Assessment of Utilization and Rationality of Analgesic Drugs in Perioperative Setting in a Tertiary Care Teaching Institute

Postoperative pain is one of the most commonly reported symptoms after the surgery. If poorly controlled, it is associated with increased morbidity, functional and quality-of-life impairment, delayed recovery time, prolonged duration of opioid use, and higher health-care costs. Preemptive analgesia refers to the administration of an analgesic treatment before the surgery to minimize sensitization induced by noxious stimuli arising throughout the perioperative period.[1] "Multimodal analgesia" which is recommended in the management of acute postoperative pain is the use of different classes of analgesics administered by diverse routes to produce a synergistic action and minimize the adverse effects of the individual drug.[2] The American Pain Society suggests that clinicians routinely incorporate nonpharmacologic therapies into multimodal analgesia regimens for additional effects consistent with the biopsychosocial model of pain.[3] Management of postoperative pain depends on the type of surgery performed, analgesics usage. Progress has been made in recognition of pain after the surgery as an important public health problem. To prevent the progression from acute to chronic postoperative pain, analgesics are given in preoperative, intraoperative, and postoperative phases. The present study was carried out to evaluate analgesics utilization pattern during abdominal surgeries for control of postoperative pain and to assess the rationality in the use of analgesics. This was a retrospective, observational study conducted by the department of pharmacology of a tertiary care teaching institute with the prior permission of the Institutional Ethics Committee. Data were collected from medical records of postoperative patients from the general surgery department who underwent operative procedures during the period from January 1 to December 31, 2018. Details of patients in the age group of 18 and above were included in the study, whereas the same of patients who were psychologically disabled and from extreme age groups were excluded from the study. The information was noted in a pro forma devised to gather the following information-patient demographics, diagnosis, type of surgical intervention, analgesics administered, routes of administration, nonpharmacological measures for control of pain. Rationality in prescribing analgesics was assessed using the WHO prescribing indicators.[4] The data were analyzed and expressed as numbers and/or percentages.

A total of 348 records was studied parental synthetic opioid injection. tramadol as a sole agent was used as a perioperative analgesic of choice in patients in preoperative (68.96%) intraoperative (77.01%) and postoperative (62.35%) cases. Unlike codeine and morphine, tramadol is devoid of respiratory depression, and abuse potential which improves its tolerability. Nonsteroidal anti-inflammatory analgesic (NSAID) injection diclofenac was also used as an analgesic monotherapy in preoperative (11.49%) intraoperative (10.63%) and postoperative (14.08%) cases. Pal *et al*. in their study concluded that parental diclofenac appears to be a superior postoperative analgesic compared to IV paracetamol, with no added advantage of their combination.[5] Injection. paracetamol was used as a single agent in 5.74% of preoperative cases and 9.48%of intraoperative cases. Injection. aceclofenac was used as a single agent to control pain in 8.90% of patients. A study conducted in 2010 concludes that intravenous paracetamol reduces opioid consumption, the extubation time, and opioid side effects such as nausea, vomiting, and itching.[6] Paracetamol is a useful, relatively inexpensive, generic analgesic given after the surgery for patients with contraindications to nonsteroidal anti-inflammatory drugs (e.g., patients with asthma or peptic ulcer) and can be helpful when providing balanced postoperative analgesia.[7] Tablet diclofenac as a single agent was used in 5.74% of preoperative and 2.58% of postoperative cases, respectively. One hundred and eight (31.03%) patients were on combination analgesics or "multimodal analgesics." The combined use of parental (opioid + nonopioid) analgesic was observed in 22.04% of patients, the most frequent combination was a synthetic opioid and NSAID (injection. tramadol + injection. diclofenac 13.79% in preoperative stage). The other commonly used drug combinations were (injection. tramadol + injection. acelofenac in preoperative and intraoperative stages 2.29%), (injection. tramadol + injection. paracetamol in preoperative stage 6.32%). The combined use of oral aceclofenac + paracetamol was observed in 1.72% of preoperative cases and in 1.14% of postoperative cases. [Table 1]. Tramadol, diclofenac, paracetamol, and aceclofenac were prescribed as generics and 99.42% of the analgesics prescribed comply with that mentioned in the National List of Essential Medicines.[8] The Medical Council of India has called upon for generic prescribing but has a long way to go. Most analgesics were administered through the parenteral route. The average number of analgesics was 1.31 per prescription. Fixed-Dose Combinations (FDCs) analgesics were used in 50 (14.36%) cases and 298 (85.63%) cases were managed without FDCs. All the prescribed FDCs were approved by DCGI from 1961 to December 31, 2019[9] [Table 2].

To sum up, postoperative pain was managed by following the standard guidelines, there was the use of appropriate preemptive analgesia and multimodel analgesia except the use of nonpharmacological measures. Tramadol and diclofenac recorded high use as monotherapy in our study and in combination therapy, the most common combination used was tramadol plus diclofenac followed by tramadol plus

Table 1: Prescribing pattern of analgesics in pre, intra and postoperative phases of surgery (*n*=348)

Analgesic used	Single analgesics			Combination analgesics used	Combination analgesics		
	Preoperative, *n* (%)	Intraoperative, *n* (%)	Postoperative, *n* (%)		Preoperative, *n* (%)	Intraoperative, *n* (%)	Postoperative, *n* (%)
Injection diclofenac	40 (11.49)	37 (10.63)	49 (14.08)	Injection diclofenac + injection tramadol	48 (13.79)	0	0
Injection paracetamol	20 (5.74)	33 (9.48)	9 (2.58)	Injection paracetamol + IV. tramadol	22 (6.32)	0	0
IV. tramadol	240 (68.96)	268 (77.01)	217 (62.35)				
IV. aceclofenac	10 (2.87)	10 (2.87)	11 (3.16)	IV. aceclofenac + IV tramadol	6 (1.72)	2 (0.57)	0
Tablet paracetamol	18 (5.17)	0	53 (15.22)	Tablet diclofenac + tablet paracetamol	26 (7.47)	0	4 (1.14)
Tablet diclofenac	20 (5.74)	0	9 (2.58)	Tablet zerodol (aceclofenac + paracetamol)	6 (1.72)	0	4 (1.14)

IV=Intravenous

Table 2: WHO indicators assessed regarding prescription of analgesics for pre, intra and postoperative stages (*n*=348)

Indicators assessed	Data value *n* (%)
Average number of analgesics per prescription	1.31
Percentage of drugs prescribed by generic name	71.61
Percentage of patients on analgesics from NLEM	99.42
Most common analgesic prescribed	Tramadol
Most common combination analgesic prescribed	Tramadol + diclofenac
Most common route of administration	IV
Percentage of injections prescribed	98.85
Percentage of patients prescribed FDCs	14.36

NLEM=National list of essential medicines, FDC=Fixed dose combination, IV=Intravenous

paracetamol. The analgesics were prescribed rationally as per the WHO indices. The side effects of each therapy could not be assessed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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References

1. Rosero EB, Joshi GP. Preemptive, preventive, multimodal analgesia: What do they really mean? Plast Reconstr Surg 2014 Oct; 134 (4 Suppl 2):85S-93S. doi: 10.1097/PRS.0000000000000671. PMID: 25255012.
2. Kaye AD, Urman RD, Rappaport Y, Siddaiah H, Cornett EM, Belani K, Salindas OJ, Fox CJ. Multimodal analgesia as an essential part of enhanced recovery protocols in the ambulatory settings. J Anaesthesiol Clin Pharmacol 2019;35:S40-5.
3. Wardhan R, Chelly J. Recent advances in acute pain management: Understanding the mechanisms of acute pain, the prescription of opioids, and the role of multimodal pain therapy. F1000Res 2017;6:2065.
4. De Vries TP. Guide to good prescribing a practical manual. World Health Organization; 1994.
5. Pal A, Biswas J, Mukhopadhyay P, Sanyal P, Dasgupta S, Das S. Diclofenac is more effective for post-operative analgesia in patients undergoing lower abdominal gynecological surgeries: A comparative study. Anesth Essays Res 2014;8:192-6.
6. IASP. Available from: https://www.iasp-pain.org/terminology?navItemNumber¼576#Pain. [Last accessed on 2020 Apr 04].
7. Kehlet H, Werner M, Perkins F. Balanced analgesia: What is it and what are its advantages in postoperative pain? Drugs 1999;58:793-7. Doi: 10.2165/00003495-199958050-00002. PMID: 10595860.
8. Available from: http://cdsco.gov.in National List Of essential medicines. 2015 National List of Essential Medicines.8 April 2020
9. Li Z, Seeram NP, Carpenter CL, Thames G, Minutti C, Bowerman S. Cranberry does not affect prothrombin time in male subjects on warfarin. J Am Diet Assoc 2006;106:2057-61. doi: 10.1016/j.jada.2006.09.012. PMID : 17126638.

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Quick Response Code:

Website: www.jpharmacol.com

DOI: 10.4103/jpp.JPP_71_20

How to cite this article: Dongre N, Dudhgaonkar S, Jaiswal KM, Jaiswal N, Vaishnao LS. Assessment of utilization and rationality of analgesic drugs in perioperative setting in a tertiary care teaching institute. J Pharmacol Pharmacother 2020;11:125-6.

Received: 17-05-2020 **Revised:** 15-07-2020
Accepted: 03-10-2020 **Web Publication:** 23-12-2020