Original article

Patterns of Postoperative Analgesic Use in a Tertiary Care Hospital of Bangladesh

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Abstract

Postoperative pain is the most common problem following surgery whether patient undergoes general anesthesia or subarachnoid block. Effective postoperative analgesia is a crucial component of surgical care. Different pharmacological modalities are available and continue to evolve for reducing and managing postoperative pain. A retrospective observational study was conducted among 600 patients undergoing different surgeries in a tertiary care hospital, Dhaka, Bangladesh to find out the pattern of postoperative analgesic used on the day of surgery. Out of 600, 248 patients (41.33%) had received monotherapy of analgesic drug. On the other hand, 276 patients (46%), 57 patients (9.5%) and 19 patients (3.2%) received two, three and four drugs combination respectively. Opioid analgesica and Pethidine were the most commonly utilized analgesic as monotherapy (69.3%), followed by epidural analgesic- Bupivacaine (19.4%). Combination of Pethidine and Paracetamol (48.2%) was the most common followed by combination of Pethidine and Ketorolac (12.7%) as two drugs combination. In three drugs combination, Pethidine, Paracetamol and Diclofenac (35.1%) were widely used. Significant use of two drugs combination therapy was observed and Pethidine was the preferred drug for monotherapy as postoperative analgesia on the day of surgery in different surgical cases.

Keywords: *Postoperative pain management, Analgesic, Prescribing pattern, Monotherapy, Combination therapy, Pethidine, Bupivacaine.*

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Introduction

Pain is one of the most common, troublesome and distressing symptoms associated with surgery. Postoperative pain management is now-a-days considered to be an fundamental part of standard surgical practice. The World Health Organization (WHO) and International Association for the Study of Pain (IASP) have already recognized pain relief as a human right.[1] Appropriate pain relief leads to shortened hospital stays, reduced hospital costs and increased patient satisfaction, fewer pulmonary and cardiac complications, a reduced risk of deep vein thrombosis, reduction of postoperative nausea and delirium, faster recovery. Subopitmal management of postoperative

pain is accompanied by an array of negative consequences including increased morbidity, impaired physical function and more likelihood of development of chronic pain with reduction of quality of life.[2-4] Despite of important impact of appropriate postoperative pain managementon outcome, a certain percentages of patients are experiencing moderate to severe pain after surgery.[5,6] The incidence of postoperative pain is high, and pain score on 1st postoperative day is quite unsatisfactory.[7] Failure to provide optimal postoperative analagesia is multifactorial. Insufficient patient education, age, sex, preoperative pain, type of surgery, incision size, psychological factors, preoperative anxiety, fear of complications associated with analgesic drugs, poor pain assessment and inadequate staffing found to be linked with severity of postoperative pain.[8-11]

Many preoperative, intraoperative and postoperative interventions and management strategies are available, and continue to evolve for reducing and managing postoperative pain that includes preoperative pain education, perioperative pain management planning, use of different pharmacological and non-pharmacological modalities.[2] In recent years, multimodal analgesia has become increasingly widespread.[12,13] Multimodal analgesia is achieved by combining different analgesics that act by different mechanisms and sites in the nervous system, resulting in additive or synergistic analgesia with minimal adverse effects of individual drugs.[14,15] Pre-emptive analgesia, analgesia administered before the painful stimulus, considered by some researchers as effective way to control postoperative pain.[16,17] But evidence from meta-analysis concluded that there is little experimental support for pre-emptive analgesic effect in clinical settings.[18] So it might be much more rational to expand the concept of pre-emptive analgesic using balanced, multimodal approach, from the preoperative period to well into the postoperative period.[19] In Bangladesh, there is no comprehensive clinical practice guideline for postoperative pain management. Hence, the present study was carried out with the attempt to find out the pattern of postoperative analgesic use on the day of surgery. Finding of this research will be helpful to formulate postoperative pain management guidelines in upcoming days.

Methods

This retrospective observational study was conducted in Asgor Ali Hospital, a tertiary care hospital of Dhaka city from May 2018 to October 2018 to find out the pattern of postoperative analgesic used on the day of surgery.

According to the manual entitled "How to investigate drug use in health facilities", minimum encounters for a cross-sectional survey is 600.[20] On the basis of this sample size, the researchers were included data of 600 patients retrospectively who underwent different surgeries in Asgar Ali Hospital, Dhaka from May 2018 to October 2018. Permission was taken from hospital authority. Demographic data, such as age, gender, admitted department were obtained from the treatment sheet. Information on analgesics used on the day of surgery was recorded by using standard data collection form. Data was compiled, presented and analyzed using Microsoft Excel 2007, and was expressed as percentage.

Results

Table I shows that out of 600, 306 patients (51%) were male and 294 (49%) were female. Highest bulk of patients were from Department of General Surgery (26%), followed by Department of Urology (24.5%) and Department of Obstetrics & Gynecology (22.5%). Majority of patients were age group 31-40 years (26%), followed by 51-60 years (23.5%) and 41-50 years (21.5%).

Table I Demographic data (n= 600)

Age (year)	**Frequency**	**Percentage**
<10	15	2.5%
10-19	12	2%
20-29	126	21%
30-39	156	26%
40-49	129	21.5%
50-59	141	23.5%
>60	21	3.5%
Gender	**Frequency**	**Percentage**
Male	306	51%
Female	294	49%
Department wise distribution	**Frequency**	**Percentage**
General Surgery	156	26%
Orthopedics	126	21%
Otolaryngology	15	2.5%
Urology	147	24.5%
Obstetrics & Gynecology	135	22.5%
Pediatrics	21	3.5%

Figure 1 shows that among all abround 248 patients (41.33%) had received monotherapy of analgesic drug, whether 276 patients (46%), 57 patients (9.5%) and 19 patients (3.2%) received two, three and four drugs combination respectively.

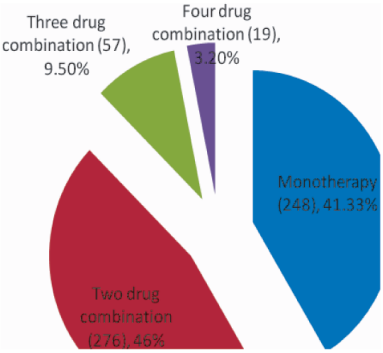

Figure 1 Pattern of postoperative analgesic prescription (n= 600)

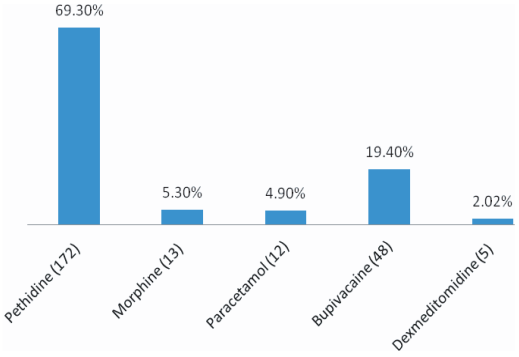

Figure 2 Distribution of monotherapy (n= 248)

Combination of Pethidine and Paracetamol (48.2%) was the most common followed by combination of Pethidine and Ketorolac (12.7%) as two drug combination. As three drug combination, Pethidine, Paracetamol and Diclofenac (35.1%) was widely used, and Morphine, Paracetamol, Diclofenac and Fentanyl was the most frequently used four drug combination therapy (Table II).

Table II Distribution of combination therapy

Two drug combination	**Frequency (n= 276)**	**Percentage**
Pethidine + Paracetamol	133	48.2%
Pethidine + Ketorolac	35	12.7%
Pethidine + Fentanyl	7	2.5%
Pethidine + Bupivacaine	18	6.5%
Fentanyl + Paracetamol	17	6.2%
Fentanyl + Bupivacaine	26	9.4%

of optimal analgesia. In current study, significant use of two drug combination therapy was observed and pethidine was preferred drug for monotherapy as postoperative analgesic on the operative day in different surgical patients. Large scale, multi-centered studies are needed for providing comprehensive data on postoperative pain managementin our country in order to optimize better patient care.

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Paracetamol + Ketorolac	23	8.3%
Bupivacaine + Lidocaine	6	2.2%
Bupivacaine + Paracetamol	11	4%
Three drug combination	**Frequency (n= 57)**	**Percentage**
Pethidine + Paracetamol + Diclofenac	20	35.1%
Pethidine + Bupivacaine + Ketorolac	9	15.8%
Paracetamol + Diclofenac + Morphine	17	29.8%
Bupivacaine + Lidocaine + Dexmeditomidine	4	7.02%
Bupivacaine + Lidocaine + Adrenaline	7	12.3%
Four drug combination	**Frequency (n= 19)**	**Percentage**
Morphine + Paracetamol + Diclofenac + Fentanyl	11	57.9%
Morphine + Paracetamol + Diclofenac +Dexmeditomidine	8	42.1%

Discussion

Effective postoperative pain control is essential component regarding care of surgical patient but there is still no consensus in Bangladesh. Current study has been conducted in this context to evaluate the pattern of postoperative analgesic use on the day of surgery in a tertiary care hospital in private setting.

Acute postoperative pain has a distinct pathophysiology that reflects peripheral and central sensitization as well as humoral factors contributing to pain atrest and during movement.[21] Surgical tissue trauma leads to nociceptor activation andsensitization. Different surgical procedurescreate a variety of patterns ofnociceptor sensitization and differences in the quality, location, and intensity ofpostoperative pain.[22,23] In this study,combination of two drugs was widely used to control postoperative pain and that concordance with one study conducted in India.[24] The advantages of this type of combination therapy provides better postoperative analgesia though involving both central and peripheral anti-nociceptive mechanisms and this approach can be used for day cases as well as for inpatient surgery.[25,26] But monotherapy was also frequently used as postoperative analgesic in similar researches.[27,28] In current study, Pethidine was the widely used drug for monotherapy as opioids are effective in the acute treatment of moderate-to-severe pain in the early postoperative period2and this findings corresponded with previous two studies conducted in Bangladesh[29,30] but different observations were found in researches conducted in India.[24,31] In this study, different types of combination therapies were used to control postoperative pain and wide use of Paracetamol was found, probably because of it's effectivess in controlling central nociception with less adverse effects.[32] But frequent uses of different NSAIDs were observed in previous literatures[28,29] because of perceived superiority of NSAIDs in postoperative pain management in low risk patients.[33] The variation in the preference of analgesics either as mono or in combination among different departments could not be well explained.[24] Significantuse of epidural Bupivacaine for postoperative analgesia was observed in current studyprobably because of provision of effective pain relief through reduced central sensitization pain-induced organ dysfunction with minimal side effects along with optimal patient satisfaction.[34] Significant failure rate is considered as most common reason for less popularity of epidural bupivacaine[35] but as this study was conducted in a tertiary care hospital, skilled anesthesiologists used epidural analgesia when required.

Conclusion

Pain is an inevitable part of the postoperative experience and there is no standard treatment modality for provision