Improving the Quality of Cancer Pain Management in an Academic Medical Center Emergency Department

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The impact and outcomes of the implementation of a pain management guideline and pain assessment standard operating procedure (SOP) in a cancer-specific emergency department are evaluated in this article. After implementation of the SOP, the number of pain assessments conducted per patient during hospitalization increased, as did the percentage of patients who underwent a pain assessment at admission, within one hour after analgesic medication was administered, and at regular intervals.

Methods

This retrospective, observational study used data retrieved from the Asan Medical Center electronic medical record system. A total of 1,993 patients visited the CED during the study period from August to September 2011 (before initiation of the CPCP, n = 891) and from February to March 2012 (after the initiation of the CPCP, n = 1,102). Patients aged 20 years and older, who stayed in the CED for more than 24 hours and experienced pain with self-reported numeric rating scale (NRS) scores of 4 or greater at the time of admission or during the CED stay were included in the study. Data from a total of 455 patients were used in the analysis.

Pain Assessment and Management

The SOP for pain assessment is mandated once every eight hours, at admission and discharge, whenever patients report pain, and within one hour after the administration of analgesic medication. The pain management guideline contains five basic principles: (a) use of oral medication when available, (b) adherence to the WHO (1990) three-step ladder approach (http://bit.ly/lu7alff), (c) use of regular, time-release analgesics for the prevention of pain recurrence, (d) prescription of...
immediate-release analgesics for breakthrough pain in advance of onset, and (e) increasing the dose of regular analgesics when breakthrough pain occurs more than three times per day.

Pain management practices before and after CPCP initiation were assessed by a CED charge nurse. The authors developed seven criteria to check whether the guideline was followed. Based on the degree of adherence to the guideline and the SOP, patients were allocated to one of three adherence groups: high (greater than 75%), medium (50%–75%), and low (less than 50%). Reaching the target NRS score was indicated when the score was 3 or less and without the patient experiencing breakthrough pain in the eight hours prior to discharge. Time to reach the target NRS score was indicated by the time taken from study enrollment to when the NRS score became 3 or less.

Depending on the type and number of variables, tests were performed (e.g., Mann-Whitney, chi-square, Kruskal-Wallis) to evaluate the median difference between groups (before and after implementing CPCP and between CPCP adherence groups), with a statistically significant level of 0.05 using SPSS®, version 21.0. For post-hoc analysis, p values were adjusted with Bonferroni correction. Missing values are excluded from the analysis.

Results

A total of 455 patients were included in the study, 163 patients before and 292 patients after the CPCP initiation. Sociodemographic and pain-related parameters showed no significant differences between the two groups (see Table 1). The number of pain assessments conducted per patient during their CED stay increased from an average of 5.9 to 8.2 (p < 0.001) after implementation of the SOP. The percentage of patients who underwent pain assessments at admission, within one hour after analgesic medication was given, and during every eight-hour shift were significantly higher in the post-SOP implementation group (44% to 98%, 35% to 64%, and 38% to 78%, respectively; p < 0.001).

Of the seven criteria evaluating pain management practices in the CED, three demonstrated a significant improvement after implementation of CPCP: appropriate dosage regimen of (a) short-acting analgesics (p < 0.001), (b) prophylactic breakthrough analgesics (p = 0.013), and (c) time-release analgesics (p < 0.001). No statistical difference was observed in the remaining four criteria of documentation of pain site, prescription of short-acting analgesics, conversion of short-acting to regular time-release analgesics, and prescription of analgesics for breakthrough pain. Documentation rates of the pain site were high (99% before and 98% after), regardless of CPCP implementation. Overall pain management guideline adherence was evaluated, and higher adherence was shown in the post-implementation group (p = 0.008) (see Table 2).

The time to reach the target NRS score was meaningfully shorter in the post-CPCP implementation group (27 hours before, 15 hours after; p = 0.025). The number of patients who reached the target NRS score (3 or lower) was significantly higher in the post-guideline and SOP implementation groups (46 patients before, 168 patients after, p = 0.038).

A total of 125, 178, and 152 patients were allocated to the low-, medium-, and high-adherence groups, respectively. With an increase in the degree of adherence, a reduction in time to reach the target NRS score was observed. Similarly, the number of patients who reached the target NRS score had a proportional increase with the level of adherence (see Table 3).

Discussion

Insufficient management of pain in the emergency department has been previously reported (Pines & Hollander, 2007; Wilson & Pendleton, 1989), and a significant relationship between overcrowding...
and delay of pain medication also has been reported (Pines & Hollander, 2007).

Adequate pain assessment is believed to be the major challenge in effective management of pain (Herr et al., 2004), as regular assessments are the most critical aspect of pain management (Thomas, 2013). Poor pain assessment practices in emergency departments have been reported (Todd et al., 2007). Implementation of the CPCP guideline in the CED was shown to improve overall pain assessment practices, with the percentage of patients who underwent regular pain intensity assessment increasing from 38% to 78%.

The time to reach the target NRS score was shorter, and the number of patients who reached the target NRS score was higher in the post-CPCP implementation group. The median pain intensity score at the time of discharge in the study by Todd et al. (2007) was 6, with only 50% of the patients having a two-point or greater reduction in NRS score throughout their stay in the emergency department. In comparison, the before and after CPCP implementation median NRS scores at discharge were 3 and 2, with the average oral morphine equivalent doses of 114 mg and 110 mg, respectively. The data indicate that the CED effectively managed patients’ pain by the time of discharge, with a reduction in reported intensity, irrespective of CPCP implementation.

Although higher adherence to the pain management guideline was demonstrated after implementation of CPCP, additional challenges remain, particularly to improve prescription of short-acting analgesics, conversion from short-acting to regular time-release analgesics, and prescription of analgesics for breakthrough pain.

**Limitations**

This study had several limitations. This was a retrospective study, and confounding variables such as comorbidities and other medical conditions, which could influence the study outcomes, could not be strictly controlled. Second, tolerance and safety of analgesics, including adverse reactions, were not considered in the study. Because pain-related parameters including NRS scores were not assessed and logged regularly before CPCP implementation, a large portion of missing values may have an impact on results.
Conclusion

Although pain management is an essential part of cancer care, pain control remains suboptimal in more than 40% of patients (Deandrea et al., 2008). Oncology nurses should focus on improving the effectiveness of pain management practices to provide quality care to patients with cancer. Implementation of the CPCP demonstrated improvement in pain assessment and management practices in the CED, resulting in better patient outcomes. Additional studies should be conducted to substantiate the validity of the guideline and SOP and to test its applicability in other settings.

References


