td>
<td>Unable to see where the toilet is</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>Poor recognition or memory of the toilet location, or how/why to ask for assistance</td>
</tr>
<tr>
<td>Healthcare worker related</td>
<td>Unavailability of a healthcare worker or call bell</td>
</tr>
<tr>
<td>Unsuitable environment</td>
<td>Healthcare staff negative attitudes to providing help to use the toilet</td>
</tr>
</tbody>
</table>

**TABLE 2. IATROGENIC INDUCED CONSTIPATION AS A CONSEQUENCE OF PHARMACOLOGICAL AGENTS**

<table>
<thead>
<tr>
<th>Iatrogenic agent</th>
<th>Effect on defecation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking five or more medications is a particular risk (Potter et al, 2002)</td>
<td>Constipation is often a result of taking medications to alleviate Parkinsonian symptoms</td>
</tr>
<tr>
<td>Antidepressant medication</td>
<td>All antidepressants cause constipation or gastrointestinal discomfort</td>
</tr>
<tr>
<td>Anticholinergic/muscarinic medication</td>
<td>Dopamine deficiency leads to a functional excess of acetylcholine, but anticholinergic medication blocks the action of acetylcholine, an excitatory neurotransmitter, leading to prolonged bowel transit time</td>
</tr>
<tr>
<td>Opioid medication</td>
<td>May be used during end stage Parkinson’s disease</td>
</tr>
<tr>
<td></td>
<td>Delays gastric emptying due to constriction of pyloric sphincter</td>
</tr>
<tr>
<td></td>
<td>Weakens gastrocolic reflex</td>
</tr>
<tr>
<td></td>
<td>Reduces propulsive component of gut motility; increased non-propulsive activity due to enhanced firing contractions leads to more efficient absorption of water and electrolytes</td>
</tr>
</tbody>
</table>

**FUNCTIONAL INCONTINENCE**

Functional incontinence occurs when people are unable to reach the toilet in time because of limited mobility, poor dexterity, difficulty in communicating that they need to use the toilet and poor vision.

Functional problems are significant for older people with PD who depend on others to help them with their toileting needs (Harari, 2004). Some may have normal bowel function but delays in going to the toilet will eventually lead to harder stools that are difficult to evacuate, ultimately leading to faecal impaction.

Table 1 outlines examples of functional disability.
PHARMACOLOGICAL INTERVENTIONS
More than 40% of patients with PD experience depression (National Collaborating Centre for Chronic Conditions, 2006). Evidence is emerging that depression can be considered an intrinsic part of PD rather than a reaction to disability (Allain et al, 2000).

Pharmacological treatments for depression in PD are complex, with some antidepressants causing agitation and worsening symptoms of the disease (Chen, 2004). The constipating side effect of all antidepressants presents an additional problem.

Table 2 outlines these and other causes of iatrogenic constipation caused by pharmacological agents.

RISK ASSESSMENT
Constipation is a significant problem for people with PD but they may be reluctant to discuss their bowel problems. This suggests that healthcare professionals need to adopt a more proactive approach (Kaye et al, 2006).

There is a strong argument for using a risk assessment tool for constipation to facilitate clinical decision making by acting as an aide memoire.

The importance of using a risk assessment tool for constipation is well documented (Royal College of Nursing, 2008; Kyle, 2006; Richmond, 2003). This is endorsed by the Royal College of Physicians (Potter et al, 2002), which stated that the identification of risk factors for constipation in older patients is critical to achieving effective management of constipation.

The NICE (2007) guideline on faecal incontinence advocates a proactive approach to bowel care for older, seriously ill patients.

The Norgine risk assessment tool for constipation is a fairly new development (Kyle, 2007a; 2007b). Minimum data exists on its validity or reliability and the absence of any other risk assessment tool for constipation has meant that it cannot be judged against a gold standard. The dynamic nature of the tool suggests it will evolve and change over time with further research. However, anecdotal evidence suggests the tool is raising the profile of constipation among healthcare workers.

CONCLUSION
PD and associated bowel problems mean that many people live with psychological and physical difficulties that reduce their quality of life.

Healthcare professionals should develop a more proactive and evidence based approach to preventing constipation rather than continuing with the existing reactive response to this distressing symptom.

Free copies of the Norgine risk assessment tool can be obtained from Norgine Pharmaceuticals. Please send your name and address to: Norgine Pharmaceuticals Ltd, Freepost (HA4696), Uxbridge, Middlesex UB9 6BR or email your details to mss@norgine.com

The World Health Organization Quality of Life (WHOQOL)-BREF can be obtained via tinyurl.com/who-bref

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