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A COMPARISON OF MULTIMODAL PAIN THERAPY WITH SINGLE DOSAGE CONVENTIONAL TECHNIQUE IN POSTOPERATIVE PAIN CONTROL OF GENERAL SURGICAL CASES

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ABSTRACT

OBJECTIVE: *To compare the effectives of multimodal pain therapy with single dosage conventional technique in postoperative pain control of general surgical cases*
METHODOLOGY: *This prospective clinical trail was conducted from February 2009 – July 2009 at Liaquat university hospital Jamshoro. 100 cases of 30-50 years of age undergoing abdominal surgery were included in this study. After obtaining informed consent patients were randomized into two groups. Group A (n=50) (Multimodal pain therapy) and Group B (n=50) (conventional single dose) were managed with Nalbuphine HCL 0.1 mg/kg. Intensity of pain was cored on 10 point visual analogue pain scale.*
RESULTS: *It was observed that postoperative pain on visual analogue score was lower in patients of group A, 6 (12%) patients complained of sever pain whereas 11(22%) patients of group B complained of severe pain. Eleven (22%) patients were pain free in group A, whereas only 5(10%) patients were pain free in group B. A very few complications were noted in Group A as compared with Group B. one patient (2%) had respiratory distress in group B, while no patient complained of distress in group A. Six patients (12%) experienced nausea in group A, where as 16 (32%) patients complained of nausea in group B. two (4%) patients had vomiting in group A, and in 3 (6%) patients had vomiting in group B. Three (6%) patients had urinary retention in Group A, whereas 2 (4%) patients had retention in group B.*
CONCLUSION: *Multimodal pain control therapy is an efficient method in controlling the postoperative pain in general surgical patients.*

KEYWORDS: combination pain therapy, postoperative pain control, analgesia

INTRODUCTION:

Pain is a sensation which is very annoying and disturbing. Pain as defined by International Association for the study of pain (IASP) is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage".[1] To control and overcome the postoperative pain of patients various regimes are currently in use most commonly used regimes are balanced analgesia and conventional method of single drug usage.[1,2] In balanced analgesia also known as multimodal pain therapy, a combination of opioid and non-opioid is used as analgesics which augments the efficacy and reduce the subsequent adverse effects. [2]

Nalbuphine HCL is used as a routine conventional single drug method for management of postoperative pain, though their side effects are well known.[3] Adjunctively non-steroidal anti-inflammatory drugs (NSAIDs) are also in use for postoperative pain management. Peripheral and central blocking of pain gives good results in management of postoperative pain.Combination of two drugs with different mechanism of action produces lasting pain control, their reduced dosage and decreased side effects are additional advantages.[4]

AUTHOR'S CONTRIBUTION:
Conception of study, design & written by Zardari AK, Literature search, data collection interpretation by Dalwani AG, revision of the manuscript, statistical analysis of data & final approval of the article by Amin M.

TABLE 1
POSTOPERATIVE PAIN SCORE

Hours after surgery After recovery	Group A N=50 Multimodal pain therapy	Group B N=50 Conventional pain therapy
None	11 (22%)	5 (10%)
Mild	23 (46%)	19 (38%)
Moderate	10 (20%)	15 (30%)
Severe	6 (12%)	11 (22%)
At 4 hours		
None	28 (56%)	11 (22%)
Mild	14 (28%)	20 (40%)
Moderate	5 (10%)	12 (24%)
Severe	3 (6%)	7 (14%)
At 8 hours		
None	35 (70%)	27 (54%)
Mild	10 (20%)	11 (22%)
Moderate	4 (8%)	8 (16%)
Severe	1 (2%)	4 (8%)
At 12 hours		
None	33 (66%)	8 (16%)
Mild	8 (16%)	22 (44%)
Moderate	7 (14%)	11 (22%)
Severe	2 (4%)	9 (18%)
At 18 hours		
None	34 (68%)	14 (28%)
Mild	12 (24%)	23 (46%)
Moderate	3 (6%)	10 (20%)
Severe	1 (2%)	3 (6%)
At 24 hours None	40 (80%)	28 (56%)
Mild	8 (16%)	17 (34%)
Moderate	2 (4%)	5 (10%)
Severe	0	0

METHODOLOGY:

This prospective clinical trail was conducted from February 2009 – July 2009 at Liaquat university hospital Jamshoro. A total of 100 cases of 30-50 years of age undergoing abdominal surgery were included in this study. Every patient was examined by an anesthetist a day before surgery for physical fitness clearance. All patients were operated under general anesthesia. After obtaining informed consent patients were randomized into two groups. Group A (n=50) (Multimodal pain therapy) and Group B (n=50) (conventional single dose) were managed with Nalbuphine HCL 0.1 mg/kg. Intensity of pain was cored on 10 point visual analogue pain scale. After achieving complete recovery from general anesthesia, readings were taken on 4 hourly bases on first 12 hours than 6 hourly on next 12 hours. Postoperative pain management in Group A was done with intramuscular Diclofenic Sodium 75 mg and for Group B Nalbuphine HCL 10 mg diluted in 9 cc distal water was used. All adverse effects if reported were noted and managed accordingly.

RESULTS:

It was observed that after recovery from general anesthesia, postoperative pain on visual analogue score was lower in patients of group A, 6(12%) patients complained of sever pain whereas 11(22%) patients of group B complained of severe pain. Eleven (22%) patients were pain free in group A, whereas only 5(10%) patients were pain free in group B.

In next 4 hours, pain score was also low in group A as compared to group B. Twenty eight (56%) of patients become pain free in group A, while 11 (22%) were pain free in group B. only 3 (6%) of patients were complaining of severe pain as compare to 7 (14%) patients of Group B. In next 8 hours, 35 (70%) of patients become pain free in group A, while 27 (54%) were pain free in group B. only 1 (2%) of patients were complaining of severe pain as compare to 4 (8%) patients of Group B. In next 12 hours, 33 (66%) of patients become pain free in group A, while 8 (16%) were pain free in group B. only 2 (4%) of patients were complaining of severe pain as compare to 9 (18%) patients of Group B. In next 24 hours, 40 (80%) of patients become pain free in group A, while 28 (56%) were pain free in group B. There was no patient complaining of severe pain in both groups at this time Table I.

A very few complications were noted in Group A as compared with Group B. one patient (2%) had respiratory distress in group B who was managed accordingly, while no patient complained of distress in group A. Six patients (12%) experienced nausea in group A, where as 16 (32%) patients complained of nausea in group B. two (4%) patients had vomiting in group A, and in 3 (6%) patients had vomiting in group B. Three (6%) patients had urinary retention in Group A, whereas 2 (4%) patients had retention in group B Table II.

TABLE II
ADVERSE EFFECTS

Adverse effect	Group A N=50 Multimodal pain therapy	Group B N=50 Conventional paintherapy
Respiratory depression	0	1 (2%)
Nausea	6 (12%)	16 (32%)
Vomiting	2 (4%)	3 (6%)
Urinary retention	3 (6%)	2 (4%)

DISCUSSION

Nociceptors (pain receptors) are dispersed with varying density in different body tissues. They are excited by various kind of stimulation like increased temperature, irritation, physical trauma to tissue et cetera. A-delta and C nerve fibers are two neurons which transmits the pain impulse to central nervous system through peripheral tissue like skin.[5] When a stimulus excites these nociceptors a localized tissue injury response is generated in periphery, the affected tissue releases chemical substances which increase the transduction of painful stimulus. Arachidonic acid pathway products like prostaglandin (PGs), leukotrienes and hydroxy acids are mediators of increase pain with inflammation. PGs and leukotrienes decreases activation threshold and augment their response to other stimuli. Cyclo-oxygenes (COX-s) is selectively inhibits by NSAIDs like Celecoxib. Besides renal & hepatic toxicity, Celecoxib has very few side effect and good effect on pain. Though NSAIDs do not provide sufficient pain control, however with their usage requirements of opioid is sufficiently reduced with which leads to decrease frequency of side effects. [6]Good analgesic effects are observed with Celecoxib given orally 2 hours before surgery. Blocking or inhibition of nociception threshold requires multimodal interception of nociceptive input. It is still yet to understand the extent of central action of NSAID.[6] In dorsal horn processing of nociceptive impulses do play important role. In a study conducted by Buggy et al[7], 40 patients of laproscopic tubal ligation were underwent a double blind study in which preemptive analgesic effects of Diclofenic sodium were studied. In control group Diclofenic sodium was given an hour after surgery and treatment group received one hour before surgery. It was observed that the treatment group had a long lasting latent pain free phase.

Tramadol is an opioid which has 3 fold mode of action.[8] It is a phenylpiperidine analogue of codeine and recemic mixture of two equal enantiomers. It binds and activates the opioid receptors with a twenty fold selective preference for U receptors. This is a agonist action, neuronal uptake of nor epinephrine is also inhibited. There are no significant effects on reparatory and cardiovascular system, common adverse effects includes: nausea, vomiting, urinary retention and sweating. [9]

Analgesics like NSAIDs, NMDA, opioid have synergistic effect if they are used in combination. It is also reported that a combination of analgesic should be used to control postoperative pain. Multimodal pain therapy has good pain control results due to different mode of actions working peripherally and centrally. [2,]

CONCLUSION

It is concluded that multimodal pain therapy has good control over postoperative pain management with major general surgery procedures. It was also observed that postoperative common adverse effect like nausea; vomiting and urinary retention is also reduced in this therapy.

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