Falls and Bone health in Parkinson’s disease

Dr. Sowjanya Potturu

Jordana Freemantle, Bernadette Goodburn
Background

- Parkinson’s Disease is a common, progressive neurological condition
- Estimated to affect 100–180 per 100,000 of the population
- Parkinson’s disease leads to extensive disability
- Huge economic impact
Falls and Parkinson’s disease

- Falls are common in Parkinson’s disease
- Prospective studies – 46% of PD patients will fall in 3 months of follow up
- Multiple factors increase falls risk in patients with PD
Fractures and Parkinson’s disease

- Median duration of four years between Parkinson’s diagnosis and first hip fracture (NoF)
- Retrospective studies indicate Parkinson’s associated with doubling of fracture risk and tripling of hip fracture risk in early diagnosis
- Several case control studies have shown that Parkinson’s patients have a lower bone mineral density than controls – lower physical activity level, sarcopenia, under nutrition
- MDT central for management and prevention of falls and fractures
- Fractured NoF associated with 8.2 % one-month and 25 % 12-month mortality in non-Parkinson’s patients; unknown with PD
Fractures and Parkinson’s disease

- NoF fracture admission associated with doubling of length of stay, and increased risk of pressure sores and Pneumonia in Parkinson’s patients

- Huge economic impact NHS: £16.3 mil all fractures (5.7 % PD admissions), £13.7 mil fracture NoF (4.3 % PD admissions)
Assessing Fracture Risk

- Lack of guidance for measuring fracture risk and managing bone health
- NICE guidelines acknowledges increased fracture risk with Parkinson’s disease – recommends risk assessment but no details on how
- Fracture risk assessed by FRAX or QFracture in patients at risk of falls (NICE recommendation)
About you

Age (30-99): 80
Sex: Male
Ethnicity: White or not stated

Clinical information

Smoking status: ex-smoker
Alcohol status: < 1 unit per day
Diabetes: none

Do either of your parents have osteoporosis/hip fracture?
Do you live in a nursing or care home?
Have you had a wrist spine hip or shoulder fracture?
History of falls?
Dementia?
Cancer?
Asthma or COPD?
Heart attack, angina, stroke or TIA
Chronic liver disease?
Chronic kidney disease?
Parkinson's disease?
Rheumatoid arthritis or SLE?
Malabsorption eg Crohn's disease, ulcerative colitis, coeliac disease, steatorrhea or blind loop syndrome?
Endocrine problems eg thyrotoxicosis, hyperparathyroidism, Cushing's syndrome?
Epilepsy or taking anticonvulsants?
Taking antidepressants?
Taking steroid tablets regularly?
Taking oestrogen only HRT?

Leave blank if unknown

Body mass index

Height (cm): 165
Weight (kg): 45

Your results

Your risk of having any osteoporotic (i.e. hip, wrist, shoulder or spine) fracture or hip fracture alone within the next 10 years is:

<table>
<thead>
<tr>
<th>Fracture Type</th>
<th>Risk</th>
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<tbody>
<tr>
<td>Hip, wrist, shoulder or spine fracture</td>
<td>34%</td>
</tr>
<tr>
<td>Hip fracture</td>
<td>26.6%</td>
</tr>
</tbody>
</table>
Algorithm for assessment and management of fracture risk

All outpatients (in primary and secondary care)
with diagnosis of Parkinson's Disease or a related movement disorder

This guidance is not applicable in end-stage disease when a patient is bedbound/hoist dependent or life expectancy under 6 months.

| step 1 | Calcium & Vitamin D | Check dietary calcium intake; if insufficient prescribe supplement. Measure baseline vitamin D level. Replace if deficient/insufficient. Start maintenance. |
| step 2 | Record | 1. Falls (no. in past year) 2. Prior fragility fracture 3. Back pain (consider X-ray) |
| step 3 | Qfracture score | 10 year probability of Major Osteoporotic Fracture (MOF) and Hip Fracture (#NOF) |
| step 4 | 10-year probability | ≥5% #NOF or ≥20% MOF <5% #NOF or <20% MOF |
| step 5 | Age | over 75 75 or younger calculate FRAX |
| step 6 | DXA/Treat | No DXA baseline DXA and Request DXA and recalculate FRAX with BMDab |

TREATMENT LIFESTYLE ADVICE

NOGG advice  
red amber green
Aims

- To see if any fracture risk assessments are done in patients attending our PD clinics
- Identify patients with high fracture risk and prescribe bone protection or investigate accordingly
Study Design

- Data collected from 90 patients attending Parkinson’s disease clinic
- Quantification of falls and falls risk factors
- Looked for documentation of bone health assessments
- Calculated Q fracture scores for all these patients
- Treatment suggested to GP accordingly
Total number of patients 90

- Male: 53
- Female: 37

Total number of patients 90
Results – Age distribution

- 50 to 60: 2
- 61 to 70: 18
- 71 to 80: 38
- 81 to 90: 30
- 91 to 100: 2
Falls in the last 6 months

- Yes: 50
- No: 40
Risk factors for falls

- Postural hypotension: 27
- Polypharmacy: 60
- Dementia: 18
- 3 or > co-morbidities: 49
Factors associated with increased fracture risk

- Low BMI <22: 35
- Previous fractures: 25
Results

• No clear documentation identifying assessment of fracture risk

• All patients classified as high risk based on Qfracture validation guidance (Hippisley-Cox 2012):

<table>
<thead>
<tr>
<th></th>
<th>Top 10th Centile NoF</th>
<th>Top 10th Centile MOF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>5.3 %</td>
<td>11.1 %</td>
</tr>
<tr>
<td>Men</td>
<td>1.3 %</td>
<td>2.6 %</td>
</tr>
</tbody>
</table>

• 13 (14 %) patients taking vitamin D replacement

• 5 (6 %) patients prescribed Alendronate
Results

• 43 {47.7%} patients have Q fracture of 20 % or more for MOF

  36 are over 75yrs  83.7%

  16 had previous fractures 37.2%

  28 have falls 65.1%

  4 on alendronate 9.3%
Conclusions

- Fracture risk assessments very poorly done or documented in our study

- This study again highlights the need for guidelines for assessment and management of bone health problems in patients with PD
Limitations

- Random selection of patients
- Stage of PD is not taken into account
- Not calculated Fracture NOF risk in the Q fracture score
References


- NICE (2012) Clinical guideline 146 Osteoporosis: assessing the risk of fragility fracture

- NICE clinical guideline 161 Falls: assessment and prevention of falls in older people

Thank you