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Efficacy of Acute Pain Control Protocol in Triage Department on Analgesics Administration Time and Patients' Satisfaction

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Abstract

Objective: Current study was conducted to develop a pain control protocol by Morphine Sulfate (MS) Suppository in triage ward with the main primary outcomes of first analgesic administration time, patients' satisfaction and also the changes in pain intensity.
Methods: In this randomized clinical trial, 318 consecutive patients attending to an academic tertiary health care center in Tehran, Iran in 2011 and 2012 were enrolled. The patients were randomly assigned to receive either routine pain control by emergency medicine residents in emergency department (n=132) or pain control protocol in triage level by nurses (n=186). Those with pain in control group were treated with conventional pain control program and those in intervention group with pain intensities higher than four were treated with suppository stat 10 mg dose of MS administered by nurses in triage ward.
Results: The mean change in pain intensity was significantly ($P<0.0001$) higher in intervention group (4.2 versus 0.2) and the first analgesic administration time was significantly different between groups ($P<0.05$) being less in the intervention group (43.1 versus 4.6). Also the patients' satisfaction was significantly higher in the intervention group ($P<0.0001$). No drug adverse effects were seen.
Conclusions: Totally, according to the obtained results, it may be concluded that acute pain control protocol in triage department by suppository of MS would result in reduced analgesics administration time and higher patients' satisfaction.

Keywords: Analgesia; Emergency Department; Pain Control

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Introduction

Insufficient analgesics prescription (oligoanalgesia) in emergency department has been evaluated in different studies (1-4). Oligoanalgesia has been an important concern in emergency medicine since 1990s (1). The shortness in this field would be more when seeing the pain as the most common symptom among patients attending the emergency departments (5-7). Recent studies demonstrated that pain management guidelines in triage level would result in better pain control in a shorter time (8,9). According to literature, 30-45 percent of patients attending urban emergency departments require analgesics during admission (1-4). However, the optimal interval from arrival to first analgesic dose prescription should be less than 30 minutes (4). Regarding to importance of pain management in emergency department and high prevalence of pain in patients and prolonged waiting for analgesic administration, different studies have been conducted to develop a guideline for urgent pain control in triage level. However, some studies have shown low efficacy for this method (10).

One of the important challenges is related to lack of a non-injection optimal analgesic that may be administered by the nurse in triage level. Current study was conducted to develop a pain control protocol by MS Suppository in triage ward with main primary outcomes as first analgesic administration time, patients' satisfaction and also the changes in pain intensity.

Methods and materials

In this randomized clinical trial, 318 consecutive patients attending to an academic tertiary health care center in Tehran, Iran in 2011 and 2012 were enrolled. Patients older than 18 years, with acute pain (initiated form six hours ago), and without analgesic use were enrolled. The exclusion criteria were hemodynamic instability (Triage level ESI 1, 2), abdominal pain, opioid hypersensitivity, and unwillingness to take part in the study. The written informed consent form was signed by all the participants and the Helsinki Declaration was respected all over the study. The study protocol was approved by Ethical Committee of Tehran university of Medical Sciences.

The patients were randomly assigned to receive either routine pain control by emergency medicine residents in emergency department (n=132) or pain control protocol in triage level by nurse (n=186). The pain in arrival was determined and recorded by the nurse in triage ward according to verbal numeric rating scale for both groups and second pain intensity was measured and recorded in emergency department by residents. Those with pain in control group received no treatment until being visited by emergency medicine residents in emergency department and those in intervention group with pain intensities higher than four were treated with suppository stat 10 mg dose of MS administered by nurses in triage ward. The primary outcomes were first analgesic administration time, patients' satisfaction, and the changes in pain intensity.

Data analysis was performed among 318 subjects including 132 patients in control group and 186 subjects in intervention group using SPSS (version 13.0) software [Statistical Procedures for Social Sciences; Chicago, Illinois, USA]. Independent-sample T, Exact-Fisher, and Chi-Square tests were used for comparison between groups and were considered statistically significant at P values less than 0.05.

Results

The mean age of the subjects was 38.71 and 36.23 years in intervention and control groups, respectively (P > 0.05). The sex, marital status,

job, educational level, previous attendance, residence location, addiction history, work shift, and cause of analgesic requirement were alike among the groups (P > 0.05) (Table 1).

Table 1: Distribution of demographic and baseline characteristics in two groups

Variable	Group*		P Value
	Intervention	Control	
Male Sex	61.3%	63.6%	*0.862*
Married status	54.5%	80.6%	*0.083*
Academic Educational level	18.2%	12.9%	*0.936*
Job	54.8%	54.5%	*0.148*
Previous attendance	64.5%	72.7%	*0.528*
Capital Residence location	64.5%	54.5%	*0.679*
Addiction history	9.7%	13.6%	*0.683*
Night Work shift	38.7%	59.1%	*0.274*
Multiple Trauma as the cause of analgesic requirement	16.1%	4.5%	*0.566*

The mean change in pain intensity was significantly higher in intervention group (Table 2), and the first analgesic administration time was significantly less in the intervention group (43.1 versus 4.6) (Table 2). However the patients' satisfaction was significantly higher in the intervention group (Table 3). No drug adverse effects were seen.

Discussion

Pain control in emergency department especially in triage level, regardless of attendance cause, is a beneficial attempt to improve patient's outcomes. Since the pain is the most common reason that patients seek care in emergency departments, developing protocols to relieve pain is an issue of importance. This study demonstrated that developing a pain control protocol in triage level prior to emergency department visit by the nurses would result in less waiting time and also better pain management resulting in higher rate of satisfaction from all the services in detail and the total quality of health care services prepared by the emergency department in an academic third-level health care center in a developing country.

We administered the MS suppository as an opioid for nurse-initiated pain control protocol in triage level. In the similar study by Fry et al. morphine was administered as analgesic and the mean pain reduction was 4. Also, in their study there were 15 adverse events. However, the studied patients in our clinical trial developed no adverse drug effects. The median time to narcotic was 18 minutes that is near to the time found in the current study. The implementation of the results obtained by Fry and colleagues is less than our study due to lack of a control comparison group (11).

Table 2: Distribution of times and pain intensity scores in two groups

Variable	Group*		P Value
	Intervention	Control	
First analgesic administration interval (min)	4.6 (1.9)	43.1 (12.2)	*0.0001*
Arrival-analgesic order interval in ED**	23.48 (14.8)	21.36 (13.9)	*0.633*
Order-analgesic administration interval in ED	18.6 (9.5)	19.09 (7.8)	*0.860*
Initial Pain Intensity	8.13 (1.7)	7.41 (1.6)	*0.129*
Final Pain Intensity	3.9 (1.4)	7.68 (1.7)	*0.0001*
Pain Intensity Change	- 4.23 (1.7)	0.2 (1.3)	*0.0001*

* Data are presented as mean (± Standard Deviation); ** ED= Emergency Department

Table 3: Distribution of patients' satisfaction in two groups

Satisfaction from	Group*		P Value
	Intervention	Control	
Analgesia	96.8%	13.6%	*0.0001*
Kindly helps by nurses	100%	36.4%	*0.0001*
Analgesia by nurse	96.8%	13.6%	*0.0001*
Waiting time	93.5%	31.8%	*0.0001*
Totally	100%	36.3%	*0.0001*

The barriers that prohibit emergency physicians from appropriate pain management include ethnic and racial bias, gender bias, age bias, inadequate knowledge and formal training in acute pain management, and fear of opioids use (12,13). The study by Kelly et al.(14) demonstrated a significant and sustained change in analgesia administration practices away from the intramuscular route in favor of the intravenous route. In contrast, intravenous opioids are used more frequently and the proper efficacy seen following MS suppository in our study may be a promising step for further administration of opioids in pain management protocols at triage level by nurses.

The study by Campbell et al. similarly showed that implementation of a pain control protocol for pain management at triage at a busy Level I trauma center, similar to our academic center, would be beneficial to improve patients' outcomes (15). Another study by Fosnocht et al. (16) demonstrated that the use of a triage pain protocol would increase the number of patients who receive analgesics in the emergency department and also use of the protocol results in a decrease in the time to analgesic medication administration that is in

congruence with our findings in the current study. Similar findings were reported by Seguin for extremity injuries (17). The Study by Finn et al. (18), similar to our study, showed that patients who receive the triage level pain protocol would have statistically significant reduced time to analgesia. Also, Muntlin and colleagues reported that nursing assessment and the nurse-initiated intravenous opioid analgesic would result in significant improvement in frequency of receiving analgesic and a reduction in time to analgesic and also the patients perceive lower pain intensity and improved quality of care in pain management (19). similar to our findings. Therefore, the role of nurses in emergency departments especially in triage levels should not be restricted to pain assessment and the pain management should be incorporated in their work schedule (20).

Totally, according to the obtained results, it may be concluded that acute pain control protocol in triage department, using MS suppository prepared by nurses, would result in reduced analgesics administration time and higher patients' satisfaction. However, further studies should be carried out to ascertain the effectiveness of this method for pain control in emergency departments and also long-term outcomes.

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