



Use of Analgesia in an Emergency Department

Rabin Bhandari,¹ Gyanendra Malla,¹ Indrajit Prasad Mahato,¹ Pramendra Gupta¹

¹Department of General Practice and Emergency, BP Koirala Institute of Health Sciences, Dharan, Nepal.

ABSTRACT

Introduction: Pain is a common presentation to the emergency department but often overlooked with little research done on the topic in Nepal. We did an observational retrospective study on 301 patients in the emergency ward of BP Koirala Institute of Health Sciences with the objective of finding the practice of analgesia. The specific focus was on the time to analgesia, drugs for analgesia and method of pain assessment.

Methods: Case file analysis of patients discharged home after presenting with pain was performed. Time to analgesia and other factors were analyzed with descriptive statistics.

Results: Diclofenac injection intramuscular (80%) was the commonest analgesic used. Assessment methods and record keeping were poor. Pain in the abdomen was the commonest. The median time to analgesia from triage was 45 minutes (IQR 30 to 80) and the median time to analgesia from doctor evaluation was 40 minutes (IQR 20 to 70).

Conclusions: Time to analgesia from triage and doctors assessment in our set up is comparable to others. The quality of documentation is poor. Problems with pain identification and assessment may lead to inadequate analgesia so reinforcing the use of pain descriptor at triage itself with pain score would be helpful in adopting a protocol based management of pain.

Keywords: analgesia; emergency; Nepal.

INTRODUCTION

Pain is a common presentation to the emergency department (ED).^{1,2} We have a great responsibility to relieve pain by all possible appropriate means in a timely, efficient and effective manner through the full spectrum of pain.² The simple regimens, employing inexpensive drugs are often not followed due to inadequate healthcare systems.³ Moreover, pain management may receive less importance due to burden of other significant disease. Many studies on pain management have focused on time to analgesia, barriers to effective analgesia and on the methods to reduce time to analgesia in emergency but there still

seems to be room for improvement. A study showed that even with triage systems that consider pain as a determinant, the time to analgesia is still high.⁴

The objectives of the study were to identify the drugs used for analgesia, time to analgesia and associated factors that might influence these and to find out the assessment methods used for pain.

Correspondence: Dr. Rabin Bhandari, Department of GP and EM, BPKIHS, Dharan, Nepal. Email:bhandari529@yahoo.com.

METHODS

An observational study was conducted in the emergency department of BPKIHS who presented with pain to the ED and discharged from the ED. Secondary data was used from the case files of patients over one month who presented with pain and/or patients in whom analgesics were used.

All patients with Australasian triage score of 2, 3, 4 and 5 who received analgesics and or complained of pain and who were discharged from the ED.

All the cases that received analgesia only in the form of local anesthetics or with unclear/incomplete records were excluded.

Steps of patient management in emergency: All the patients were triaged before distribution to respective areas designated for treatment. Triage was nurse initiated and took place immediately on arrival, even before the registration takes place. The triage score used is based on Australasian Triage Score system with a five tier system. Related to pain, score two is given for chest pain of likely cardiac nature or very severe pain and progresses to triage score of five used for minimal pain of any cause. The triage nurse recorded complaints in brief along with vitals related to airway, breathing, circulation and disability. However, visual analogue score or numerical score for pain wasn't given at triage, as it is not used at present. Analgesics were provided only after assessment by a doctor. After the doctor filled the medication order the patient's relatives or friends (patient party) arranged to buy medications from medical shops which were then administered by the nurses.

Data was initially entered in Microsoft Excel and descriptive statistics with measures of quartiles and interquartile ranges were calculated.

All the details of patients presenting with pain including triage score, age, sex, cause for presentation and pain, time of triage, triage score, time of doctor evaluation, time to analgesia from triage and doctor evaluation, assessment methods for pain and discharge summary were analyzed.

The research complied with the research guideline as given by the research committee of B P Koirala Institute of Health Sciences.

RESULTS

A total of 301 patients with initial Australasian Triage Score of 2, 3, 4 and 5 discharged from the ED were studied over a period of one month. The mean age of the patients was 31 ± 16 years. Males constituted

62.5% where as females constituted 37.5% of the total sample.

Table 1. Age and sex distribution.

Age(in years)	Male (n) (%)	Female (n) (%)	Total (%)
0-10	13 (93)	1 (7)	14 (4.65)
10-20	42 (62)	26 (38)	68 (22.59)
20-30	60 (61)	38 (39)	98 (32.56)
30-40	33 (67)	16 (33)	49 (16.28)
40-50	12 (50)	12 (50)	24 (7.97)
50-60	14 (58)	10 (42)	24 (7.97)
60-70	10 (63)	6 (37)	16 (4.32)
70-80	3 (75)	1 (25)	4 (1.33)
80-90	1 (25)	3 (75)	4 (1.33)
Total (%)	188 (62.5)	113 (37.5)	301 (100)

Injectable medication was the preferred mode of analgesia. Morphine injection was used in less than one percent. Paracetamol and ibuprofen combination was used in combination and only in paediatric patients (Table 2).

Table 2. Analgesics use in emergency.

Analgesics	n (%)
Inj. Diclofenac	239 (79.4)
Inj. Tramadol	54 (17.9)
Inj. Morphine	2 (0.7)
Tab/sypNsaid	6 (2)

Diclofenac was given intramuscularly and tramadol intravenously in all the cases. A single analgesic was used in 83% of the cases. When a combination of drugs was used, only 2% received the other drug within the initial two hours (Table 3).

Table 3. Time after which additional drug was used for analgesia.

Duration in hours	Frequency n (%)	Cumulative percent
Less than 2	7 (2.3%)	2.3
2- 4	3 (1%)	3.3
4- 6	8 (2.7%)	6
6- 8	32 (10.6%)	16.6
More than 8	1 (0.3%)	16.9
Not given	250 (83.1%)	100

In 29% of the drug orders, the unit of the prescribed dose was not mentioned and the dose of the drug was prescribed as number of tablets or number of ampoules.

Almost three fourth of the drug prescriptions (73%) recorded drug to be given as required basis or a statum (stat) dose (Table 4).

Drug frequency	Frequency(%)
As required basis	42 (14%)
Stat dose	180 (59.8%)
Bd/tds	77 (25.6%)
Not given	2 (0.7%)

Pain in the abdomen was the commonest complaint associated with analgesia use, comprising 36%. Among those with pain in the abdomen, the genitourinary system was involved in 13%. Road traffic accidents and fall injuries comprised 22% and 20% respectively. Only one case of chest pain was recorded as receiving analgesia (Table 5).

Diagnosis /complaints	n	(%)
Abdominal pain under evaluation	46	35.8
Renal/ ureteric colic	41	
Cholelithiasis/cholecystitis	3	
Blunt trauma abdomen	1	
UTI	6	
Peritonitis / intestinal	2	
Obstruction	2	
Gastritis	2	
Hernia	5	
Abscess and Others	-	
Soft tissue injury, cut injury other than road traffic accidents	81	27
Road traffic accidents	44	14.6
Fractures	36	12
Others	32	10.6

All the cases receiving analgesia had a history or self report of pain at triage. The records didn't show any other method for pain assessment viz. numerical score or verbal score. There was no record of reassessment of pain. The history taking for pain was poor with all the cases only mentioning the site of pain and associated features. Analgesics were prescribed at discharge in 97% of the cases.

The median time to analgesia from triage was 45 minutes (IQR 30 to 80) and the median time to analgesia from doctor evaluation was 40 minutes (IQR 20 to 70).

Table 6. Time to first dose of analgesic.

Total no of samples = 301	T1	T2	T3
Median	45	40	5
Interquartile range (IQR)	30 to 80	20 to 70	0 to 15
Minimum value recorded	0	0	0
Maximum value recorded	960	950	103

T1 = triage to first dose of analgesic in minutes, T2 = Doctor to first dose of analgesic in minutes, T3 = Triage to doctor in minutes

The time to analgesia was also calculated separately after stratification into two time periods, daytime and nighttime. The night time was taken to be the period from night round of emergency to morning round the next day when the number of staffs were at their minimum. The median time from triage to analgesia during the day time was 50 minutes (IQR 30 to 90) where as it was 45 minutes (IQR 30 to 75) for the night hours. Doctor to analgesia time similarly was 40 minutes (IQR 20 to 70) for day time and 35 minutes (IQR 25 to 65) for night time.

DISCUSSION

Emergency departments in Nepal are mostly staffed by junior doctors supervised by few seniors. The lack of experience and protocols for pain management may result in inadequate analgesics being prescribed to needy patients. Motov et al,² in their literature review have noted some of the problems for effective pain management in the ED, such as failure to acknowledge pain, failure to assess initial pain, failure to have pain management guidelines in the ED and failure to document pain. All of these affect the time the patient receives the first and the subsequent doses of analgesia. Our results have shown that these barriers exist in our emergency, especially the failure to document and follow up the pain in writing. The other barrier that might lead to inadequate analgesia is the dosing and frequency of given analgesics. We found that the majority of doctors preferred to give analgesia on 'as required basis' or as 'stat' doses (73%) rather than as a periodic regular prescription. The problem with giving analgesia on 'as required basis' is well identified. The doctors working in emergency may give drugs on 'as required basis' or 'stat' dose expecting brief stays but as there is no reassessment of pain recorded, the patient may risk inadequate analgesia. Fielding et al looked at perceptions of interns and nurses managing post operative pain relief where lack of communication was reported as one barrier for inadequate analgesics

being given. When interns were asked why the patient received inadequate analgesia one answer was that they wrote analgesia on a 'pro re nata' (prn) or as needed basis. Giving drugs on a prn basis may risk the patient not getting analgesia as the patient may not ask and the nurse might not give it.⁵ The combination of failure to inadequately assess the pain at initial evaluation and then failure to subsequently reassess pain relief, can lead to many patients with inadequate or no analgesia at all.

Diclofenac injection was found to be the most common analgesic used, while morphine was found to be used in under 1% of patients with pain. This is not unusual considering the fact that diclofenac is easily available and emergency physicians are used to it.^{3,6} Zimmerman et al,⁷ had also documented intramuscular diclofenac as most frequent analgesic used in their emergency departments. Many patients we selected were suspected to have ureteric colic or to have suffered trauma, which might have led to overuse of diclofenac. The assumption of less severe pain is another factor that might have prompted the selection of diclofenac. The low use of morphine may be due to the bias resulting from selection of patients with apparently less serious problems as they were discharged from emergency. However, it might reflect the reluctance on the part of the doctor to use opioids as an initial choice of analgesic as discussed by Motov et al.² Moreover, the nurses may not give morphine when prescribed on 'prn' basis due to fear of morphine.⁵ The pattern of analgesics prescribed depends on experience,⁷ individual preferences and the availability and cost of drugs among others.

In Nepal, morphine and pethidine are the stronger opioids whose distribution is tightly regulated by Department of Drug Administration and injectables are supplied to hospitals only. Tramadol and diclofenac injections are available in medicine shops easily. The rural hospitals still use injection pentazocine, which is available after prescription by a registered doctor. Cost wise, an injection of diclofenac is the cheapest solution costing from 15 to 25 rupees for 75 mg, whereas tramadol injection costs 30 to 50 rupees for 50 mg and morphine injection costs 100 rupees for 15 mg (1 US dollar = 84 rupees). Patients are given morphine from hospital supply. Tablets forms are cheaper option but were not used much in our emergency.

Our average 'doctor to needle time' and 'triage to needle time' was about the same as has been reported elsewhere.⁸⁻¹² Some reports were of interventional studies and showed that analgesia time can be decreased with proper documentation and use of pain scores. A problem peculiar to our kind of set up is that the patient or family needs to buy analgesics from shops located outside and this might influence the time to analgesic. Contrary to popular belief the mean triage to needle time and doctor to needle time was slightly higher for daytime compared to nighttime in our study. This might be attributable to crowded emergency during daytime compared to night time in our ED.

We were trying to appraise the quality of care in analgesia offered by emergency doctors alone and so the samples included only the cases in which analgesia was prescribed by the emergency doctor on duty and the patient was subsequently discharged from the ED. This explains the small numbers of chest pain patients in this sample as we have a policy of early referral for chest pain cases. This selection might have under represented the use of morphine and ketamine (mostly for patients with pain and hypotension) which is also used in our emergency. But this allowed us to find the practice of our doctors working in emergency as the prescription of a case given for consultation to other departments was often influenced by other department doctors. Moreover, this allowed us to have all the case file details easily.

CONCLUSIONS

The article gives us a glimpse of analgesia in emergency, a subject less written about in less developed situations such as our own. Time to needle from triage and doctors' assessment in our set up is comparable to others. The quality of documentation is poor. Problems with pain identification and assessment may lead to inadequate analgesia. The textual recording of pain at triage could be reinforced by concurrently recording the pain score (eg. VAS). This would be helpful in adopting a protocol based management of pain.

ACKNOWLEDGEMENTS

Dr. Malcolm Moore for valuable suggestions and Dr. Sailesh Maharjan for last minutes manuscript preparation help.

REFERENCES

1. Todd KH, Ducharme J, Choiniere M, Scrandall C, Fosnocht DE, Home P et al. Pain in the emergency department: results of the pain and Emergency Medicine Initiative (PEMI) multicenter study. *The Journal of Pain*. 2007;8:460-6.
2. Motov SM, Khan ANGA. Problems and barriers of pain management in the emergency department: are we ever going to get better? *Journal of Pain Research*. 2009;2:5-11.
3. Size M, Soyannwo OA, Justins DM. Pain management in developing countries. *Anaesthesia*. 2007;62(Suppl.1):38-43.
4. Ducharme J, Tanabe P, Homel P, Miner JR, Chang AK, Lee J et al. The influence of triage systems and triage scores on timeliness of ED analgesic administration. *American Journal of Emergency Medicine*. 2008;26:867-73.
5. Fielding R, Irwin MG. The knowledge and perceptions of nurses and interns regarding acute pain and postoperative pain control. *Hong Kong Med J*. 2006;12(Suppl.1):S31-48.
6. Chung CH. The use of injectable nonsteroidal anti-inflammatory drugs in local accident and emergency practice. *Hong Kong Journal of Emergency Medicine*. 2002;9:65-714.
7. Zimmerman O, Halpern P. Opinion survey of analgesia for abdominal pain in Israeli emergency departments. *The Israel Medical Association Journal*. 2004;6:681-5.
8. Silka PA, Roth MM, Moreno G, Merrill L, Geiderman JM. Pain scores improve analgesic administration patterns for trauma patients in the emergency department. *Academic Emergency Medicine*. 2004 Mar;11:37.
9. Stalnikowicz R, Mahamid R, Kaspi S, Brezis M. Undertreatment of acute pain in the emergency department: a challenge. *International Journal for Quality in Health Care*. 2005;17:173-6.
10. Yanuka M, Halpern P. An interventional study to improve the quality of analgesia in the emergency department. *Emergency Medicine Journal*. 2002;19(Suppl.1):A20-40.
11. Goh HK, Choo SE, Lee I, Tham KY. Emergency department triage nurse initiated pain management. *Hong Kong Journal of Emergency Medicine*. 2007;14:16-21.
12. Lim GH, Wee FC, Seow E. Pain management in the emergency department. *Hong Kong Journal of Emergency Medicine*. 2006;13:38-45.