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Recommended Citation

Hoda, M. Q., Hamid, M., Khan, F. A. (2007). Audit of an acute pain service in a tertiary care hospital in a developing country. *Journal of Pakistan Medical Association*, 57(11), 560-562.

Available at: https://ecommons.aku.edu/pakistan_fhs_mc_anaesth/182

Audit of an Acute Pain Service in a Tertiary Care Hospital in a developing country

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Abstract

The first anaesthesia based acute pain service (APS) was introduced in Pakistan at the Aga Khan University Hospital in July 2001, with the aim of patient safety and satisfaction. The American Society of Anesthesiologist task force guidelines were used for the introduction of APS.

APS has managed 6810 patients during four and half years period. Common analgesic techniques used, were intravenous infusion (50 %), patient controlled intravenous analgesia (18 %) and epidural infusions (30 %). Common reported side effects were nausea and vomiting with intravenous infusion (10 %) and PCIA (10%) while motor block was noticed with epidural infusion (29%).

This article aims to share experience with the initial setup of APS, difficulties faced after establishment of APS and an audit to show overall APS performance.

Introduction

The goal of adequate pain control after surgery is still underachieved and several steps need to be taken to reach this target.¹ Introduction of an acute pain service (APS) is an important step in postoperative pain management. In addition to controlling postoperative pain and reducing morbidity and mortality, acute pain services can also help in early recovery and discharge from the

hospital.

Need for acute pain service was realized several decades ago but the real impetus was provided by the development of acute pain services in 1985 in USA and Germany which was followed by a joint report from Royal College of Surgeons of England and College of Anaesthetist recommending the development of APS in all hospitals under taking acute surgery.^{2,3}

APS is now responsible for clinical research, training of medical and nursing staff,^{4,5} development of guidelines, organization of seminars, audits and evaluation of new and existing methods of postoperative pain management.⁶ In addition after introduction of APS in several hospitals there was an increased use of specialized methods of pain relief such as patient controlled intravenous analgesia (PCIA), patient controlled epidural analgesia (PCEA), and epidural infusions in surgical wards.⁷ Anaesthetist can provide proactive leadership in this multidisciplinary⁸ acute pain team to ensure effective management of postoperative pain.⁹

The first anaesthesia based APS was introduced in Pakistan in July 2001 at the Aga Khan University Hospital, with the aim of patient safety and satisfaction. This article aimed to share the experience of setting up of an APS in a developing country, the difficulties encountered and the

nature of service provided over four and half years period.

Methods and Results

Initially the AP team comprised of two anaesthesia consultants and a resident/medical officer. Acute pain consultants provided continuous coverage over 24 hours and spent one session of dedicated time every week. While the resident was involved in daily morning and evening rounds on all acute pain patients and discussed them with the consultant. During the second year, on the request of APS a nurse was induced into the team.

APS realized the importance of education of health personnel involved in the care of surgical patients. Educational methods used were lecture sessions for nurses and residents, hands on teaching of residents and daily discussions with pain nurse and resident who was rotating in APS. Booklets on PCA and epidural infusions for medical staff were also designed. Recently two booklets on PCA and epidurals infusion have been published for patient's education in English and Urdu.

In the first year of APS, pharmacy department agreed to provide premixed bags of Bupivacaine with Fentanyl in three different concentrations, which are being infused by using I-med Gemini PC-1 infusion pump. Patient controlled analgesia was never used before anywhere in our country. PCA was introduced in the first year of establishing APS and selected Graseby 3400 PCIA pumps based on the previous experience of APS consultants during their training in UK and USA.

In the second year of service, an ongoing education and training program for nurses and residents was started to minimize the complications and improve quality of care. At the same time, regular audits and patient satisfaction surveys were initiated to identify deficiencies in APS.

We also realized the importance of multidisciplinary nature of pain service. In order to achieve this, nursing policies were developed in collaboration with the nursing department. With the help of pharmacy department, premixed infusion bags for epidural infusions in three standard concentrations of Bupivacaine 0.125%, 0.1% and 0.0625% with Fentanyl 2 microgram/ml were obtained. Assessment and recording of pain as fifth vital sign is recognized recently by joint commission on accreditation of healthcare organizations.¹⁰ Prior to APS there were no standardized prescriptions, assessment tools and protocols for pain management on the surgical floors. Assessment and monitoring forms for PCIA and epidural infusion have also been designed, which are being utilized since June 2002, by nursing staff in recovery room and surgical wards.

Since the establishment of acute pain service in July 2001 till December 2005, a total 6810 postoperative patients

Table 1. Type of modalities used each year.

Modality	2001	2002	2003	2004	2005	Total
	n= (%)	n= (%)	n= (%)	n= (%)	n= (%)	n= (%)
Epidural	188 (27%)	502 (33%)	441 (36%)	465 (32.5%)	488 (24.8%)	2048 (30.2%)
PCIA	2 (0.3%)	58 (3.8%)	195 (16%)	363 (25%)	604 (30.7%)	1222 (17.9%)
Intravenous Infusion	488 (72%)	960 (63%)	552 (45%)	574 (40%)	824 (41.9%)	3398 (49.8%)
Para Vertebral/ \Extra Pleural	—	—	21 (1.8%)	25x (1.8%)	46 (2.3%)	92 (1.3%)
Brachial Plexus Block	—	—	5 (0.4%)	1 (0.06%)	—	6 (0.08%)
Caudal Infusion	2 (0.3%)	—	4 (0.3%)	2 (0.13%)	—	8 (0.11%)

Table 2. Modality and Associated Complications.

Complication	Epidural		Intravenous Infusion		PCIA	
	Nos.	(%)	Nos.	(%)	Nos	(%)
Nausea/vomiting	124	(6.0)	351	(10.3)	183	(14.9)
Sedation	03	(0.14)	297	(8.7)	163	(13.3)
Itching	—	—	—	—	3	(0.24)
Rashes	—	—	—	—	2	(0.16)
Hallucination	—	—	—	—	1	(0.08)
Combination of symptoms	—	—	23	(0.67)	—	—
Hypotension	16	(0.7)	01	(0.02)	—	—
Motor block	604	(29.4)	—	—	—	—
Ineffective epidural	16	(0.7)	—	—	—	—
Urinary retention	09	(0.43)	—	—	—	—
Catheter migration	—	—	—	—	—	—
Catheter pull out	77	(3.7)	—	—	—	—
Kinking/leakage	11	(0.4)	—	—	—	—

received pain relief treatment. This audit was conducted on all the patients managed by acute pain service and included postoperative surgical patients, medical consults and trauma patients. Chronic pain patients were excluded from this audit. A proforma was developed for this purpose which was filled by acute pain nurse in the form of monthly report and later annual report.

Different surgical specialities covered by APS during this period included General surgery (20%), orthopaedics (25.8%), obstetric/gynaecology (35.2%), urology (5.9%) and miscellaneous group (12.9%). Higher percentage of obstetric and gynae patients were managed by acute pain service in the last two years period while orthopaedics group was dominant in first eighteen months.

The methods of analgesia administered during study period are shown in Table 1. Modalities of Epidural (30.2%), PCIA (17.9%) and intravenous infusions (49.8%)

were commonly used for postoperative pain management. The decrease in the use of intravenous infusion over the years, correspond with the increase in the use of PCIA, which gradually increased from 0.3% in 2001 to 30.7% in the year 2005.

Reported frequency of complication has increased during the last two years (31.2%), which was very low in first eighteen months (4.27%). Overall frequency of nausea and vomiting was (10.4%). Further breakdown showed the higher frequency of nausea and vomiting in I/V infusion (10.3%) and PCIA group (14.9 %) than epidural infusion group (6.0 %). Sedation was also common in I/V infusion (8.7%) and PCA groups (13.3%) when compared with epidural group (0.14%). None of these patients required active management to treat sedation, which was mild and not associated with respiratory depression.

A breakdown of epidural complication is also presented in Table 2. Motor block was noticed in 29.4% patients either unilaterally or bilaterally. Majority of these patients responded to either change in position or by reducing the bupivacaine concentration.

Conclusion

For an acute pain service to function smoothly it is fundamental that nursing staff, surgical staff, primary anaesthetist and APS work as a team. Several problems were noticed at the start of acute pain service, some of which were specific to our country. It included lack of awareness and realization of importance for adequate pain control. In addition, there was no established APS setup in the country to follow and absence of trained AP nurses in the country.

Since lack of awareness and inexperienced hospital staff is an important associated factor, continuing programs for nursing and anaesthesia staff have been introduced to facilitate staff familiarity with new acute pain therapy equipment and techniques. Documentation has increased

during the last two years but the accurate assessment is still lacking particularly by ward nurses, despite the availability of key for assessment on assessment forms, presence of educational material on each ward and several teaching classes.

It is concluded that careful planning, dedicated team and multidisciplinary approaches are mandatory for introduction of APS. Established APS not only improve documentation, assessment and quality of care but also patient safety.

Acknowledgements

The authors thank Ms. Riffat Aamir (Acute Pain Nurse) for technical support in data collection and maintenance.

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