INDONESIAN JOURNAL OF ANESTHESIOLOGY AND REANIMATION
Volume 1 Number 1, July 2019 : 13-18

Original Article

PAIN TREATMENT ON TRAUMA PATIENT IN DR.SOETOMO GENERAL HOSPITAL EMERGENCY ROOM

Khoir Amaliin[1a], Atiya Nurrahmah[1], Nancy Margarita Rehatta[2], Choesnan Effendi[3]

[1,3] Faculty of Medicine, Universitas Airlangga, Surabaya
[2] Department of Anesthesiology and Reanimation, Faculty of Medicine, Universitas Airlangga/Dr Soetomo Academic Hospital, Surabaya
[a]Corresponding author: dr.khoiramaliin@gmail.com

ABSTRACT

Introduction: Uncontrolled pain has many negative effects to the body. The Guideline of Pain Management has been specifically arranged, but assessment and pain treatment in the Emergency Room (ER) have not adequate yet. Integrated pain assessment before and after treatment is very important in monitoring pain management effectiveness. **Objective:** The aim of this study was to determine pain score of emergency patients before and after treatment. This study was also conducted to record the treatment timing that was given by the paramedics in the emergency room. **Method and Material:** This study was a description research with 40 trauma patients as samples in the ER at Dr. Soetomo Hospital. Patient's pain level was measured twice, before the treatment and an hour after that. The pain level was measured using Visual Analog Scale (VAS). Patients were given ketorolac 30mg intravenous as the treatment. **Result and Discussion:** There were2.5% of the patients VAS 1 and the other 12.5% VAS 10. An hour after treatment 20% of the ER patients were free of pain and the rest 7.5% VAS 6. The average of VAS before the treatment were 6.38 ± 2.1and an hour after later they decreased to 2.23 ± 1.7. There were only 67.5% of the ER patients that were treated in the 1st hour, 17.5% of them were treated in the 2nd hour, the other 10% were treated in the 3rd hour, and the last 5% of them were treated in the 4th hour. **Conclusion:**The average value of pain was decreased when one hour after administration of pain therapy by paramedics, but therapy at different times showed no difference in the level of pain reduction that can be inferred.

Keywords: Emergency Room, Pain, Time, Visual Analogue Score.

ABSTRAK

Pendahuluan: Rasa nyeri yang tidak terkendali memiliki banyak efek negatif pada tubuh. Pedoman manajemen rasa nyeri telah secara khusus diatur. Namun, penilaian dan pengobatan nyeri di Instalasi Rawat Darurat (IRD) belum memadai. Integrasi penilaian rasa nyeri sebelum dan setelah perawatan ini sangat penting dalam memantau efektivitas manajemen rasa nyeri. **Tujuan:** Studi ini dilakukan untuk menentukan tingkat nyeri pasien gawat darurat sebelum dan setelah pengobatan, dan mengetahui waktu terapi nyeri oleh paramedis. **Metode dan Bahan:** Penelitian ini adalah penelitian deskripsi. Studi ini prospective observasional dengan 40 pasien trauma sebagai sampel di IGD Rumah Sakit Dr. Soetomo. Tingkat nyeri pasien diukur dengan Visual Analog Skor (VAS) dan mencatat waktu terapi, dalam satu jam kemudian, VAS akan mengukur lagi. Pasien diberikan intravena ketorolac 30mg sebagai terapi. **Hasil dan Pembahasan:** Sebelum terapi, ada 2,5% dari 40 pasien memiliki VAS 1 dan 12.5% memiliki VAS 10, satu jam setelah terapi hanya 20% dari pasien yang bebas dari rasa nyeri dan ada 7,5% dari pasien yang memiliki VAS 6. Rata-rata VAS sebelum pengobatan adalah 6.38 ± 2.1, menurun menjadi 2.23 ± 1.7 ketika satu jam setelah pengobatan. Ada 67.5% (n = 27 dari 40) pasien yang diberi perlakuan pada jam pertama, sementara 17,5% (n = 7) pada jam kedua, 10% (n = 4) pada jam ketiga dan 5% dari pasien (n = 2) pada jam keempat. **Kesimpulan:** Nilai rata-rata rasa nyeri menurun ketika satu jam setelah pemberian terapi nyeri oleh paramedis. Tetapi, terapi pada waktu yang berbeda menunjukkan tidak ada perbedaan dalam tingkat pengurangan rasa sakit yang dapat disimpulkan.

Kata kunci: Instalasi Rawat Darurat, Nyeri, Waktu, Visual Analog Skor.

Article info: Received 12 April 2019, Received in revised from 4 July 2019, Accepted 24 July 2019

INTRODUCTION

Pain is a problem that happened often to the patients in hospital daily, especially in Emergency Room (ER). The perception of pain, which is felt by individual, varied depending on genetic factors, gender, age, psychological aspects, pain history, culture, beliefs, mood and also the ability to cope with the pain.[1,3,15] Uncontrolled pain has many negative effects to the body.[9] While the pain control capabilities is varied for each individual, one of them depend on the experts who deal with the pain.[13] Measuring the pain enables doctors and researchers to show a statistically and clinically significant treatment effects. Visual Analog Score is usually used to measure the severity of pain.[17]

How to cope with pain in emergency case is continue to be developed. The subjective of Patient's level of pain must be measured with the correct method in order for the grant of a therapy can provide the desired results. This current era, pain management guidelines already arranged specific to the each type of preoperative pain. However, Pain's assessment and treatment in the ER have not been done. The integration of pain assessment before and after the treatment is very important to monitor its effectiveness.[4,5] This research was conducted to find out the patient's level of pain before and after therapy, and knowing the portrayal time of administering the pain therapy by health workers in dealing with patients who come to ER. So the results can be obtained a decrease, increase, or stay after the giving of the therapy by medical staff at ER.

MATERIAL AND METHOD

This was a descriptive study with 40 trauma patients in the Dr Soetomo General Hospital surgical emergency room as the research samples. There were40 traumatical patients in Emergency Room Dr. Soetomo Hospital Surabayafrom January to February 2014. The level of pain was measured twice, the first one was when the patient arrived in the ER, the second one was an hour after the pain treatment. The severity of pain was measured using VAS. After the measurement, ketorolac30 mg intravenous was given.

Inclusion criteria were trauma patient, aged 18-64 y.o, with GCS>9.Patient's data was collected through direct interview and patient's medical record.

Data collection sheet were composed of patient consent, day and date the data collected, basic patient information (name, age, gender, level of education), type of trauma, the time patient arrived in the ER, patient's level of pain when they were arrived, the length of time before ketorolac 30 mg intravenous was being administered, and patient's level of pain an hour after the administration of ketorolac. The data obtained were managed with Microsoft Excel and SPSS.

RESULT AND DISCUSSION

The Characteristics of Research Subjects

The scale of VAS had been provedto be sensitive and reliable, and it was considered to be the best option for elderly patients, including those with mild to moderate cognitive disorder. This type of scale used a description such as: 'no', 'mild', 'moderate', 'severe', 'torture'.[10] Therefore, the researchers split the pain level scale, VAS scales (0-10) divided into 4 groups by the researchers, they were 'no pain' (VAS 0), 'mild pain' (VAS 1 – 3), 'moderate pain' (VAS 4 – 7), and 'severe pain' (VAS 8 – 10).

Table 1. Distribution of Pain Level Based on Patient's Age

Pain Level	Group of Age			
	18 - 29 n = 13	30 - 41 n = 9	42 - 53 n = 13	54- 64 n = 5
No pain	0%	0%	0%	0%
Mild pain	0%	0%	15%	0%
Moderate pain	77%	56%	69%	80%
Severe pain	23%	44%	15%	20%

Table 2. Distribution of Pain Level based on The Patient's Gender

Pain Level	Male n = 30	Female n = 10
No pain	0%	0%
Mild pain	3,3%	10%
Moderate pain	76,7%	50%
Severe pain	20%	40%

Table 3. Distribution of Pain Level based on Patients' Levels of Education

Pain Level	Bachelor n = 2	Senior High School n = 19	Junior High School n = 10	Primary School n = 7	Uneducated n = 2
No pain	0%	0%	0%	0%	0%
Mild pain	0%	5%	10%	0%	0%
Moderate pain	100%	63%	70%	86%	50%
Severe pain	0%	32%	20%	14%	50%

Patient's aged distribution (table 1) were 32.5% patients aged 18 to 29 years, 22.5% aged 30 to 41 years, 32.5% aged 42 to 53, and 12.5% aged 54 to 64 years. From the gender distribution data (table 2), there were 75% male patients, and 25% female patients. Level of patients' education being sampled varied from un-educated to bachelor (table 3), but the distribution of each level of education was not balanced.

The Results of Pain Level Measurements

Based on table 4, before the treatment, the pain levels were varied from level 1 (2,5%) to level 10(12,5%). An hour after ketorolac 30 mg intravenous were given, 20% of the patients were pain free whereas 7,5% of them had pain levels of 6. The calculation of pain level average before the therapy that was being decreased of 6.38 to 2.23 one hour after being given ketorolac 30 mg intravenous as an analgesic.

Tabel 4. Patients' Pain Level Before and After The Treatment.

Criteria	Pain Before the Treatment	Pain After the Treatment
VAS 0	0.0	20.0
VAS 1	2.5	17.5
VAS 2	2.5	22.5
VAS 3	0.0	17.5
VAS 4	10.0	12.5
VAS 5	15.0	2.5
VAS 6	30.0	7.5
VAS 7	15.0	0.0
VAS 8	7.5	0.0
VAS 9	5.0	0.0
VAS 10	12.5	0.0
Minimum	1	0
Maximum	10	6
Mean	6.38	2.23
Std. Deviation	2.108	1.761
N	40	40

The Result of Pain Therapy Timing

The data showed in table 5 that the majority of the patient (67,5%) were treated within the first hour, the other 17,5% were treated within the second hour, 10% of them were treated within the third hour, and the last 5% were treated after the third hours in the Emergency Room.

Table 5. The Patient's Pain Level Distribution Based on The Pain Therapy Timing.

Variable	1st Hour		2nd Hour		3rd Hour		4th Hour	
	Before	After	Before	After	Before	After	Before	After
Min	1.00	0.00	5.00	1.00	5.00	0.00	4.00	0.00
Max	10.00	6.00	7.00	4.00	10.00	6.00	5.00	1.00
Mean	6.5185	2.2222	6.1429	2.4286	6.7500	2.7500	4.5000	0.5000
SD	2.3758	1.8045	0.69007	1.27242	2.21736	2.5000	0.70711	0.70711
N	27	27	7	7	4	4	2	2

*Description table : n = number of patients

In the ER, some trauma patients reported their pain level as high as 10, that usually happened in chronic cancer pain patients, due to their distrust against the paramedics. The high level of pain were reported by the patient, purposed to get treated immediately.[11]

The factors that can be interfere the pain levels are age, gender, education level, and psychologic.[15] Pain perception will decrease along with the aging process. Age differences indicate the differences in the modulation of pain. That is because of brain parenkim atrophy that happened due to the aging process. The depletion of the substantia grisea happened in some areas, involved in pain processing, such as insula, gyrus cingulatum, posterior parietalis lobe and Senatosensory cortex.[2] According to the gender, hormonal factors act as a pain modulator in ventrolateral periaquaductus grisea area.[6] Men had a connectivity increased in periaquaductus grisea, the amygdala and the putamen, while women did not increase.[8] Some of these factors could not be taken due to the limited number of conclusions by the sample and unequal characteristics of research subjects. On some occasion, patients may still feel some pain even if they hadbeen taken the pain killer. This condition may happened depends on the type of traumatic experience and their ability to control the pain.[1,3,13,15] In case of pain, there must be a quick oral nonopioid giving advance according to WHO's Pain Relief Ladder. Guide of WHO claimed to be able to provide 80-90% effectiveness in lowering the patient's pain level.[16]Patient in ER gave ketorolac 30 mg intravenous for the systemic analgesic and there was no obtained of the opioids use although for patients with moderate and severe levels of pain. These conditions might be happened because the health workers were afraid of opioid and its side effect. The health worker may not be able to decide whether the patients really need the opioid or just faking it.[12] However, the therapy which were given by the paramedics in the ER of Dr. Soetomo General hospital, abled to lower the patient average pain level from 6,38 ± 2.1 to 2,23 ± 1.7 an hour after the treatment.

The factor that can interfere with pain handling in the ER was the intrinsic barrier from the medical personels. This condition may happen due to inadequate knowledge of

pain, the absence of standard pain handling procedure, and their lack of accountability in terms of standard of care.[14] Despite of the fact that 50% patients treated within the first hour in the ER, there were still 5% of them who got treated after 4 hours. This might be happened because the patient had to follow through various physical and laboratory examination first before treated with pain mediation and iv fluid.

CONCLUSION

The average level of pain before therapy was 6,38 ± 2.1. That average value decreased and became 2,23 ± 1.7 at one hour after being givenketorolac 30 mg intravenous as pain therapy. However, the decrease of patient pain level who was given therapy in a different hour did not show a difference that can be inferred.

ACKNOWLEDGEMENT

The authors said thanks to Prof. Dr. Nancy Margarita Rehatta, Dr., SP. AnKIC-KNA as a lecturer and coordinator of the Executor I supervisor Module KBK, Choesnan Effendi, Dr., AIF. as a teacher supervisor II, h., Prof. Dr. Agung Pranoto, Dr., m. SC., Sp. PD., K-EMD, FINASIM FK as Dean of UA, Dr. Florentina Sustini Dr., MS as Coordinator of Research Module, Furqon Musabil as a motivator, both parents are Mr. and Mrs. Mualimin Kasiatun, as well as sister Blessing Sanjaya's son and beloved Am Jagad Fathikah for the contributions that have been given so that the research can be carried out properly.

REFERENCES

1. Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine. Acute Pain Management: Scientifc Evidence. Australia: National Health and Medical Research Council (NHMRC); 2010.
2. Cole LJ, Farrel MJ, Gibson SJ, Egan GF. Age-related differences in pain sensitivity and regional brain activity evoked by noxious pressure. Neurobiology of Aging. 2010;31:494-503.
3. Diatchenko L, Slade GD, Nackley AG. Genetic Basis for Individual Variations in Pain Perceptions and the Development of Chronic Pain Condition. Human Molecular Genetics. 2004;14:135-143.
4. Guru V, Dubinsky I.The Patient vs. Caregiver Perception of Acute Pain in the Emergency Department[internet]. Journal of Emergency Medicine. 1999;8:7-12. Available from: http://www.jem-journal.com/article/S0736-4679%2899%2900153-5/abstract?cc=y=?cc=y cited on January 2017
5. Kelly AM. A process approach to improving pain menagement in the emergency departement: development and evaluation. Accid Emerg. 2000;17:185-187.
6. Krzanowska, Eliza K. Reversal of sex differences in morphine analgesia elicited from the ventrolateral periaqueductal gray in rats by neonatal hormone manipulations abstract [internet]. Btain Research.2002;929(1):1-9. Available from: http://www.sciencedirect.com/science/article/pii/S0006899301033509
7. Lameshow S. Adequacy of Sample Size in Health Studies. England: John Wiley and Sons Ltd; 1990.
8. Linnman C, Beucke JC, Jensen KB. Sex similarities and differences in pain-realted periaquaductal gray connectivity. NIH Public Access. 2012;153(2):444-454.
9. Mangku G, Senapathi TG. Buku Ajar Ilmu Anestesi dan Reaminasi. Jakarta: Indeks; 2010.

10. National Institute of Clinical Studies. Emergency Care Acute Pain Management Manual. Canberra: NHMRC; 2011.
11. Richard HM. Socioeconomic variations in responses to chest pain : qualitative study. Primary Care: BMJ. 2002;324:1-4.
12. Rupp T, Delaney KA. Inadequate Analgesia in Emergency Medicine [internet]. An Annals of Emergency Medicine International Journal 2013 [cited September 18, 2014]. Available from:http://www.annemergmed.com/article/S0196-0644(03)01226-5/fulltext
13. Russel PB, Aveyard SC, Oxenham DR. An Assessment of Methods Used to Evaluate the Adequacy of Cancer Pain Management. Journal of Pain and Symptom Management. 2006;32:581-588.
14. Todd KH.). Barriers to Effective Emergency Departement Pain Management. In Pain Management and Sedation: Emergency Dapartement Management. USA: McGraw-Hill; 2006. p. 82-87.
15. Woodrow KM, Friedman GD, Siegalaub AB, Collen MS. Pain Tolerance: Differences According to Age, Sex and Race. Psycosomatic Medicine. 1972;34(6):548-556.
16. World Health Organization.). WHO's Pain Ladder for Adults [internet]. dari World Health Organization2013 [cited on July 1, 2013]. Available from: http://www.who.int/cancer/palliative/painladder/en/
17. Younger J, McCue R, Mackey S. Pain Outcomes: A Brief Review of Instruments and Techniques. Curr Pain Headache Rep. 2009;13(1):39-43.