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Persistence of pain quality in community-dwelling older adults with chronic non-cancer pain

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ABSTRACT

Longitudinal assessment of chronic geriatric pain is complicated by an age-associated plateau in pain severity and increase in widespread pain, calling for innovative measures such as pain quality descriptors that characterize how pain may feel. We characterized persistence of pain quality and its relation to severity, activity interference and distribution of sites, in a population-based sample of adults aged≥70 years with chronic pain (n = 398). Persistent pain quality was defined as reporting descriptors within the same category: sensory, cognitive/affective, or neuropathic at baseline and 18 months. A count variable indicated number of persistent categories. Pain quality was highly persistent. Adjusted for baseline covariates, individuals endorsing 3 persistent categories were 2-2.5x more likely to experience more widespread pain at 18 months compared to fewer persistent categories. No associations were noted in changes in pain severity or interference. A comprehensive pain assessment that includes diverse pain quality descriptors may improve individualized pain management.

Introduction

Chronic geriatric pain is a complex condition to assess and treat. Older age is associated with several highly prevalent comorbid pain conditions including both musculoskeletal and neurologic conditions.[1] The impact of pain in older persons goes far beyond physiologic risks to include impaired cognitive function, depression, sleep disturbance, diminished socialization, increased healthcare use and costs, and impaired functional abilities.[2] Despite the prevalence and potential impact, stoic attitudes of older adults in pain, myths about pain being a natural element of aging, and fears about potential addiction, can lead to underreported and undertreated pain in this population.[1,3] Cognitive impairment and sensory deficits in hearing and vision, conditions more common in older adults, are also barriers to effective communication of symptoms and its treatment. These complexities are compounded when assessing longitudinal changes in pain.

Furthermore, traditional clinical pain measures, i.e. pain severity and pain location, are also less informative in the setting of chronic geriatric pain. Pain severity (also referred to as pain intensity in the literature) is the pain rating from 0 to 10. Evidence from population-based studies of elders with pain have reported that age is not associated with pain severity, suggesting a plateau effect of pain severity among older age groups.[4–7] Pain location refers to painful areas on the body, commonly joints. While back and knee pain are the most common sites of chronic geriatric pain, the prevalence of multi-site or widespread pain ranges from 63% to 75%[4,8] among older adults. The high prevalence of multi-site pain has led to conceptualization of distribution of pain sites or a count of number of pain sites in epidemiologic research studies.[8–11] Because of the

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challenges in geriatric pain assessment, clinicians could benefit from innovative measures and methods that can capture new information not otherwise collected with traditional clinical pain measures to assess longitudinal changes in chronic pain among older adults.

Longitudinal changes in pain severity, pain interference (rating for pain-related interference in activities, range 0–10) and distribution of pain sites have been used to assess the natural course of chronic pain and pain-associated conditions among older adults[8,12] but less attention has been focused on pain quality. Pain quality is based on the idea that all pain does not feel the same way. The Gate Control theory suggests that there is a plasticity associated with nerve transmission in pain pathways that changes the experience, effectively creating different kinds of pain experiences or pain qualities.[13] Pain quality is assessed using verbal descriptors that characterize how pain may feel such as "aching", "sharp" or "troublesome".[14] These pain quality descriptors have been used to distinguish between nociceptive pain (resulting from tissue injury) and neuropathic pain (resulting from nerve injury or abnormal nerve functioning), although the evidence is largely based on adults with one pain condition as opposed to older adults with multiple prevalent comorbid pain conditions.[13,15,16]

Research on pain in aging is based on the assumption that the geriatric pain experience has unique characteristics in comparison to pain in younger populations.[17] Our prior published work suggests that older adults use highly variable pain qualities to describe chronic pain. n.[18] We used factor analysis on 20 pain quality descriptors and derived 3 categories: cognitive/affective, sensory and neuropathic.[18] We found that over half of older adults with chronic pain endorsed descriptors in all 3 categories, likely representing multiple physiological mechanisms for pain. Questions remain in regards to whether pain quality changes over time and how best to assess longitudinal changes in pain when traditional clinical pain measures may not be adequate for chronic geriatric pain.

If older adults endorse persistent pain quality descriptors over time, that information could be used to target appropriate interventions to better manage their unique pain.

The **M**aintenance **O**f **B**alance, **I**ndependent **L**iving, **I**ntellect, and **Z**est in the **E**lderly (MOBIIZE) Boston Study (MBS) is a prospective longitudinal cohort study with a comprehensive set of measures for pain and pain-associated conditions in a population-based sample of adults aged ≥70 years, and thus uniquely suited to address the gap in the literature on persistent pain quality among older adults with chronic pain. The aims of this study were to characterize persistence of pain quality over 18 months and determine its relation to other pain outcomes including severity, distribution of pain sites, interference, and pain-associated chronic conditions among older adults living with chronic pain. We hypothesize that pain quality persists in chronic geriatric pain and that persistence of pain quality will be associated with multi-morbidity for pain-associated conditions and other pain measures.

Material and methods

Participants and procedures

Using a door-to-door population-based recruitment, 680 persons enrolled in MBS completed baseline and 18 month follow up assessments. Participants selected for this study had chronic pain defined as a pain severity rating of greater than 0 at baseline and 18 months and endorsed at least one pain quality descriptor at each time point (n = 398). The sample was recruited from the population aged 70 and older living in the community within a 5-mile radius of the Hebrew Rehabilitation Center (HRC) in Boston (including parts of 5 nearby towns). A detailed description of the study methods has been published.[19] In addition to the age criteria, eligible persons were able to communicate in English, planned to be in the area for the subsequent 2 years, and were able to walk across a small room without personal assistance (although use of a walker or cane was allowed). Domestic partners or spouses aged 65 and older were also permitted to enroll. Exclusion criteria were: diagnosis of a terminal disease and evidence of moderate to severe cognitive impairment as determined by Mini-Mental State Exam (MMSE)[20] score less than 18. Baseline and 18-month follow-up assessments were conducted in two parts: a home visit and subsequent clinic examination conducted within 4 weeks at the HRC. The institutional review boards of the HRC and collaborating institutions approved all protocols for the study and informed consent procedures. Participants provided written informed consent at the start of the baseline home visit.

Measures

Pain quality

The MBS instrument for assessing pain quality was adapted from the short-form McGill Pain Questionnaire (SF-MPQ)[21] and comprised of a list of 20 commonly used pain quality descriptors as determined by geriatricians and investigators of the study (Supplemental Table S1). Participants were instructed to answer No or Yes to each descriptor that best describes any chronic pain, not pain that is new and occurring in the past week or so. Three categories of pain quality descriptors were derived: (1) cognitive/affective, (2) sensory, and (3) neuropathic.[18] An example of descriptors in each category are: (1) cognitive/affective: "nagging", (2) sensory: "throbbing", (3) neuropathic: "burning".

Persistent pain quality was defined as participants reporting descriptors within the same category at baseline and 18 month follow up assessments. Non-persistent pain quality was defined as endorsing descriptors within the category at baseline only. A count variable was created for number of persistent categories which was divided into 3 groups: (1) those with 1 category in common at baseline and 18 months, (2) those with 2 persistent categories in common at baseline and 18 months, (3) those who endorsed descriptors in all 3 categories at both time points.

Pain severity and interference

Global pain severity and interference were assessed using the severity and interference subscales of the Brief Pain Inventory (BPI).[22] Pain severity was the average of 4 separate items for worst pain, least pain, pain on average, and pain now for "pain in the past week that has lasted more than a week or two"; each rated on a 11-point numeric rating scale (NRS). The interference subscale consists of 7 items which assess the degree to which pain interferes with general activity, mood, walking ability, normal work, relations with other people, sleep, and enjoyment of life, rated on a 0-to-10 NRS where 0 represents "does not interfere" and 10 indicates "interferes completely." Pain interference score is the average of the 7 ratings.

Distribution of pain sites

Distribution of pain sites was assessed using a 13-item joint pain questionnaire for chronic musculoskeletal pain in hands and wrists, shoulders, back, hips, knees, or feet lasting 3 or more months in the previous year and present in the previous month, adapted from the Women's Health and Aging Study.[12,23,24] Responses were categorized into three groups: (1) no pain; (2) single-site pain; (3) more than one pain site (multisite pain) (4) widespread pain.[25] Widespread pain was defined based on an adapted version of the American College of Rheumatology (ACR) criteria for fibromyalgia (a condition characterized by widespread pain): pain above and