

Short Note

Pre-Operative versus Postoperative Surgical Analgesia.



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Abstract

Background; postoperative pain remain the most common dilemma for surgical patients, there are many methods for control of pain, either by conventional postoperative analgesia or preoperative analgesia.

The aim; is to evaluate the benefit of Diclofenac as pre-operative analgesia in comparison to the postoperative conventional treatments.

Methods and Patients; this study includes patients of different age and sex groups, underwent different elective and emergency surgical operations,

They divided in to two groups:

- Group A (100 patients): controlled group, were received pre-operative analgesia.

- Group B (100 patients): compared group, were received the conventional analgesia.

Results; thirty eight percent of patients in group A have significant pain versus eighty six percent of the patients in group B (P value 0.0000)

Preoperative analgesia as single dose of Diclofenac is more effective in control of postoperative pain than conventional postoperative analgesia.

Conclusion; we could say that the pre-operative (pre-emptive) analgesia is safe, feasible, well tolerant, less costly and more effective for the control of different types of the surgical pain.

Keywords; pain, pre-emptive analgesia, conventional analgesia. Diclofenac.

Introduction

The international association for the study of pain has defined pain as "an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage" [1]. Accordingly appropriate pain management is becoming the standard of care in surgical practice throughout the world; and the fifth vital sign in U.S.A. particularly [2] Surgical pain which is the most common postoperative complication of surgery could be treated by different methods of traditional analgesic therapies broadly called conventional surgical analgesia which means to begin therapy after surgery is completed and pain is experienced [3] Or by preemptive analgesia which means pain treatment that given to the patient just before the

operation, which abolishes pain by blockage of the synthesis of algesic substances released in response to tissue damage caused by surgery [4, 5] .

Patients and Methods

This is a prospective study including 200 patients, was conducted in the surgical wards in Sulaimani Teaching Hospital from the first of July 2004 to the first of June 2005. Data collected about the type of operations, pre-operative and postoperative vital signs, Cardiovascular, Respiratory, gastrointestinal, psychiatric features and any previous hospitalizations particularly for surgery and any pain concern procedures. The patients were divided in to two equal groups each 100 patients; Group (A) receiving preoperative analgesia and

Group (B) received conventional postoperative analgesia Pre-operative analgesia in group (A) was in the form of (Diclofenac) suppository, retard (100mg) for elective operations, and in the form of Intramuscular injection (75mg) for the emergency operations, one hour before their surgical operation. The Pain assessed by application of a practical and clinical method; (no significant, mild, moderate & severe pain).

We mean by mild pain just feeling of pain, that not affects the body functions , and by moderate pain , that affects functions of the system in which operation done ,while severe pain means that pain affects the normal daily activities of the patient like eating, sleeping walking etc.

Patients known to have hypersensitivity to Nonsteroidal anti-inflammatory drug(N.S.A.I.D)s, peptic ulcer diseases, bleeding disorder, renal impairment, , obstructive jaundice, history of bronchial asthma or on anticoagulant therapy and those younger than 12 years or older than 75 years were excluded. Post-operatively all patients revised and evaluated again for the effects of applied pre-operative analgesia (group A) or application of postoperative conventional analgesia (group B) and that; in systematic manner at regular programmed intervals as; half an hour, two ,four, eight, twelve, sixteen and twenty-four hours.

Results

The Male: Female ratio was 95/105 , the age distribution varies and for illustration of specific age group, the patients categorized to two major age groups as shown in table 1.

Table 1: Numbers and Percentages of patients age distribution.

Age	No. of patients	Percentage
Children 12-18	22	11%
Adults 19-75	178	89%
Total	200	100%

The types of the operations were of different categories as shown in table 2.

Table 2: Types of the operations.

Types of Operations	No. of patients	Percentages
Minor surgical conditions	54	27%
Abdominal pain (Appendicitis in majority)	70	35%
Ano-rectal conditions (Hemorrhoids in majority)	36	18%
Laparoscopy (Laparoscopic Cholecystectomy in majority)	19	9.5%
Anterior abdominal wall hernia	16	8%
Subtotal thyriodectomy	4	2%
Open prostatectomy	1	0.5%
Total	200	100%

In the first group (A) of patients; the majority 62% had no significant post-operative surgical pain; mild pain, 22% patients; moderate pain, 16% patients; and no of them has severe pain .

Within two hours post operatively we found; outcomes for group (A) as following: No Pain in 58 patients and Pain in 42 patients, but for group (B) were as: Pain in all 100 patients.

In the first 12 hours we found the outcomes as following: group (A); No Pain in 62 patients with Pain in 38 patients, but for group (B) was as following: No Pain in 14 patients and Pain in 86 patients. Lastly the outcomes for the second 12 hours were as following :

group (A) as : No Pain in 66 patients with Pain in 34 patients, but for group (B) were as : No Pain in 14 patients with Pain in last 86 patients , collectively speaking ; (62%)of group (A) were have no pain , even incisional pain and just (22%) have mild pain, (16%) were in moderate pain, and no one of them in severe pain at 12 hours postoperatively as shown in table 3.

In the second group (B) of patients; the majority 49% had moderate postoperative surgical pain; mild pain, 34% patients; severe pain, 3% patients; and just 14% patients had no significant pain in 1 hors postoperatively as shown in table 4.

Table 3: Numbers & percentages of group (A) patients in response to pre-operative analgesia.

Age/ years	Total No. of patients	No. of patients with no significant pain	No. of patients with mild pain	No. of patients with moderate pain	No. of patients with severe pain
12-18	8	4	4	0	0
19-75	92	58	18	16	0
%. of patients	100%	62%	22%	16%	0

Table 4: Numbers & percentages of group (B) patients in response to conventional analgesia.

Age/ years	Total No. of patients	No. of patients with no significant pain	No. of patients with mild pain	No. of patients with moderate pain	No. of patients with severe pain
12-18	14	0	6	7	1
19-75	86	14	28	42	2
%. of patients	100%	14%	34%	49%	3%

Statistical analysis using (SPSS version 9) than 0.001, which is significant at the 99% done for patient’s responses to pre-emptive analgesia revealed, P-Value less confidence level. As shown in table 5.

Table 5: Number and percentage of patients with pain in group A, and B.

Responds to analgesia	Group-A	Group-B	% of patients	Chi-Square test	P- value
Non-significant pain	62	14	38%	48.8960	0.0000
Significant pain	38	86	62%		

Discussion

There were no significant differences between the two studied groups with respect to number, ages, sex ratio, alcoholic consumption, smoking, and exposure to previous surgical operations, as shown in table 6.

From the comparison of table (4, 5) we note the significant difference in response of the patients to both pre-operative and conventional analgesia as shown in figure 1

Table 6: Patient Demographics and Surgical Data.

	Group (A)	Group (B)
Number	100	100
Mean ages (yr)	34.83	34.21
Sex ratio	51:49	44:56
Alcoholic consumption	7	4
Smoking	28	29
Previous surgery (n)	41	48

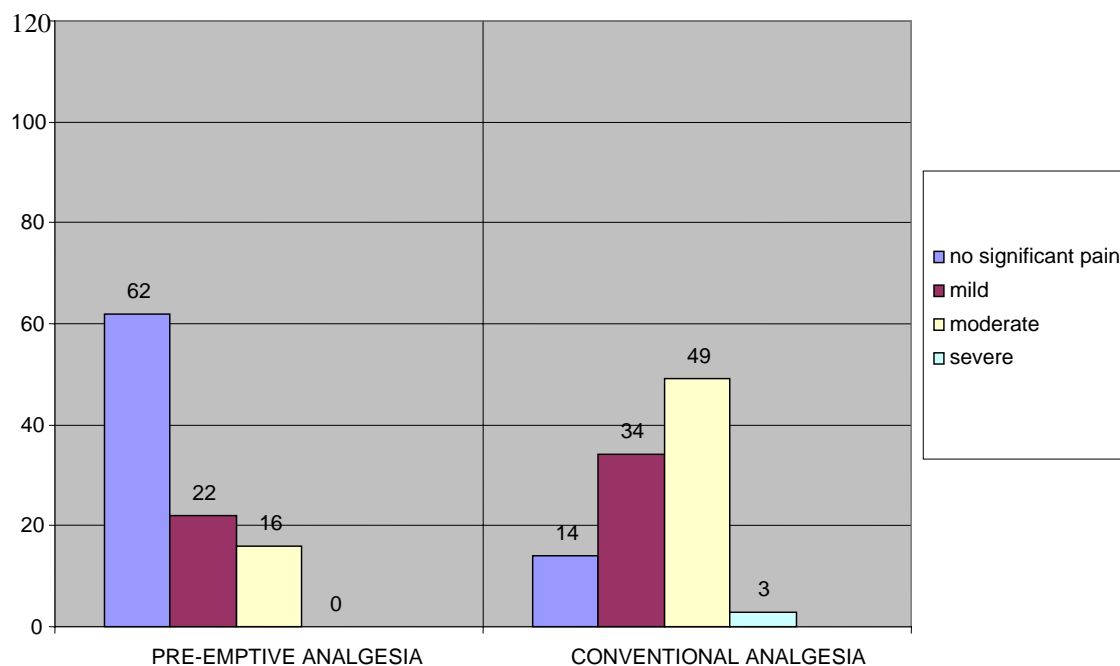


Figure 1: Averages pain scores in patients received pre-emptive analgesia in comparison to postoperative conventional analgesia.

Pre-emptive analgesic interventions that recognize the intensity, duration, and somatotopic extent of surgery can help to reduce postoperative pain and its longer-term sequelae [6].

In this work we excluded patients over 75 years of age and children below 12 years of age because of possible side effects of drug which is more in this two groups as also the patients with history of peptic ulceration, bleeding tendency, renal impairment and previous hypersensitivity to NSAIDs.

From our results we could deduce that the perioperative Diclofenac had immediate effect on postoperative pain and analgesic use up to 12 hours postoperatively. Postoperative pain was qualified by a pain score, as well as the analgesic requirement, which has been

recommended for comparison of treatment efficacy [7]. Pre-emptive analgesia is the concept of initiating analgesic therapy before the onset of the surgical operation, so as to prevent the nociceptor barrage and its consequences. Although there are many scores for evaluation of the state of pain and its response to analgesia like; VAS: visual analogue scale and Ramsay sedation scale [8]. We used simple practical criteria as follow: 0= No Pain, 1= Mild Pain, 2 = Moderate Pain, 3 = Severe Pain .We tried to evaluate the effect of pre-emptive (Diclofenac) in control of post-operative pain in group (A), comparing it to group (B) which has not received this type of analgesia.

Our results are comparable with other studies as shown in table 7.

Table VII; comparison of our results with others concerning type of analgesia, and painfree duration.

	Researcher	Pain free duration in hrs	Material used	P value
1	Puolakka , Purra ⁽⁹⁾	2-20	etoricoxib or etoricoxib plus paracetamol	0.001
2	Slingsby LS , Murison PJ ⁽¹⁰⁾	Not effective	carprofen	insignificant
3	Vallejo MC , Phelps AL ⁽¹¹⁾	Not effective	Preincisional	insignificant
4	MSParina Bajaj,MDChetna C ⁽¹²⁾	6 hours	Diclofenac	P< 0.05
		12 hours	Paricoxib	P< 0.05
5	Present Study	12 hours	Diclofenac	P 0.000

The causes of the pain in the minority of the group (A) were:

1. Expulsion of the Diclofenac suppository during or shortly after the operation, especially in patients with perianal operations and in patients received scoline, which causes fasciculation and expulsion of the drug via anus as shown in figure2.



Figure 2: Expulsion of Diclofenac suppository by some patient

2. In elective cases, as long as there is no pain with condition preoperatively and surgical operation induced wound and pain, they were in need of more analgesia, while in casualty with acute abdominal

pain, just relieve of the pathology like inflammatory bowel conditions, abscesses, obstructions, relieved pain partially and set their threshold of pain for lower point setting.

3. Neurotic personality of the some patients which affect the post operative outcomes regarding pain assessment in comparison to more stable patients.

4. Differences in the threshold of pain, regarding the age and sex among the patients.

Conclusion

A single (100mg; suppository or 75mg injection) dose of Diclofenac administrated pre-operatively one hour prior to induction of anesthesia in selected patients; significantly decreases post operative pain and subsequent consumption of analgesia, without causing any side effects and no complications were encountered, with shorter hospital stay, less costs, and more patient satisfaction .

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References

1. Ronald D. Miller; "Anesthesia" .5th edition; **2000**; 3; P 2323, by Churchill Livingston,. New York
2. Russell. Bailey & Love" Short Ppacity of Surgery" 24th Edition **2004**, 52, 1446-1448. Anold,
3. Mark C. Horattas et al. /Pre-emptive analgesia *The American Journal of surgery* **2004**, 188, 271-276.
4. Jale Bengi Celik, Niyazi Gormus, Zulfikare Isik Gormus, Selmin Okesli and Hasan Solak: ,treating postoperative pain by preventing the establishment of central sensitization*The Journal of Cardiothoracic and vascular anesthesia*,**2005**,19(1), 67-70.
5. Allan Gottschalk: Up date on preemptive analgesia anesthesiology;**2003**,7, 116-121.
6. Gottschalk A, Smith DS: New Concepts in acute pain therapy: Preemptive analgesia *Am Fam Phys* **2001**; 63:1079-1084.
7. Holger Holthusen, Peter Backhaus, Frank Boeminghaus, Maria Breulmann, and Peter Lipfert: Preemptive Analgesia: No relevant advantage of preoperative compared with postoperative intravenous administration of morphine, ketamine, and clonidine in patients undergoing transperitoneal tumor nephrectomy: *Regional Anesthesia and Pain Medicine*, **2002**, 27(3) , 249-253.
8. Chandra K. Pandey, Shio Priye, Surendra Singh, Uttam Singh, Ram B. Singh, Prabhat K. Sigh; Preemptive use of gabapentin significantly decreases post operative pain and rescue analgesic requirement in laparoscopic cholecystectomy; *Can J Anesthesia* **2000** ,51(4) 358-363.
9. Puura A, Puolakka P, Rorarius M, Salmelin R, Lindgren Etoricoxib pre-medication for post-operative pain after laparoscopic cholecystectomy. *Acta Anaesthesiol Scand*. **2006** ,50(6):688-93.
10. Slingsby LS, Murison PJ, Goossens L, Engelen M, Waterman-Pearson AE. A comparison between pre-operative carprofen and a long-acting sufentanil formulation for analgesia after ovariohysterectomy in dogs. *Vet Anaesth Analg*. **2006** 33(5):313-27
11. Bonaventura MA, Vallejo MC, Phelps AL, Sah N, Romeo RC, Falk JS, Johnson RR, Edington HD, Keenan ,DM Preemptive analgesia with bupivacaine for segmental mastectomy. *Reg Anesth Pain Med*. **2006** ,31(3):227-32
12. M S Parina Bajaj, MD Chetna, Comparison of the effects of parecoxib and diclofenac in preemptive analgesis, *Current Therapeutic Research*, **2004**, 65, issue 5, :383-397,

هه لسه نگاندى کارىگهري نازارپر پيش نهشتهرگهري بهراورد به نازارپر پاش نهشتهرگهري .

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پوخته

نهمه لى کۆئینهوه یهکى، ناینده بىنى، بهراوردکارى یه ، نه بهشى نهشتهرگهري گشتى نه نه خوشخانهى فیرکارى سلیمانى کراوه، نه ماوى 1 جولای/2004 ز دا بو 1/جولای/2005. مهبهست نه لى کۆئینهوهکه بریتى بوو نه هه لسه نگاندى کارىگهري بهکاره نانى دهرمانى (Diclofenac) وهك چارهسهري نازار بو پيش نهشتهرگهري به بهراورد به رینگا چارهسهرهباوهکانى نازار بو پاش نهشتهرگهري . نه خوشهکان نه ته مهن و رهگهزىكى جى اوازبوون و جوړى نهشتهرگهري جىاوازيان بو کرابوو، نه ههردوو جوړى ، نه سهرخو و کتوت و پر ، وه به شيوهیهکى سه رهکى دابهش کرابوون بو دوو دهسته : -دهستهى " ا " : که سهد نه خوش بوون و چارهسهري نازاريان بو پيش نهشتهرگهري وهرگرتبوو . -دهستهى " ب " : که سهد نه خوشى تر بوون و چارهسهرهباوهکانى نازاريان بو پاش نهشتهرگهري وهرگرتبوو . نه کۆتايى دا، دهرچووین بهوى که به کاره نانى چارهسهري نازار بو پيش نهشتهرگهري ، رینگايهکى بى وهى و گۆنجاوه و جى رهزانه ندى یه و کهم خهرج و نۆز کارىگهريه بو چارهسهرکردنى جوړه جى اوازهکانى نازارى پاش نهشتهرگهري .

تخمین مدى فعالية العلاج بالمسكن الالى الاستباقي فى التداخلات الجراحية مقارنة بالعلاجات التقليدية المعتادة لما بعد الجراحة و استقرار الالم .

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الخلاصة

هذه دراسة مستقبلية، مقارنة، اجريت فى قسم الجراحة العامة ، فى مستشفى السلیمانية التعليمى ، للفترة من الاول من تموز سنة 2004 و لغاية الاول من حزيران لسنة 2005م . الهدف من هذه الدراسة هو تقييم مدى فعالية العقار (Diclofenac) كمسكن المي استباقي فى التداخلات الجراحية، مقارنة بالطرق العلاجية التقليدية المعتادة لما بعد الجراحة واستقرار الالم. لقد شملت الدراسة مرضى من مختلف الاعمار والاجناس والذين خضعوا لتداخلات جراحية متنوعة، منها الطارئة ومنها الباردة و قد تم تقسيم المرضى الى مجموعتين رئيسيتين و كالتى: -المجموعة " ا " : (المختارة للدراسة) ، المكونة من مئة مريض ، حيث تم استعمال العقار المسكن الاستباقي معهم . -المجموعة " ب " : (المجموعة المقارنة) ، المكونة من مئة مريض اخرين ، حيث تم معالجتهم بالعقارات المسكنة التقليدية المعتادة لما بعد الجراحة . وفى النهاية، امكنا الاستنتاج بان استعمال العلاج المسكن الالى الاستباقي فى التداخلات الجراحية طريقة امينة، ملائمة، جيدة القبول من قبل المرضى، اقل كلفة و اكثر فعالية من الطرق العلاجية المسكنة التقليدية والمعتادة الاستعمال لما بعد الجراحة.

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