PAIN® 155 (2014) 2568–2574

www.elsevier.com/locate/pain

Is all pain is treated equally? A multicenter evaluation of acute pain care by age

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Sponsorships or competing interests that may be relevant to content are disclosed at the end of this article.

ARTICLE INFO

Article history:
Received 29 April 2014
Received in revised form 11 September 2014
Accepted 15 September 2014

Keywords:
Acute pain care
Emergency department
Geriatrics

ABSTRACT

Pain is highly prevalent in health care settings; however, disparities continue to exist in pain care treatment. Few studies have investigated if differences exist based on patient-related characteristics associated with aging. The objective of this study was to determine if there are differences in acute pain care for older vs younger patients. This was a multicenter, retrospective, cross-sectional observation study of 5 emergency departments across the United States evaluating the 2 most commonly presenting pain conditions for older adults, abdominal and fracture pain. Multivariable adjusted hierarchical modeling was completed. A total of 6,948 visits were reviewed. Older (⩾65 years) and oldest (⩾85 years) were less likely to receive analgesics compared to younger patients (<65 years), yet older patients had greater reductions in final pain scores. When evaluating pain treatment and final pain scores, differences appeared to be based on type of pain. Older patients with abdominal pain were less likely to receive pain medications, while older patients with fracture were more likely to receive analgesics and opioids compared to younger patients. Differences in pain care for older patients appear to be driven by the type of presenting pain.

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1. Introduction

Disparities in the treatment of pain have been found across a spectrum of settings, conditions, and patient populations with most studies focusing on gender, racial, and ethnic differences in care [1,4,6,7,13,17,20]. There has been less attention placed on differences that may exist based on age, in particular for older adults. With an aging population [5] and a greater prevalence of pain in this vulnerable cohort (up to 74% of community-dwelling older adults reported pain in last 30 days) [18], there will be increasing demand and a need to address and improve the quality of pain care older adults receive.

Pain is one of the most common complaints clinicians encounter, especially in the emergency department (ED), where it is present in up to 78% of visits [22]. Data on the effect of age on acute pain assessment and management are conflicting and arise from studies of single health care settings or cities or conversely used national databases [11,16] that did not allow for detailed review of acute pain care processes (eg, documentation of pain levels, treatment of pain with analgesics, times to these processes, types of analgesics ordered). To date, to our knowledge, no multicenter study has investigated patient-related characteristics associated

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http://dx.doi.org/10.1016/j.pain.2014.09.017
0304-3959/Published by Elsevier B.V. on behalf of International Association for the Study of Pain.

with acute pain care processes and how these differences may affect patient pain outcomes for older patients.

The objective of this study was to compare the quality of acute pain care in older vs younger adults and determine if differences exist based on patient characteristics and presenting condition. Understanding factors associated with acute pain treatment and whether or not these influence pain care processes will allow for the identification and subsequent targeting of factors to reduce pain and improve overall patient care.

2. Methods

2.1. Design and setting

This was a multicenter, retrospective, cross-sectional observational study of adult patients who presented with fractures or abdominal pain to 5 EDs across the United States. Four of the sites were considered urban, 1 suburban; 4 were in academic tertiary care hospitals, while 1 was at a community hospital. Two sites were located in the Northeast region of the United States, 1 in the Mid-Atlantic, 1 in the Rocky Mountain region, and 1 on the West Coast. To account for seasonal variation, included in the review were all adult visits made during the months of January, April, July, and October 2009 (January 1 to 31, 2009, April 1 to 31, 2009, July 1 to 31, 2009, and October 1 to 31, 2009). This study received institutional review board approval with waiver of informed consent at all 5 sites.

2.2. Data collection

All 5 EDs utilize comprehensive electronic health records (EHR) (4 utilized ED Pulsecheck—PICIS Inc, Wakefield, MA; 1 utilized Epic ASAP—Epic Systems Corp, Verona, WI) for electronic patient tracking, physician and nursing documentation, and order entry. As such, all data entered into the systems at these 5 EDs are time stamped, and patient charting is organized according to presenting condition. Patient-related and pain care data were collected using both chart review and administrative reports that were created and shared at sites utilizing the same EHR, or standardized to match at the one site that utilized Epic. For chart review, the site investigator at each site trained research assistants (RAs) to extract all data following 12 recommended criteria for medical record review studies [24]. All RAs had at least a 4 h training session of the ED EHR process, shadowed the chart review process of the investigator, did test chart abstractions that were compared to those of the investigators, and were deemed qualified to abstract independently when test abstractions were completed with 95% agreement. These methods have been previously utilized and described by investigators for other studies evaluating the quality of ED pain care [9,10]. RAs were blinded to the study hypothesis.

2.3. Participants

The cohort was composed of adults aged 18 or older who presented to the ED with a chief complaint of pain and received a final primary diagnosis of the 2 most commonly presenting ED pain conditions, abdominal pain or fracture pain [10]. As had been done successfully in a previous study [10], an automated text filter algorithm (Microsoft Excel; Microsoft Corp, Redmond, WA) of the chief complaint and ED diagnosis was used and included the following words: abd, -ache, appendicitis, appendix, arthritis, biliary, burn, cancer, cholangitis, cholecystitis, colic, colitis, contusion, Crohn, diverticulitis, epigastric, fall, fell, flank, fracture, fx, gout, hernia, injury, meniscus, kidney, lithiasis, obstruction, pain, pancreatitis, perforation, problem, pyelonephritis, sprain, stone, strain, tear, tendon. Those with fracture pain had a final ED diagnosis of a confirmed fracture.

2.4. Measures

2.4.1. Variables studied

The primary patient-related predictor studied was age, which was categorized into younger (18 to 64 years), older (65 to 84 years), and oldest (85 years and older). Covariates were selected on the basis of construct validity or using evidence-based review of the literature for factors known to be associated with the quality of pain care received [1,4,6,7,10,13,17,20]. The covariates were included in adjusted analyses: initial reported pain score (0 to 10 with 0 = none to 10 = worst pain or severe) (ie, if a patient reported no initial ED pain, it would be reasonable to account for this in whether they did not receive any analgesics), gender, race/ethnicity (white, black, Hispanic, Asian, other), number of prior medications, triage score (Emergency Severity Index [ESI], 1 = urgent, 5 = nonurgent) [25], and Charlson comorbidity score [3]. Additional pain covariates included in adjusted analyses were categorization of final ED diagnosis for type of fracture (long, short, facial bone) or abdominal pain (nonspecific abdominal pain, appendicitis, biliary, bowel obstruction, cancer, colitis, constipation, flank pain, hernia, musculoskeletal, non-abdomen-related [eg, chest pain], ob/gyn, pancreatic, urology related) based on final ED diagnoses, and admission status as a surrogate for longer times patient may have remained in the ED and acuity of their diagnosis. All variables that were continuous in nature (ie, pain score 0–10, number of prior medications, ESI, Charlson score) were treated as continuous variables in adjusted analyses.

2.4.2. ED analgesic administration

Pain treatment outcomes were evaluated. These included whether analgesics were provided, and if so, the initial type of analgesic received (opioids vs nonsteroidal anti-inflammatory drugs [NSAIDs] vs others vs none). Opioids included codeine, fentanyl, hydromorphone, morphine, oxycodone, and propoxyphene, as well as a combination opioid and nonopioid medications such as acetaminophen/oxycodone. NSAIDs included aspirin, cyclooxygenase-2 inhibitors, ibuprofen, indomethacin, naproxen, and ketorolac. "Other" medications included acetaminophen; specifically for abdominal pain patients, this included antacids, H1-receptor antagonists, and proton pump inhibitors. For subjects who received any opioid, equianalgesic doses were calculated using standard conversions [23].

2.4.3. Final and reduction in pain scores

All sites utilized a 0 to 10 verbal numeric rating scale to assess patients' pain severity. The initial pain score was considered to be the first pain score recorded in the EHR while the final pain score was the last score recorded before discharge from the ED or admission. Overall reduction in pain scores was calculated by subtracting the final pain score from the initial pain score. Both final pain score and overall reduction in pain score were used as a patient pain care outcome.

2.5. Data analyses

Descriptive analyses were completed of the cohort by age category and stratified by pain condition (fracture vs abdominal pain). Univariate comparisons of the primary predictor (age category) and covariates were run against pain care outcomes. Those found significant ($P \leqslant .05$) or with construct validity (gender, race/ethnicity, Charlson score, number of medications) [1,4,6,7,10,13,17,20] were included in adjusted analyses. Multivariable adjusted