PAIN 141 (2009) 173–177

PAIN

www.elsevier.com/locate/pain

Pain in Parkinson's disease: Prevalence and characteristics

A.G. Beiske [a,*], J.H. Loge [b,c], A. Rønningen [a], E. Svensson [d]

[a] Department of Neurology, Akershus University Hospital, N-1478 Lørenskog, Norway
[b] National Resource Centre for Studies of Long-term Effects after Cancer, Rikshospitalet University Hospital, Norway
[c] Department of Cancer Research and Molecular Medicine, Norwegian University of Science and Technology, Norway
[d] Department of Adult Mental Health, Norwegian Institute of Public Health, Norway

ARTICLE INFO

Article history:
Received 21 May 2008
Received in revised form 19 November 2008
Accepted 1 December 2008

Keywords:
Pain
Parkinson's disease
Treatment
Prevalence

ABSTRACT

Parkinson's disease is a chronic, progressive, incurable neurodegenerative disease. As the disease progresses, motor disturbances and non-motor symptoms represent considerable illness burdens. Symptom relief is the goal for the treatment. Pain is frequently observed in patients with Parkinson's disease, but its prevalence, characteristics and associations with Parkinson's disease are poorly documented. These were investigated in 176 home-living PD patients. They underwent a neurological examination and a structured interview for registration of pain characteristics in addition to responding to standardised questionnaires. Pain was reported by 146 (83%) patients. Compared to the general population, the Parkinson's disease patients experienced significantly more pain as measured by SF-36 Bodily Pain Scale. The average pain during the last 24 h measured by the Brief Pain Inventory was 2.85. Fifty-three percent of the patients reported one, 24% reported two and 5% reported three pain types. Musculoskeletal pain was reported by 70%, dystonic pain by 40%, radicular-neuropathic pain by 20% and central neuropathic pain by 10%. Thirty-four percent were on analgesic medication. Pain was not associated with age, disease duration or severity of the disease; female gender was the only significant predictor of pain. Pain is frequent and disabling, independent of demographic and clinical variables except for female gender, and is significantly more common in Parkinson's patients compared to the general population. A minority of the Parkinson's disease patients with pain received analgesic medication. The findings call for improved attention to assessment and treatment of pain in the follow-up of Parkinson's disease patients.

1. Introduction

In addition to the motor disturbances experienced by the patients suffering from Parkinson's disease (PD), several non-motor symptoms including pain also affect the PD patients [5].

Five different types of pain have been described in PD patients: musculoskeletal pain (due to parkinsonian rigidity, rheumatological disease or skeletal deformity), radicular-neuropathic pain (due to a root lesion, focal or peripheral neuropathy), dystonic pain (related to antiparkinsonian medication), central neuropathic pain (related to antiparkinsonian medication) and akathisia (under off-period or drug induced) [12]. Neuropathic central pain (NCP) is a disease-specific symptom in PD and also a symptom of stroke [29] and multiple sclerosis [24] as well. NCP can be very intense and difficult to treat [11].

To our knowledge, only two studies have assessed *all types* of pain in patients with PD, and the prevalence of pain was as high as 68% and 85%, respectively [18,25]. One study assessing pain perceived by the patients as directly related to their PD found that 46% experienced pain attributed to PD [14]. Some studies have examined specific types of pain in PD patients or pain localized to specific regions. For example, the prevalence of back pain was reported to be 60–74% [4,7]. A recent review of non-motor symptoms in PD patients emphasized the need for large community-based studies on the prevalence of pain and other non-motor symptoms [5].

Except for the studies on back pain, the intensity and prevalence of pain in the PD patients have, to our knowledge, never been compared to the general population [4,7]. Pain is a prevalent symptom in the general population, thus important to adjust for. For example, 19% of the European population and 30% of the Norwegian population are reported to suffer from chronic pain [3]. The prevalence of pain increases by age [20], which is also of relevance, since PD primarily affects the elderly.

Pain treatment can also be an indicator of the magnitude of pain as a clinical problem in PD patients. Treatment of pain in PD patients has to our knowledge only been assessed in two studies, who reported that 58% [18] and 34%, only for back pain [4], were taking some form of analgesic medication.

* Corresponding author. Tel.: +47 901393337; fax: +47 67929098.
E-mail addresses: abeiske@online.no, antonie.beiske@ahus.no (A.G. Beiske).

0304-3959/$34.00
doi:10.1016/j.pain.2008.12.004

The aim of the present study is to examine the prevalence of pain in PD patients, including pain types, the intensity and the duration of pain. The prevalence of pain in PD patients will be compared to the general population. Clinical and demographic predictors of pain in the PD patients will also be investigated as well as the usage of different analgesic treatments.

2. Materials and methods

2.1. Materials

All PD patients living in the eastern part of Akershus county, Norway (320,000 inhabitants), were defined as the target population. The patients were recruited from the Department of Neurology, Akershus University Hospital, which is the only Neurological Department in the county. The county has no geriatric department. The great majority of patients with PD are therefore diagnosed in the out-patient clinic at the Department of Neurology. The department routinely offers yearly follow-up consultations to the patients with PD. Patients receiving treatment with duodenal pumps are followed up during inpatient stays, and patients treated with STN (Sub Thalamic Nucleus Stimulation) are referred to other hospitals for their follow-up consultations.

A total of 413 PD patients were identified in the out-patient registry at the Department of Neurology of Akershus University Hospital. The patients should be diagnosed with PD according to the published diagnostic criteria [17], and had to be mentally (MMSE $\geqslant$ 23) and physically able to complete interviews, self-report questionnaires and examinations lasting for at least 2 h. The data collection was organised as part of the yearly follow-up consultations, and the patients were included consecutively as they were invited to the consultation. Before these consultations, the patients received an invitation to participate in the present study combined with their ordinary follow-up visit. If they did not want to participate, the regular consultations were conducted as scheduled.

After examinations of the 413 case records, 76 patients were excluded because of cognitive impairment that would make them unable to complete the interviews and examinations. In addition, 22 did not fulfill the diagnostic criteria for PD, 14 had moved or were followed by other departments or hospitals, and 37 had died during the inclusion period.

Not all the case records contained sufficient information to decide whether the diagnostic criteria were fulfilled, resulting in 9 patients being excluded for not fulfilling the diagnostic criteria when examined at the follow-up consultation. Furthermore, 12 patients had deteriorated since the last control making them unable to complete the interview/fill in the self-report questionnaires. Thus, 243 patients were found eligible and offered to participate. However, due to financial restraints the inclusion period had to be shortened. Forty-one eligible patients were therefore not invited to participate. Thus, 202 eligible patients were invited, 17 rejected, 6 did not answer, and 3 did not show up. In sum, 176 patients were included consecutively until the end of the inclusion period, yielding a response rate of 87% (176/202).

2.2. Methods

Through a structured interview conducted as part of the clinical examination including examination of the somatic sensibility, basic demographic data and information on PD, such as date of first symptom, date of diagnosis, date of initiating therapy and co-morbidity, were collected and recorded. Staging of the disease was based upon the findings of the clinical examination and in accordance with the present standards (Modified Hoehn and Yahr Staging [15] and Unified Parkinson's Disease Rating Scale, UPDRS [8]). Cognitive functioning was assessed by the Mini Mental State Examination (MMSE) [10].

Pain was assessed by a self-report questionnaire including the Norwegian version of the Brief Pain Inventory (BPI) [16]. Using a 10-point Likert scale as a response alternative, the BPI assesses pain intensity and pain's interference with functions. For the present study, the items addressing pain's interference with functions were not utilized, because these items were judged to be potentially confounded by other aspects of the PD. The variable of interest in this study therefore was the pain severity index, calculated by adding the scores on the pain severity items (questions 3, 4, 5, and 6).

Pain was also assessed by the two items on bodily pain in the Medical Outcomes Study 36-Item Short Form (SF-36), thus allowing for comparison with the general Norwegian population [20]. The responses were summed and transformed to a 0–100 scale (0 = worst pain, 100 = no pain) according to the standard procedure for the SF-36 [22]. Missing values in one of the items were substituted with person-specific values according to the SF-36 algorithm [22].

As a part of the clinical interview, the patients responded to semi-standardised questions on pain. First they were asked whether they experienced pain (yes/no). If positive they were asked to characterize the pain's qualities (burning, dull, stabbing, aching, tension, tightness or radiating), the pain's onset (creeping or acute), and its fluctuation, localisation and precipitating/relieving factors. Based upon this information and the clinical examination by the senior neurologist, each reported pain was categorized as musculoskeletal pain (dull, aching, poorly localized or confined to joints with pain with motion and after rest), radicular/neuropathic pain (tingling, limited to a dermatome or specific neuronal distribution), dystonic pain (associated with visible dystonia, often as early morning dystonia in the toes or legs, or as a overdosing phenomenon in the upper extremities), or CNP (boring, constant, ineffable and poorly localized, not limited to a dermatome or specific neural distribution).

For each type of pain, the frequency, duration and development were assessed, as well as whether the patients perceived the pain as dependent on motor fluctuations. Finally, the patients were asked how the dopaminergic medication influenced upon the pain and if they perceived the pain as directly related to their PD. If the patients were not able to answer the last question, a detailed history of the pain was used to decide whether the pain was unrelated to the PD or not. If this did not allow for decision about relation to PD, the pain was characterized as not related to the PD.

The study was approved by the Regional Committee for Medical Research Ethics.

2.3. Statistical methods

Descriptive statistics for the BPI, bodily pain of SF-36, the clinical examination, and use of medication were calculated. To analyse potential explanatory factors on the BP-scale of the SF-36, linear regression was used. A stepwise approach was conducted, block one including demographic factors (gender and age), block two adding disease characteristics (disease duration and UPDRS), and block three adding pain characteristics (number of pains and type of pain).

A significance level of 0.05 was chosen.

All statistical methods were undertaken using SPSS-14.