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Reports of Chronic Pain in Childhood and Adolescence Among Patients at a Tertiary Care Pain Clinic

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Abstract: Although chronic pain in childhood can last into adulthood, few studies have evaluated the characteristics of adults with chronic pain who report childhood chronic pain. Thus, 1,045 new patients (mean age, 49.5 ± 15.4) at an academic tertiary care pain clinic were prospectively evaluated using validated self-report questionnaires. Patients also responded to questions about childhood pain. We found that almost 17% (n = 176) of adult chronic pain patients reported a history of chronic pain in childhood or adolescence, with close to 80% indicating that the pain in childhood continues today. Adults reporting childhood chronic pain were predominantly female (68%), commonly reported widespread pain (85%), and had almost 3 times the odds of meeting survey criteria for fibromyalgia (odds ratio [OR] = 2.94, 95% confidence interval [CI] = 2.04–4.23) than those denying childhood chronic pain. Similarly, those with childhood pain had twice the odds of having biological relatives with chronic pain (OR = 2.03, 95% CI = 1.39–2.96) and almost 3 times the odds of having relatives with psychiatric illness (OR = 2.85, 95% CI = 1.97–4.11). Lastly, compared to patients who did not report childhood chronic pain, those who did were more likely to use neuropathic descriptors for their pain (OR = 1.82, 95% CI = 1.26–2.64), have slightly worse functional status (B = −2.12, t = −3.10, *P* = .002), and have increased anxiety (OR = 1.77, 95% CI = 1.24–2.52).

***Perspective:** Our study revealed that 1 in 6 adult pain patients reported pain that dated back to childhood or adolescence. In such patients, evidence suggested that their pain was more likely to be widespread, neuropathic in nature, and accompanied by psychological comorbidities and decreased functional status.*

***Key words:** Chronic pain, pediatric pain, fibromyalgia, anxiety, depression, functional status.*

Chronic musculoskeletal pain commonly occurs in children and adolescents.[7,35,44,50,55] Although childhood pain is frequently thought of as being relatively mild and time-limited,[57] recent studies indicate that in many individuals this may not be the case. For example, more severe and widespread (ie, occurring in many locations in the body) musculoskeletal pain consistent with fibromyalgia has been found in as many as 6.2% of adolescents.[12] Additionally, clinical and epidemiologic studies have suggested that individuals who report pain and other common symptoms in childhood are at an increased risk for having pain in adulthood.[3,9,18,20,39,42,48,60] In one longitudinal population-based study, the authors found that having multiple symptoms at age 7 (especially headache and gastrointestinal pain) increased the risk of having chronic widespread pain in adulthood by 50%.[42] Several retrospective studies also support the association between childhood pain and adulthood chronic pain,[18,39,47,48] but these studies tell us little about the physical and psychological characteristics of these individuals as adults.

Chronic pain in childhood not only has psychological and social consequences but also has physiological consequences, including changes in the central nervous system (CNS) that may affect the experience of pain in the future.[19,21,46] Most of what is understood about CNS changes in response to childhood pain comes from animal models and human neonate research. For example, rat pups exposed to painful stimuli

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demonstrate altered responses to painful stimuli in adulthood.[6,56] Similarly, human neonate studies suggest that the timing and intensity of exposure to painful stimuli (eg, heel sticks in the hospital) can result in structural and functional alterations in brain development and changes in nociception.[10,38,65]

In adult patients with chronic pain who also experienced pain in childhood, peripheral factors are likely important; however, CNS factors including diffuse hyperalgesia/allodynia and impaired descending pain modulation may be more relevant.[66] Fibromyalgia is the prototypical chronic pain condition presumed to have pain that is largely the result CNS pain amplification.[15,27,59,66] Patients with fibromyalgia and other similar centralized chronic pain conditions (eg, irritable bowel syndrome, temporomandibular joint disorder) tend to be female, exhibit augmented pain and sensory processing, have a family history of chronic pain and/or psychiatric illness, and express symptoms other than pain (eg, fatigue, memory and sleep difficulties, psychiatric comorbidity).[4,51] Many types of early life trauma (eg, physical and sexual abuse) put individuals at increased risk for this type of pain.[2,32,43,49] These characteristics are thought to comprise a centralized pain risk profile or *phenotype*.[52]

Although there is ample evidence that some children with chronic pain go on to be adults with chronic pain, there have been very few studies evaluating the characteristics or the phenotype of those with pain that persists from childhood to adulthood. The purpose of this study was to evaluate phenotypic differences between adult chronic pain patients who do and do not report a history of chronic pain in their childhood. We hypothesized that reports of childhood chronic pain are part of a centralized pain phenotype. Thus, adult patients who experienced childhood chronic pain would be more likely to report pain of greater severity and with a more neuropathic quality, meet fibromyalgia survey criteria, exhibit increased psychiatric comorbidity, report that they have family members with chronic pain and/or psychiatric comorbidity, report physical or sexual abuse from childhood, and have decreased functional status.

Methods

As part of standard clinical care and our ongoing pain research efforts at the University of Michigan Back & Pain Center (Department of Anesthesiology), all new patients complete an initial assessment packet that includes a survey of routine medical information along with several validated self-report measures.[31] For this study, patients 18 years of age and older presenting from November 2010 through March 2012 were included (N = 1,045). Institutional review board (University of Michigan, Ann Arbor, MI) approval was obtained. Because these data are used in the context of clinical care, the need for informed consent was not required. Patients are instead provided with a document explaining the use of their data for both clinical care and research and provided the opportunity to opt out of research. To date, no patients have opted out.

Patients are asked specifically about pain, family history, psychological factors, physical function, demographics, and treatment history. As part of the pain assessment, patients are also asked about childhood pain using a series of items developed specifically for this study. The first item asks, "Did you have chronic pain (pain lasting >3 months) as a child or adolescent?" The follow-up question evaluates the persistence of the pain—"If so, how long did the pain last?"—and provides 4 options: "3 to 6 months," "6 to 12 months," ">1 year," and "Still continues." Information is also collected regarding age of onset, initiating event (open field), and the location of the pain (open field). Other areas of inquiry considered for this study were questions about disability status, current suicidal or homicidal ideation, and the existence of biological relatives with chronic pain. The latter was queried via a family tree checklist of grandparents, parents, siblings, and children.

Also contained within the initial assessment packet are validated self-report measures. Pain severity was assessed using the mean of the 4 pain intensity items from the Brief Pain Inventory.[41] Patients report their worst, least, average, and current pain, where 0 indicates "no pain" and 10 indicates "pain as bad as you can imagine."[16] The 9-item PainDETECT was used to assess the presence and severity of neuropathic pain.[22] Scores range from −1 to 38, with scores greater than or equal to 19 suggesting that a neuropathic component is likely. Depressive and anxiety symptoms were evaluated using the Hospital Anxiety and Depression Scale,[67] which consists of 7 items that assess symptoms of anxiety and another 7 items to evaluate depressive symptoms. Scores range from 0 to 21 for each subscale, with higher scores indicative of greater levels of symptoms related to depression and anxiety. A score greater than or equal to 11 is considered suggestive of a "definite case" of anxiety or depression.[67] Functional status was assessed using the 10-item PROMIS Physical Function SF1.[14] Raw scores range from 10 to 50 but were converted to T scores as reported here (range, 14.1–61.7), with higher scores representing greater functionality.

American College of Rheumatology (ACR) survey criteria for fibromyalgia were used as a measure of centralized pain.[63] The Widespread Pain Index (WPI) was calculated using the Michigan Body Map, a 2D-mannequin checklist that depicts 35 potentially painful body areas including the 19 areas comprising the ACR survey criteria (scores range, 0–19).[63] The Symptom Severity (SS) scale was used to assess the second aspect of the criteria: associated symptom presence and severity (scores range, 0–12). Survey criteria for a dichotomous diagnosis of fibromyalgia are WPI $\geq$7 and SS score $\geq$5 or WPI = 3 to 6 and SS $\geq$9.[62,63] The survey criteria have demonstrated good reliability and validity, with a concordance rate with the 1990 ACR criteria[61] of 72.7%.[33]

Analysis

All pen-and-paper data collected for clinical and research use were entered into the Assessment of