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## Original Article

## Short-term outcomes of patients being treated for chronic intractable pain at a liaison clinic and exacerbating factors of prolonged pain after treatment

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## ABSTRACT

**Background:** Although a multidisciplinary approach is often recommended to treat intractable pain, this approach does not completely prevent uncontrolled pain in some patients. The aim of this retrospective study was to investigate the exacerbating factors of prolonged, intractable pain among patients being treated at a pain liaison clinic.

**Methods:** The participants of this study were 94 outpatients (32 men, 62 women) with chronic intractable pain who visited our hospital between April 2013 and February 2015. Demographic and clinical information was obtained from all patients at baseline. Experts in various fields, including anesthesia, orthopedic surgery, psychiatry, physical therapy, and nursing, were involved in the treatment procedures. All patients were assessed before and after a 6-month treatment period using the following measures: the Numeric Rating Scale (NRS); the Pain Catastrophizing Scale (PCS); the Hospital Anxiety and Depression Scale (HADS); the Pain Disability Assessment Scale (PDAS); and the Oswestry Disability Index (ODI). All participants were then divided into two groups based on their self-reported pain after treatment: a pain relief group ( $n = 70$ ) and a prolonged pain group ( $n = 24$ ). The exacerbating factors of prolonged pain after treatment in the pain liaison outpatient clinic were analyzed using univariate and multiple logistic regression analysis.

**Results:** A significant improvement in NRS scores was observed after the 6-month follow-up period. After treatment, 24 (25.5%) of the 94 patients reported having prolonged pain. Significant improvements were seen in the PCS, PDAS, and ODI scores in the pain relief group, and in the HADS depression scores in the prolonged pain group. On univariate and multiple regression analysis, HADS depression scores were identified as a factor related to prolonged pain after treatment.

**Conclusions:** The results of the present study suggest that severe depression at the initial visit to the liaison outpatient clinic was an exacerbating factor for prolonged pain after treatment.

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### 1. Introduction

Treatment for patients with chronic intractable pain can be a complicated and challenging task because of their psychological comorbidities. In addition, for such patients, the economic loss resulting from medical expenses and temporary leaves of absence due to pain is substantial. A multidisciplinary approach developed in Europe for treating patients with chronic intractable pain has been shown to be effective [1–3]. This multidisciplinary approach has

recently been implemented in Japan, and some preliminary results have been reported [4,5]. We started a consultation-type pain liaison outpatient clinic in 2012 in order to provide multidisciplinary evaluations of pain and to support patients who want to control their own pain. This approach is advantageous for medical staff because it clarifies mutual treatment care goals, thereby helping specialists in different areas provide care in more efficient and effective ways. We previously reported preliminary results from the implementation of a multidisciplinary approach in our pain liaison outpatient clinic [5], however, some of whom reported pain progression. In our previous study, we found that patients with severe

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anxiety were at a higher risk of drop-out [5]. However, the underlying factors that limit pain relief in patients with intractable pain remain unknown. Therefore, the objectives of this retrospective study were to investigate the short-term outcomes of patients being treated for chronic intractable pain at our outpatient clinic and to clarify the exacerbating factors for prolonged pain after treatment.

## 2. Patients and methods

### 2.1. Participants

The study participants were 136 outpatients with chronic intractable pain admitted to our hospital between April 2013 and February 2015. Patients' chief complaints were shown in Table 1. Inclusion criteria of this study were having low back pain persisting longer than 3 months without relief after conservative treatment (rest and use of a lumbar corset, pain medication, and physical therapy) and agreeing to complete a written self-report questionnaire. Exclusion criteria included ongoing litigation, dementia, delirium, or other conditions that made completing a questionnaire difficult, or a severe chronic disease such as cardiovascular disease, renal failure, or other disqualifying conditions that interfered with treatment. Patients with no low back pain and those who had dropped out of the pain liaison outpatient clinic were also excluded. Written, informed consent was obtained from all patients before the study began, and ethical approval was obtained from the hospital board of ethics.

### 2.2. Treatment protocol

The treatment protocol used in this study is shown in Fig. 1. Before the first examination at the pain liaison outpatient clinic, an anesthesiologist explained the purpose of the treatment to all patients. If a patient was eligible, their written consent was obtained. At baseline, patients completed self-report questionnaires and provided demographic and clinical information. During the first visit, patients received an explanation of the clinical course from a nurse and underwent a thorough physical examination from various specialists, including anesthesiologists, orthopedic surgeons, psychiatrists, dental anesthesiologists, nurses, physical therapists, and clinical psychologists. A conference was also held in which the participating specialists discussed the potential physical causes, psychological problems, social problems, and other associated factors with the patient in detail, and then the treatment plan was decided. Next, patients were asked to record their activities of daily

living (ADL) in a diary. The diaries were checked by a liaison clinic nurse during regular visits, and weekly activity targets, including instruction on gradually progressive stretching within manageable limits, physical therapy where possible, improvement of sleep quality and quantity, and relief of pain and anxiety about movement, were established and reviewed based on their content. In addition, a clinical psychologist assessed familial relationships and the division of roles, and provided advice and instruction for the patient and their family members regarding improved methods for coping with pain. Patients visited the clinic at 1, 3, 5, 8, 12, and 24 weeks after the first visit to ensure compliance with the medication regimen.

### 2.3. Pain assessment

The Numeric Rating Scale (NRS) for pain is a valid, reliable, and widely used tool for the self-evaluation of chronic pain intensity [6]. NRS scores range from 0 to 10, with 0 representing no pain and 10 representing the worst pain imaginable.

### 2.4. Assessment of pain catastrophizing

The Pain Catastrophizing Scale (PCS), which is used to measure the degree of pain catastrophizing [7], is a 13-item questionnaire composed of items on rumination, magnification, and helplessness. Rumination (items 8–11) refers to “the fact that the patient cannot get the idea of pain out of his/her head and cannot stop thinking about the pain”, while magnification (items 6, 7, and 13) refers to “the exaggeration of the threatening properties of the painful stimulus”, and helplessness (items 1–5 and 12) refers to “the estimation that the person has of not being able to do anything to influence the pain.” The PCS is scored on a scale from 0 to 52, with each item rated on a 5-point scale (0: not at all, to 4: all the time). A higher score indicates a greater degree of pain catastrophizing.

### 2.5. Assessment of anxiety and depression

The Hospital Anxiety and Depression Scale (HADS) was used to assess anxiety and depression. The HADS is composed of a 7-item depression scale and a 7-item anxiety scale, with each item scored from 0 to 3 and scores ranging from 0 to 21. A higher score indicates the presence of depression and/or anxiety [8,9].

### 2.6. Physical disability and quality of life assessment

The Pain Disability Assessment Scale (PDAS) was used to assess the degree to which chronic intractable pain interfered with various ADL during the previous week [10]. The PDAS is composed of 20 items, each rated on a 4-point scale (from 0: pain did not interfere with this activity, to 3: pain interfered with this activity). PDAS scores range from 0 to 60, with a higher score indicating greater interference from pain. In addition, the Oswestry Disability Index (ODI) was used to assess self-reported pain disability and quality of life [11]. On the ODI, 0 is equated with no disability and 100 is equated with the maximum possible disability.

### 2.7. Statistical analysis

Paired *t*-testing was used to compare differences in each value before and after treatment. If the data were not normally distributed, a Wilcoxon signed-rank test was used. Effect size is calculated by dividing the mean difference of the measurements before and after treatment by the standard deviations (SD). Values of 0.10, 0.30, and 0.50 indicate small, moderate, and large effect sizes (*r*), respectively [12]. After 6 months of treatment, patients were divided into two groups (a pain relief group and a prolonged pain

**Table 1**  
Chief complaint.

Chief complaint	n
Systemic pain	26
Leg pain	26
Low back pain	20
Neck pain	19
Upper-extremity pain	15
Precordial pain	5
Back pain	5
Buttock pain	4
Postoperative pain	4
Oral pain	3
Perineal pain	2
Foot pain	2
Facial pain	1
Intercostal neuralgia	1
Axillary pain	1
Abdominal pain	1
Knee pain	1
Total	136

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