

RESEARCH ARTICLE

Pattern of analgesic usage among post-operative patients in orthopedics department in a rural tertiary care hospital: A prospective study

Chandrakantha T¹, Rajesh B², Neha K³

¹Department of Pharmacology, Shridevi Institute of Medical Sciences and Research Hospital, Tumkur, Karnataka, India, ²Department of Pharmacology, Santhiram Medical College, Nandyal, Andhra Pradesh, India, ³Department of Pharmacology, Sree Mookambika Institute of Medical Sciences, Kanyakumari, Tamil Nadu, India

Correspondence to: Rajesh B, E-mail: drrajeshb83@gmail.com

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ABSTRACT


Background: To improve the therapeutic advantage and decrease the undesired effects, of drugs, the periodic evaluation of drug utilization pattern enables to make suitable and rational modification in the current prescribing trend. **Aims and Objectives:** The objectives of the study were to evaluate the pattern of the usage of analgesics in post-operative pain management in the department of orthopedics. **Materials and Methods:** A prospective observational study was conducted for a period of 6 months by analyzing the case records of patients who have undergone surgery in the departments of orthopedics. The data regarding prescription of analgesics on the 0, 1st, 2nd, and 3rd post-operative days, their dose, preferred route of administration, and mono/combined therapy were collected from case sheets. The data were analyzed and the results were presented using Microsoft Excel. **Results:** Diclofenac, a non-opioid analgesic was prescribed commonly (75.4% and 83.7%) on day 0 and day 1 post-operative period, respectively, through parenteral routes. Tramadol (22.2% and 15.4%) was preferred among opioids. Aceclofenac and paracetamol combination through oral route was preferred for multidrug therapy. Oral route of drug administration was preferred from the 2nd post-operative day onward. Monotherapy was employed during early post-operative period and multidrug therapy on days 2 and 3 during the post-operative period. Generic drugs were prescribed to only 12.06%. **Conclusion:** Post-operative pain can be managed by non-opioid analgesics such as diclofenac as a monotherapy and combination with opioids such as tramadol can be used for patients not responding well to diclofenac alone. Drugs should be ideally prescribed by generic names.

KEY WORDS: Analgesics; Orthopedics; Post-operative Pain

INTRODUCTION

Drug utilization studies can be used as one of the basic tools for creating a sound base regarding sociomedical and health economics for health-care policy-making.^[1] According to the WHO, drug utilization studies are defined as “the marketing, distribution, prescription, and use of drugs in a society with

special emphasis on the resulting medical, social and economic consequences.”^[2] Using drugs inappropriately can turn out to be potentially hazardous to the patients and leading to unnecessary expenditure.^[3] Pain is considered as an unpleasant sensation with varying degrees of severity.^[4] “Pain is always subjective.”^[5,6] In general, severe post-operative pain is underdiagnosed and undertreated. Inadequate pain control is associated with increased morbidity, increased hospital stay and costs.^[7] With the availability of numerous analgesics in the market, there is always an associated risk of irrational prescription.^[8] There is always a need to identify safe and effective utilization of analgesics among post-operative patients. Hence, this study was designed to evaluate the drug utilization pattern of analgesic among post-operative patients in a rural tertiary care teaching hospital.

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MATERIALS AND METHODS

This prospective, observational study was conducted from June 2016 to November 2016 at Sri Adichunchanagiri Hospital and Research Centre, B.G Nagara, Nagamangala. Ethical clearance from the Institutional Ethics Committee was obtained before starting the study. Patients aged >18 years who underwent operative procedure in the department of orthopedics were included in the study. Informed consent was taken in a pre-designed consent form. Patients aged <18 years and not willing to participate were excluded from the study.

Data were collected from the case records of the inpatients admitted for undergoing any surgical procedure in the department of orthopedics. The data regarding analgesics prescribed during the 0, 1st, 2nd, and 3rd post-operative days, their dose, route of administration, and mono/combined therapy were collected from case sheets.

RESULTS

Considering all the inclusion and exclusion criteria, 116 patients were selected from the post-operative wards of orthopedics. During the study, it was observed that all patients undergoing surgery were prescribed with analgesics.

Out of 116 patients, all the patients were prescribed with injectable analgesics (parenteral) on the day of surgery (day 0) [Table 1] and also on the 1st post-operative day (day 1) [Table 2]. Diclofenac was the most commonly prescribed among the injectable analgesics (75.4% on day 0 and 83.7% on day 1) followed by tramadol (22.2% on day 0 and 15.4% on day 1) and pentazocine (2.4% on day 0 and 0.8% on day 1).

A total of 75 patients (64.6%) [Table 3] were prescribed with different oral analgesics on the 2nd post-operative day (day 2), combination of aceclofenac + paracetamol (38.8%) was the commonly prescribed oral analgesic followed by tramadol + paracetamol (15.5%) combination. The least prescribed oral analgesic was a combination of diclofenac + paracetamol (3.4%). Aceclofenac was prescribed as monotherapy (6.9%).

On the 3rd post-operative day (day 3) [Table 4], the number of patients prescribed with different oral analgesics has increased to 95 (81.9%). Combination of aceclofenac + paracetamol (56.9%) was again the commonly prescribed oral analgesic followed by tramadol + paracetamol (16.4%) combination. The least prescribed oral analgesic was a combination of diclofenac and paracetamol (3.4%). Aceclofenac was prescribed as monotherapy (5.2%).

On the day of surgery and 1st post-operative day [Table 5], drugs were administered only through parenteral route.

Table 1: Pattern of analgesic usage on the day of surgery (day-0)

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Diclofenac	-	95	95	75.4
Tramadol	-	28	28	22.2
Pentazocine	-	3	3	2.4
Aceclofenac	-	-	-	-
Aceclofenac+ paracetamol	-	-	-	-
Tramadol+ paracetamol	-	-	-	-
Diclofenac+ paracetamol	-	-	-	-
Total	-	126	126	100

Table 2: Pattern of analgesic usage on the day of surgery (day-1)

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Diclofenac	-	103	103	83.7
Tramadol	-	19	19	15.4
Pentazocine	-	1	1	0.8
Aceclofenac	-	-	-	-
Aceclofenac+ paracetamol	-	-	-	-
Tramadol+ paracetamol	-	-	-	-
Diclofenac+ paracetamol	-	-	-	-
Total	-	123	123	100

Table 3: Pattern of analgesic usage on the day of surgery (day-2)

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Diclofenac	-	35	35	30.2
Tramadol	-	6	6	5.2
Pentazocine	-	-	-	-
Aceclofenac	8	-	8	6.9
Aceclofenac+ paracetamol	45	-	45	38.8
Tramadol+ paracetamol	18	-	18	15.5
Diclofenac+ paracetamol	4	-	4	3.4
Total	75	41	116	100

Moreover, the administration of drugs through oral route was subsequently increased on the 2nd and 3rd post-operative days.

On the day of surgery [Table 6], monotherapy was prescribed for 103 patients and 13 patients received multidrug therapy. On the 1st post-operative day, monotherapy was prescribed for 109 patients and 7 patients received multidrug therapy. On the 2nd post-operative day, monotherapy was prescribed for 49 patients and 67 patients received multidrug therapy. On the 3rd post-operative day, monotherapy was prescribed for 27 patients and 89 patients received multidrug therapy.

When considering the mode of prescribing of analgesics [Figure 1], the percentages of analgesics prescribed in

Table 4: Pattern of analgesic usage on the day of surgery (day-3)

Drugs	Route of administration		Total	Percentage
	Oral	Parenteral		
Diclofenac	-	19	19	16.4
Tramadol	-	2	2	1.7
Pentazocine	-	-	-	-
Aceclofenac	6	-	6	5.2
Aceclofenac+ paracetamol	66	-	66	56.9
Tramadol+ paracetamol	19	-	19	16.4
Diclofenac+ paracetamol	4	-	4	3.4
Total	95	21	116	100

Table 5: Pattern of analgesic usage regarding route of administration

Post-operative period	Oral (%)	Parenteral (%)
Day 0	-	126 (100)
Day 1	-	123 (100)
Day 2	75 (64.6)	41 (35.4)
Day 3	95 (81.9)	21 (18.1)

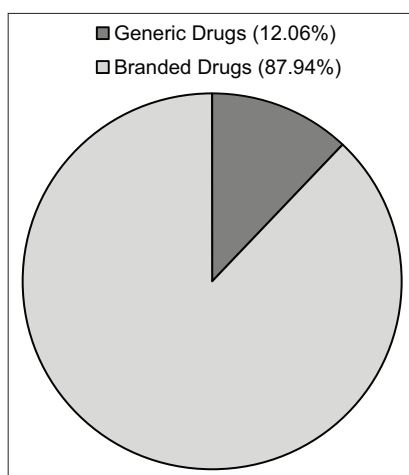


Figure 1: Generic versus branded drugs

generic names in the hospital were 14 (12.06%) which were low compared to the analgesics prescribed with trade name 102 (87.94%).

DISCUSSION

According to our study, diclofenac, a nonsteroidal anti-inflammatory drug (NSAID), was the preferred analgesic for the management of post-operative pain. Tramadol was commonly used among opioids. Diclofenac was administered both by intramuscular and intravenous route followed by tramadol. Analgesics were preferably administered through parenteral route during the early post-operative period, whereas on days 2 and 3, during the post-operative period, both oral and parenteral routes were used with more preference given to oral route. Monotherapy was preferred during early post-operative period which gradually changed to multidrug therapy on days 2 and 3 during the post-operative period. Aceclofenac was used as monotherapy in 6.9% and 5.2% on days 2 and 3, respectively. The combination of aceclofenac and paracetamol was the preferred choice followed by tramadol and paracetamol. Out of 116 patients, only 14 patients (12.06%) were prescribed generic drugs, whereas 102 patients (87.94%) received branded drugs.

Findings of the study by Farhat *et al.*^[9] and Dashputra and Badwaik^[10] suggest that for the management of post-operative pain, diclofenac was preferred which is similar to the findings of our study but is in contrast to the findings by Dasta *et al.*^[11] according to whom opioids like morphine were commonly used. According to Vallano *et al.*, tramadol was commonly used among opioids which similar to the findings of our study.^[12] Ehikhamenor *et al.* found that diclofenac was preferably administered by intramuscular route and also intravenous route in few cases which is similar to findings in the present study.^[13] Among the drug combinations, it was found that the combination of aceclofenac and paracetamol was the preferred choice followed by tramadol and paracetamol which is similar to the study conducted by Farhat *et al.*^[9] Findings of this study suggest that non-opioid analgesics are the preferred drugs for the treatment of post-operative pain relief which is comparable with the findings of Dashputra and Badwaik, Chaudhari *et al.*, and Vallano *et al.*^[10,14,15] Very few prescription in the present study contained generic name of the drugs which is similar to Tabish *et al.* and Bhansali *et al.*^[4,16] but in contrast with National List of Essential Medicines, India, which promotes prescription by generic names.^[17] Soler-Company *et al.* stated that it is the “customary habits” of the care providers which determines the analgesic interventions rather than the patients’ pain level.^[18]

The patients could not be followed up for any potential adverse drug reactions or drug-drug interactions.

Table 6: Monotherapy versus multidrug therapy

Analgesics	Day 0		Day 1		Day 2		Day 3	
	Number of patients	%	Number of patients	%	Number of patients	%	Number of patients	%
Monotherapy	103	88.8	109	94.0	49	42.2	27	23.3
Multidrug therapy	13	11.2	7	6.0	67	57.8	89	76.7
Total	116	100	116	100	116	100	116	100

CONCLUSION

Post-operative pain can be better managed by non-opioid analgesics like diclofenac. A combination of NSAIDs with opioids like tramadol should be reserved for patients not responding to diclofenac alone. NSAIDs like diclofenac are better suited for short course analgesic therapy like post-operative pain management (<10 days), due to their cost-effectiveness and less adverse effects. Drugs should be ideally prescribed by their generic names rather than brand/trade names. In this era, where increased number of irrational drug combinations is being marketed aggressively, educating health-care providers regarding the national essential list of drugs and adhering to rational prescribing is the need of the hour.

REFERENCES

- Shalini S, Ravichandran V, Mohanty BK, Dhanaraj SK, Saraswathi R. Drug utilization studies an overview. *Int J Pharm Sci Nanotechnol* 2010;3:803-10.
- World Health Organization. Introduction to Drug Utilization Research. Geneva: World Health Organization; 2003. Available from: <https://www.apps.who.int/iris/handle/10665/42627>. [Last accessed on 2017 Apr 10].
- Hawkey CJ, Hodgson S, Norman A, Daneshmend TK, Garner ST. Effect of reactive pharmacy intervention on quality of hospital prescribing. *BMJ* 1990;300:986-90.
- Tabish A, Jha RK, Rathod AM, Rathod RM, Gupta VK. Prescribing trend of analgesics in a tertiary health care setup of rural Vidarbha: A critical appraisal. *Res J Pharm Biol Chem Sci* 2012;3:566-71
- Mohammed TC, Beegum IM, Perumal P. Prescribing pattern of analgesics in a tertiary care hospital. *Int J Pharm Technol Res* 2011;3:1521-9.
- Elvir-Lazo OL, White PF. The role of multimodal analgesia in pain management after ambulatory surgery. *Curr Opin Anaesthesiol* 2010;23:697-703.
- Bertolini G, Minelli C, Latronico N, Cattaneo A, Mura G, Melotti RM, *et al.* The use of analgesic drugs in postoperative patients: The neglected problem of pain control in intensive care units. An observational, prospective, multicenter study in 128 Italian intensive care units. *Eur J Clin Pharmacol* 2002;58:73-7.
- Kamaldeen AS, Omuya LM, Buhari ASM, Saka AO, Saka MJ. Evaluation of analgesics usage in pain management among physicians. *J Appl Pharm Sci* 2012;2:194-8.
- Farhat S, Parveen S, Qureishi M, Bashir Y, Latief S, Jabeen M, *et al.* Pattern of analgesic utilization in immediate post-operative period and as a part of conservative management with concomitant antiulcer and antiemetic utilization in patients admitted in surgical wards of a tertiary. *Asian J Sci Technol* 2016;7:2543-6.
- Dashputra AV, Badwaik RT. Utilization of analgesics in perioperative cases of teaching hospital. *Int J Med Pharm Sci* 2013;3:14-9.
- Dasta JF, Fuhrman TM, McCandles C. Patterns of prescribing and administering drugs for agitation and pain in patients in a surgical intensive care unit. *Crit Care Med* 1994;22:974-80.
- Vallano A, Malouf J, Payrulet P, Baños JE, Catalan Research Group for the Study of Pain in the Hospital. Analgesic use and pain in the hospital settings. *Eur J Clin Pharmacol* 2007;63:619-26.
- Ehikhamenor EE, Aghahowa SE, Azodo CC. Retrospective evaluation of analgesics prescribing pattern in a tertiary hospital in Nigeria. *J Biomed Sci* 2012;11:71-7.
- Chaudhari JS, Kubavat AR, Mistry VR, Pandya AS, Hotchandani SC, Patel BS. A drug utilization study of analgesics for management of postoperative pain in patients admitted at a tertiary care teaching hospital. *Int J Basic Clin Pharmacol* 2013;2:757-62.
- Vallano A, Aguilera C, Arnau JM, Baños JE, Laporte JR. Management of postoperative pain in abdominal surgery in Spain. A multicentre drug utilization study. *Br J Clin Pharmacol* 1999;47:667-73.
- Bhansali NB, Gosai TR, Dholaria NK, Suthar SD, Chacko J, Chavda DA, *et al.* Drug utilization study in post-operative patients in surgical ward of a tertiary hospital attached with medical college. *Pharm Lettr* 2013;5:251-7.
- National List of Essential Medicines, India; 2011. Available from: <https://www.apps.who.int/medicinedocs/documents/s18693en/s18693en.pdf>. [Last accessed on 2017 May 05].
- Soler-Company E, Baños JE, Faus-Soler T, Morales-Olivas F, Montaner-Abasolo C. Analgesic use for postoperative pain: Differences arise when comparing departments of surgery. *Pharmacoepidemiol Drug Saf* 2002;11:607-14.

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