Drug-related problems in Parkinson’s disease identified and solved by community pharmacists

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http://www.consumer-health-care.de/

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Agenda

1. Some facts about Parkinson‘s Disease (PD)
2. Drug therapy of Parkinson‘s Disease
3. Patients‘ experience with disease and therapy
4. Pharmacists approach to care for PD patients
5. Study of pharmaceutical care for PD patients
6. Conclusions and recommendations
Epidemiology of Parkinson’s Disease

Crude prevalence of PD has been reported to vary from 15 (per 100,000 population) in China to 657 in Argentina and from 100 to 250 in North America and Europe.

The prevalence and incidence of PD increase exponentially with age. Slightly higher in men than in women.

The mortality rate for PD increases in older patients. The most common cause of death is pneumonia.

Lai, B.C.L, Tsui, J.K.C.: Epidemiology of Parkinson’s disease
BCMJ, Vol. 43, No. 3, April 2001, page(s) 133-137 Articles
Some facts about Parkinson’s Disease (PD)

“Parkinson’s Disease is a progressive disorder of the nervous system that affects your movement and develops gradually“.

Early symptoms:

- slight tremor sometimes only in one hand
- face shows little or no expression
- slurred speech
- rigid muscles and slowed movement, impaired posture and balance
- changes in writing which may become difficult to read
Some facts about Parkinson’s Disease (PD) II

Early symptoms / complications:

- cognitive problems (thinking problems, "dementia")
- depression and emotional changes
- sleep problems

- swallowing problems, increased saliva accumulation
- problems with controlling the bladder
- constipation

- Sometimes also: orthostatic hypotension, fatigue, pain and sexual and smell dysfunction,
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⇒ Significant impact on patient‘s Quality of Life
# Parkinson’s disease – multiple symptoms

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<td>Hypersalivation*</td>
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Lots of different medicines required to control symptoms!
Drug therapy of Parkinson‘s Disease

1. Increase the level of Dopamine in the brain
   - Levodopa/Carbidopa (30 min. before a meal)
   - COMT Inhibitors (Entacapone - adjunct therapy)
   - MAO-B Inhibitors (Selegiline, Rasagiline)
   - Glutamate antagonist (Amantadine)

2. Control the symptoms of the disease
   - Anticholinergics
   - Apomorphine
Most common PD drug related problems

- Wearing off (the medicine and its effect)
- Involuntary movements/dyskinesias (also related to progress of disease)

- Impulsive and compulsive behaviour
- Hallucinations or delusions

And many others depending on the medicine taken (Erythema, dark urine, constipation or diarrhoea, belly pain and nausea, dizziness, fatigue, dry mouth, sweating....)
**Drug related problems with Levodopa**

The „Wearing-Off“ problem:

- Decreasing effect 2-3 hrs. after administration
- Impact on motoric as well as non-motoric symptoms
Drug therapy of Parkinson’s Disease

1. Increase the level of Dopamine in the brain
   - Levodopa/Carbidopa (30 min. before a meal)
   - COMT Inhibitors (Entacapone, Tolcapone,
   - MAO-B Inhibitors (Selegeline, Rasagiline)
   - Glutamate antagonist (Amantadine)

2. Additonal control of symptoms
   - Anticholinergics
   - Apomorphine

Main challenge currently: To slow down the progress of the disease. High risk of drug-related problems
Designing a study to identify and solve drug-related problems of patients with PD by community pharmacists

1st step: Analysis of an internet platform with entries of PD patients

2nd step: Analysis of the compliance of German neurologists with Guidelines for the treatment of Parkinson‘s disease

3rd step: Developing a check list for community pharmacists

4th step: Implementing the check list to identify drug-related problems in PD patients by community pharmacists
PD patients’ internet platform entries (n=160):

- 283 drug-related problems identified
- 153 Adverse Drug Reactions

Step 1: Analysis of an internet platform → check list (step 3)

<table>
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<th>P-Code</th>
<th>Problem</th>
<th>Solution</th>
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| C1     | Wrong application time of medicine: (together with a meal) | • Correct application 30 min prior or 60-90 min after a meal  
  • Not together with protein-rich food (e.g. fish, meat, cheese) |
| s      | Nausea/Emesis | • Doperidon (Motilium®)  
  • Application together with cookies or other carbs |
|        | Overdose/cardinal symptoms: nightmares, hallucinations, Hyperkinesia | • Inform physician if:  
  • Initial dose > 2 x 100mg/d  
  • Maximum dose > 1000mg/day (side effects depend on dose) |
German neurologists (n=320):
- 60% were in compliance with guidelines for the treatment of Parkinson’s Disease without motoric complications

### Step 2: Analysis of the compliance of German neurologists with Guidelines for the treatment of Parkinson’s disease

<table>
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<th>Parameter</th>
<th>Description</th>
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<th>n (Old)</th>
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<tr>
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<td>H&amp;Y I (stage II)</td>
<td>n=64</td>
<td></td>
</tr>
<tr>
<td>Parameter 2: % Dopamine</td>
<td>H&amp;Y II-V (stage III)</td>
<td>n=127</td>
<td></td>
</tr>
<tr>
<td>Parameter 3: % Levodopa without Dopamine</td>
<td>Levodopa (Mono therapy)</td>
<td>n=18</td>
<td></td>
</tr>
<tr>
<td>Parameter 4: % Levodopa without Dopamine</td>
<td>Levodopa (Mono therapy)</td>
<td>n=111</td>
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- H&Y I (stage II): increased functional impairment without motoric complications
- H&Y II-V (stage III): Dopamine (Mono- or combination therapy)
Step 4: Implementing the check list to identify drug-related problems in PD patients by community pharmacists
Step 4: Implementing the check list to identify drug-related problems in PD patients by community pharmacists

Struktur und Häufigkeit der dokumentierten ABP (331 ABP, n=113)

- Unerwünschte Arzneimittelwirkungen (13.3%)
- Arzneimittelinteraktionen (9.4%)
- Unzweckmäßige Dosierung (15.7%)
- Unzweckmäßige Arzneimittelwahl (12.1%)
- Compliance Probleme (19.6%)
- Kein Arzneimittel trotz Indikation (29.6%)

Interventions to solve drug-related problems

Detailübersicht über die Anpassung des Medikationsprofils nach erfolgreicher Intervention bei 200 ABP

- Umstellung der Basistherapie (Arzt) 17.0%
- Erniedrigung der AM Dosis (Arzt) 5.5%
- Erhöhung der AM Dosis (Arzt) 8.5%
- benötigtes AM erstanden (Patient/OTC) 18.0%
- benötigtes AM verordnet (Arzt) 8.0%
- schädliches AM abgesetzt (Arzt) 21.0%
- sonstige Anpassungen 22.0%
Overall results of the study

215 drug-related problems (65%) were solved or avoided during the project duration of 8 months of Implementing a structured medication review in 32 pharmacies

• Improvement of the subjective health status
• Improvement of the health-related Quality of Life
• Improvement of the quality of drug use (acc. to Beers‘ list)
• Identification of 4 patients without Parkinson‘s Disease

Conclusions

• The in-depth analysis of patient reports allows the development of a check list for the most urgent problems of the therapy of PD from a patient’s perspective without being biased by an interviewer.

• This check list is a valuable instrument for pharmacists to identify and solve drug related-problems of patients with Parkinson’s Disease.

• The results of this study prove that the approach taken is suitable for the everyday routine in community pharmacies.
Published papers about this study:

1. Drug related problems with Antiparkinsonian agents: consumer Internet reports versus published data
   Sabrina Schröder, York Zöllner, and Marion Schaefer
   Institute of Clinical Pharmacology, Charité University Medicine, CCM, Berlin, Germany

2. Do neurologists in Germany adhere to the national Parkinson’s disease guideline?
   Sabrina Schröder, Daniel Kuehner, Guy Arnold, York Zöllner, Elodie Jones, Marion Schaefer

3. Drug-related problems in Parkinson’s disease: the role of community pharmacists in primary care
   Sabrina Schröder, Peter Martus, Per Odin, Marion Schaefer

4. Impact of community pharmaceutical care on patient health and quality of drug treatment in Parkinson’s disease
   Sabrina Schröder, Peter Martus, Per Odin, Marion Schaefer
Thank you very much for your attention!

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