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Research Article

Clinical study on post operative analgesia and pain management of patients undergoing elective surgeries

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ABSTRACT

Background: Adequate control of the postoperative pain plays an important role in postoperative management, taking into account the fact that, beyond the fear for the outcome of surgery, the main concern of patients is related to postoperative pain, which is often perceived as the most unpleasant event and unwanted side effect of the surgical act. The objective was to assess post-operative pain, to compare various modalities of pain management in respects of analgesic efficacy, level of sedation.
Methods: This is a prospective, descriptive study. All the patients were explained about the study, an informed consent was taken. They were explained and educated about the Visual Analogue Scale (VAS) and the usage of it preoperatively. The degree of pain perceived by the patients was evaluated at 1, 3, 6, 12, 24, 48, and 72 hours following surgery, using VAS in mm. The level of sedation was determined using Ramsay's Sedation score. 4 analgesic modalities were used.
Results: Patients in group IV experienced lowest VAS scores compared to all remaining group patients at all intervals of time except at 6 hours when the average VAS score was more. Level of sedation for patients in group IV was negligible compared to other groups and also few complications.
Conclusions: Multi modal analgesia with wound infiltration win LA + IV tramadol + IM diclofenac achieved the best level of analgesia in this study with least consumption of opioids, lowest level of sedation and with best patient satisfaction.

Keywords: Clinical study, Pain management, Surgery

INTRODUCTION

Effective pain management following surgery is a basic humanitarian right.[1] Adequate control of the postoperative pain plays an important role in postoperative management, taking into account the fact that, beyond the fear for the outcome of surgery, the main concern of patients is related to postoperative pain, which is often perceived as the most unpleasant event and unwanted side effect of the surgical act.

Management of acute postoperative pain remains problematic. Patients continue to describe poorly controlled pain and studies report pain as underestimated, under medicated, and under relieved.[2-4]

Aside from the suffering caused by insufficient pain relief, this is an issue with potential adverse physiological and psychological consequences. Patients that continue to experience unrelieved post-surgical pain are at greater risk from developing deep vein thrombosis, pulmonary embolus, coronary ischemia, myocardial infarction and pneumonia.[5]

The prevention and effective pain management approaches following surgery, has the potential to improve surgical outcomes. The improved strategies could facilitate and avoid clinical complications, reduce resource costs, improve quality of life and have a considerable impact on public health.[6] The management of postoperative pain, to achieve acceptable pain scores on movement is challenging and unfortunately not always achieved to a satisfactory level. There is a belief that the amount of pain perceived is merely directly proportional to the extent of injury.[7] The severity of postoperative pain is however influenced by multiple factors aside from the extent of trauma.[8] Despite identical surgical procedures, there is postoperatively a large variation in the pain experience and analgesic requirement.[9] Psychological factors such as anxiety and depression have been considered as important predictors of postoperative pain and perceived control over pain has been identified as a major psychological factor that is associated with reduced pain reports and increased pain tolerance. The pain treatment method is also of importance for the pain experience.

Patients with good analgesia are more co-operative, recover more rapidly and leave hospital sooner. Thus, the main objective of the therapy is to maintain postoperative quality of life and rapid postoperative recovery.

This is a prospective, descriptive study, the overall aim of which was to gain a Comprehensive knowledge of patients´ pain experiences, and to formulate strategy for effective and optimal pain management. Specific objectives included effective assessment of post-operative pain, effective management of post-operative pain, to compare various modalities of pain management in respects of analgesic efficacy, level of sedation, to achieve good patient satisfaction, and to minimize complications associated with unrelieved post-operative pain.

METHODS

This is a prospective, descriptive study of post-operative pain management of patients undergoing major elective surgeries at the department of General surgery, GGH Kakinada (Rangaraya Medical College) from August 2012 to September 2014 (2 yrs).

Inclusion criteria

1. Patients undergoing all major surgeries over abdomen and chest.
2. Patients aging between 18 – 75 years.

Exclusion criteria

1. Patients unwilling to participate in the study.
2. Inguinal and perineal surgeries.
3. Laparoscopic surgeries.
4. Patients with history of allergy to analgesic medications used in the study.
5. Patients experiencing intra operative, anaesthetic complications.

All the patients who fit in to the inclusion criteria were explained about the study, an informed consent was taken. All the patients were explained and educated about the visual analogue scale (VAS) and the usage of it preoperatively. The degree of pain perceived by the patients was evaluated at 1 hour, 3 hours, 6 hours, and 12 hours, 24 hours, 48 hours and 72 hours following surgery, using VAS in mm.

The pattern of pain and its management was studied for the first 3 days following surgery.

The level of sedation was determined using Ramsay's Sedation score. [10] At the same time pain was evaluated. In this study 4 analgesic modalities were used

Modality I: - (NSAID + sedative)

(Inj. Diclofenac sodium 75 mg IM BD + Diazepam 5 mg rectal suppository BD)

Patients were given one dose of Inj. Diclofenac sodium 75mg IM soon after they perceived moderate to severe degree of pain (VAS > 30 mm) following surgery, and all of them received 5 mg of diazepam rectal suppository HS on the day of surgery. In the first 3 post-operative days Inj. Diclofenac 75 mg IM was given BD at scheduled timings. Diazepam rectal suppository was given HS. Between the doses all patients experiencing moderate to severe pain were given Inj. Fentanyl 50 µ gm slow IV as rescue analgesic.

Modality II: - (IV Opioid)

(Inj. Tramadol 50 mg slow IV BD alone)

All the patients included in this analgesic modality received Inj. Tramadol 50 mg slow IV soon after they experienced moderate to severe pain (VAS > 30 mm) following surgery. In the first 3 post-operative days they received Inj. Tramadol 50 mg slow IV BD at scheduled timings. Between the doses all of the patients experiencing severe pain were given Inj. Fentanyl 50 µ gm slow IV as rescue analgesic.

Modality III: - (Epidural opioid)

(Inj. Tramadol epidural bolus BD)

Patients receiving this modality received one dose of Inj. Tramadol epidural bolus injection soon after they experienced moderate to severe pain following surgery. For the first 3 days in the post-operative period Inj. Tramadol epidural bolus BD at scheduled timings. Between the doses all those experiencing severe pain

were given Inj. Fentanyl 50 µgm slow IV as rescue analgesic.

Modality IV: - Multimodal (LA wound infiltration + IV Opioid + NSAID)

All the patients receiving this analgesic modality received Post-operative wound infiltration with 0.5% Bupivacaine 20 ml immediately following closure of the incision, Inj. Tramadol 50 mg slow IV given soon after they perceived moderate to severe pain (VAS >30 mm) following surgery. Post operatively for the first 3 days all of them received Inj. Tramadol 50 mg slow IV BD and Inj. Diclofenac sodium 75 mg IM BD at scheduled timings. Both the drugs were given at different timings but not simultaneously. Those experiencing severe pain between the doses received Inj. Fentanyl 50 µ gm slow IV as rescue analgesic.

Patients were mobilised soon their pain reached acceptable and tolerable levels and ambulatory VAS was calculated. The overall subjective satisfaction levels of the patient towards pain relief were graded as poor, satisfactory and good as expressed by patients.

RESULTS

A total of 200 patients were studied over the period between July 2012 - July 2014. Maximum patients were in the age group of 41-50 years (32%) followed by 25% each in 31-40 years and 51-60 years. No one was below 20 years of age. Only 3.5% of patients were in the age group of 71 years and above. Females were more (62.5%) than males (37.5%). Maximum surgeries were done for modified radical mastectomy (MRM) (25%), followed by Hernioplasty (23.5%) and cholecystectomy (15%). Other surgeries performed on the study subjects in the decreasing order were Gastrectomy (8.5%), Whipple's procedure (7%), hiatus hernia repair (4%), Hemi colectomy (4.5%), Trans hiatal oesophagectomy (3.5%), longitudinal pancreaticojejunostomy (LPJ) (3%), Rectopexy (2.5%). Most common mode of anaesthesia used was general anaesthesia in 57.5% of cases followed by epidural anaesthesia in 25% of cases and spinal was given in 17.5% of patients.

It is seen from table 1 that patients in group IV had experienced lowest VAS scores compared to all remaining group patients at all intervals of time except at 6 hours when the average VAS score was more for this group compared to other groups.

It can be observed from table 2 that, level of sedation for patients in group IV was negligible or zero compared to other groups at all intervals of time.

It is seen from table 3 that group IV patients had no severe complications compared to remaining groups.

Table 1: Comparison of four groups in relation to pain scores.

Time	Average VAS score (range)			
	Group I	Group II	Group III	Group IV
1st hour	47.7 (27-68)	61.12 (42-78)	16.69 (12-24)	10.66 (6-16)
3 hours	15.2 (5-28)	14.6 (6-28)	43.87 (30-68)	12.76 (8-20)
6 hours	21.98 (10-35)	15 (6-24)	18 (12-26)	32.96 (20-46)
12 hours	59.04 (40-78)	36.64 (24-48)	30.73 (22-42)	13.56 (6-26)
24 hours	22.84 (12-36)	14.16 (6-28)	18.24 (12-28)	10.84 (6-16)
48 hours	16.88 (8-33)	12.64 (8-20)	15.59 (10-22)	11 (6-18)
72 hours	14.58 (8-24)	12.76 (10-20)	14.73 (4-22)	10.16 (6-16)

Table 2: Comparison of four groups in relation to average level of sedation.

Time	Average sedation score (range)			
	Group I	Group II	Group III	Group IV
1st hour	2.62 (2-3)	2.48 (2-3)	1 (0-2)	0.9 (0-2)
3 hours	1.76 (1-2)	3.2 (2-4)	0.59 (0-1)	1 (1)
6 hours	1.28 (1-2)	2.26 (1-3)	1.14 (1-2)	0.52 (0-1)
12 hours	0.9 (0-1)	1.52 (1-2)	1.16 (0-2)	1 (1)
24 hours	1.58 (1-2)	2.88 (2-4)	0.79 (0-1)	0.14 (0-1)
48 hours	1.36 (1-2)	2.38 (2-3)	0.85 (0-1)	0.6 (0-1)
72 hours	1.26 (1-2)	2.44 (2-3)	0.79 (0-1)	0 (0)

Table 3: Comparison of four groups in relation to complications.

Post-operative nausea & vomiting	Group I	Group II	Group III	Group IV
Mild	19 (38%)	08 (16%)	28 (56%)	30 (60%)
Moderate	23 (46%)	25 (50%)	10 (20%)	20 (40%)
Severe	08 (16%)	17 (34%)	02 (04%)	00 (00%)

DISCUSSION

"*Nature has placed mankind under the government of two sovereign masters Pain and Leasure*" – Jeremy Bentham (1748-1832).

"For all, the happiness mankind can gain is Not In Pleasure, but in Rest from Pain." – John Dryden

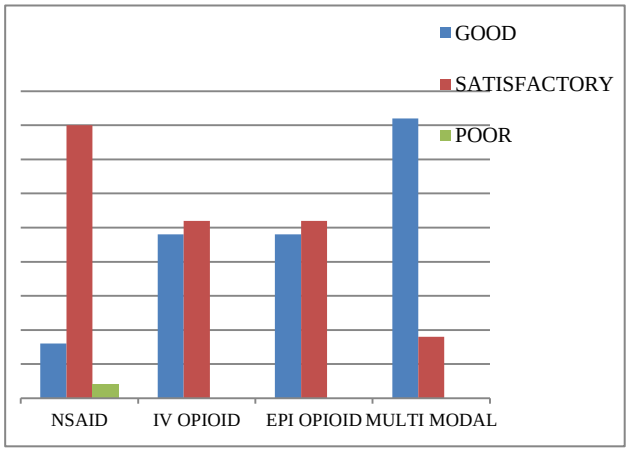

Figure 1: Subjective satisfaction towards pain relief.

Post-operative pain is a very distressing symptom which sometimes requires vigorous and effective treatment. Challenge of relieving post-operative pain after major surgery is significant because pain relief may be difficult to achieve without simultaneously incurring severe side effects. Not all the patients will be pain free even with advanced analgesic strategies. The reasons for inadequate pain relief are numerous. The nature of pain itself is subjective and there is usually no simple test for its quantification. Patients' response to analgesics is also variable and the efficacies of post-operative pain relief methods are neither uniform nor sufficient.

The present study is a Prospective, descriptive study of post-operative pain experienced by patients undergoing major abdominal and thoracic surgeries in the department of general surgery GGH, Kakinada. 200 patients participated in the study that underwent various surgeries. Four analgesic modalities were given for the patients' post operatively dividing them in to 4 groups. Post operatively the level and distribution of pain was assessed using VAS and the antecedent sedation using Ramsay's sedation score for the first 72 hrs. following surgery at intervals of 1, 3, 6, 12, 24, 48, and 72 hours.

It is evident from the above statics that in this study the Multi modal analgesia group (Group IV) achieved effective and sustained post-operative analgesia than the other groups with fewer spikes of pain scores and with least consumption of opioids.

Kilbride et al compared the narcotic requirements of patients undergoing major abdominal surgery who received parenteral and epidural opioids showed that the daily requirements of narcotics is less with epidural analgesia than with parenteral administration.[11]

The present study showed contrary finding of more requirement of opioid with epidural route (350 mg Tramadol) than parenteral route (400 mg Tramadol).

In the present study both the groups achieved comparable analgesic levels at and after 3 hours following surgery. The disparity in the opioid requirement is because the parenteral opioid group received more number of rescue analgesic doses (Group 2 77 µ gm vs. 55 µ gm in Group 3).

It is evident from the chart that in this study the average sedation levels were not uniform throughout the post-operative period but were undulating. The base line level and height of the waves vary with the modality of treatment. The base line sedation level and the height of the waves were highest among the patients of 4 Opioid group (Group 4).

The sedation levels of the NSAID group (Group 1) were also higher contrary to the expectation because of the additional usage of per rectal Diazepam and more frequent use of rescue analgesic Fentanyl which is a strong opioid. The average sedation levels of Epidural Opioid group (Group 3) is nearly uniform with fewer spikes, base line level is lower than that of Groups 1 & 2 but higher than that of Group 4.

Group 4 (multi modal analgesia group) patients experienced the lowest baseline level of sedation in this study but with intermittent spikes the heights of which are greater than that of Group 3. Probably as a result of superimposition of the sedation of rescue analgesic which is given as and when required and the regular opioid given as a part of protocol at scheduled time.

The management of colorectal cancer has progressed over the past few decades because of many advances, including those in genetics, pathology, imaging, medical oncology, radiation oncology, and surgery.[16] Undoubtedly, the management of patients afflicted with colorectal cancer will evolve as advances continue to be made in the multiple disciplines that contribute to the diagnosis and treatment of colorectal cancer.[17]

Among Group 1 patients the level of satisfaction achieved was good in 16% patients (8 of 50), Satisfactory in 80% of patients (40 of 50) and poor in 4% (2 of 50). Among Group 2 patients level of satisfaction achieved was Good in 48% of patients (24 of 50), satisfactory in 52% of patients (26 of 50). Among Group 3 patients the level of satisfaction achieved was good in 48% of patients (24 of 50), satisfactory in 52% of patients (26 of 50). Among Group 4 patients the level of satisfaction achieved was good in 82% of patients (41 of 50), satisfactory in 18% of patients (9 of 50). The patient subjective satisfaction was similar in Group 2 & Group 3

patients. Multimodal analgesia group (Group 4) achieved the best level of satisfaction of all.

No major adverse effects were observed in this study except for 4 cases of post-operative pneumonia in the Group II patients. The Post-operative Nausea and Vomiting (PONV).

The duration of Hospital stay was comparable among the four groups. No regimen did prolonged or shortened the total duration of hospital stay following surgery significantly. The result is in comparison with that of Meta-analysis of Marret et al.[12]

Marret et al did a meta-analysis of epidural analgesia versus parenteral opioid analgesia after colorectal surgery.[12] A systematic review of randomized controlled trials comparing postoperative EA and parenteral opioid analgesia after colorectal surgery was performed. The effect on postoperative recovery was evaluated in terms of length of hospital stay and the result EA did not influence duration of hospital stay.

CONCLUSION

Multi modal analgesia with wound infiltration win LA + 4 Tramadol + IM Diclofenac achieved the best level of analgesia in this study with least consumption of opioids, lowest level of sedation and with best patient satisfaction.

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REFERENCES

1. Brennan F, Carr BD, Cousins MJ. Pain management as a fundamental human right. Anaesthesia and analgesia. 2007;105:205-21.
2. Watt-Watson J, Stevens B, Garfinkel P, Streiner D, Gallop R. Relationship between nurses' pain knowledge and pain management outcomes for their postoperative cardiac patients. Journal of Advanced Nursing. 2001;36(4):535-45.
3. Ferguson J, Gilroy D, Puntillo K. Dimensions of pain and analgesic administration associated with coronary artery bypass grafting in an Australian intensive care unit. Journal of Advanced Nursing. 1997;26(6):1065-72.
4. Gust R, Pecher S, Gust A, Hoffman V, Bohrer H, Martin E. Effect of patient-controlled analgesia on pulmonary complications after coronary artery bypass grafting. Critical Care Medicine. 1999;27(10):2218-23.
5. Apfelbaum. Postoperative Pain Experience: Results from a National Survey Suggest Postoperative Pain Continues to be undermanaged. Anesth Analg. 2003;97:534–40.
6. Nesher N, Ekstein MP, Paz Y. Morphine with adjuvant ketamine vs. higher dose of morphine alone for immediate post thoracotomy analgesia. Chest. 2009;136:245-52.
7. Melzack R, Coderre T, Katz J, Vaccarino AL. Central neuroplasticity and pathological pain. Annals of the New York Academy of Sciences. 2001;933:157-74.
8. Pan PH, Coghill R, Houle TT, Seid MH, Lindel WM, Parker RL et al. Multifactorial preoperative predictors for post caesarean section pain and analgesic requirement. Anaesthesiology. 2006;104:417-25.
9. Ozalp. Postoperative pain management: predictors, barriers and outcome by Kerstin WIckström ENE, Göteborg, 2008.
10. Ramsey sedation scale. Available from: http://www.londonccn.nhs.uk/_store/documents/ramseysedationscale.pdf.
11. Kilbride et al Intramuscular vs. PCA vs. Epidural analgesia. Surg Gynecol Obstet. 1992;174(2):137-40.
12. Marret E, Rolin M, Beaussier M, Bonnet F. Meta-analysis of intravenous lidocaine and postoperative recovery after abdominal surgery. Br J Surg. 2008;95(11):1331-8.

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