

Assessing the Patients' Recall regarding Pain and its Relief after Open Heart Surgery

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Abstract

Pain assessment and management of patients undergoing open heart surgery, especially those with communication barriers, continue to present challenges to nurses. The present study was undertaken to assess the characteristics of post-operative pain suffered by patients after open-heart surgery during hospital recovery, to find out association between pain score of patients and selected variables and to assess the alleviating factors of pain. The study revealed that there was no significant differences between the pain intensity and sex of the patient, or type of surgery. Seventy percent of patients identified the chest incision as their location of pain. In this study, patients recalled post-operative pain as mild to moderate and pain relief from pain medications was adequate.

Open-heart surgery involves several pain-sensitive structures, because it requires a median sternotomy, rib retraction, and invasion of muscle and visceral tissues (Taillefer et al, 2006). Untreated post-operative pain may lead to chronic post-operative pain (Leegaard et al, 2008). Post-operative pain is nociceptive in nature, resulting from the activation of pain sensing neurons or nociceptors (Fine, 2004). It is a complex process influenced by both physiological and psychological factors and is often described as throbbing, constant, aching, cramping, and/or sharp. For a patient experiencing post-operative pain, assessment is the foundation of pain management. Scientific advances in understanding pain mechanisms, pain assessment, and analgesic use have improved pain management practices.

However, there is a need to view it from the patients' perspective because 'pain is what the person says it is and exists whenever he or she says it does' (McCaffery, 1968). Pain management is considered such an important part of care; the American Pain Society coined the phrase, 'pain-the fifth vital sign', to increase awareness among health care professionals of the importance of effective pain management. Open-heart surgery means surgery under cardiopulmonary bypass, whether or not the heart is cut opened. Post-operative pain in these patients may be nociceptive, neuropathic or both and can be present in the immediate post-operative period or may persist for variable periods of time after the operation (Taillefer et al, 2006) and is a worry for many patients. The present study was undertaken to assess the characteristics (location, intensity and pain inducing; activities) of post-operative pain suffered

by patients after open heart surgery during hospital recovery, to find out association between pain score of patients and selected variables and to assess the alleviating factors of pain.

Materials and Methods

Setting: This descriptive survey was conducted in the cardiac surgical intensive care unit of a tertiary level referral hospital in Kerala, India. This institute of national importance has a 239-bedded hospital for tertiary care of cardiovascular and neurological diseases.

The cardiovascular and thoracic surgical department has a bed strength of 83 including a 35-bedded surgical ward, a 15-bedded surgical intensive care unit, a 24-bedded congenital heart ward, and a 9-bedded paediatric surgical intensive care unit. More than 1600 open heart surgeries are performed every year in this department. The common open heart procedures other than surgeries for congenital cardiac anomalies include coronary artery bypass graft (CABG) and valve replacement (VR) surgeries. Patients are given morphine infusion for varying periods of time during the day of surgery for pain relief. In addition non-steroidal anti-inflammatory drugs like diclofenac sodium and analgesics like tramadol are generally prescribed in the following days.

Sample: Patients after coronary artery bypass graft or valve replacement surgery were consecutively selected during September 2009 to October 2009 based on certain exclusion criteria. One hundred and forty open heart procedures were done between 5 September and 29 October 2009. These included 59 CABG surgeries, 42 VR surgeries, 34 atrial septal defect (ASD) closures, four CABG + VR, and one CABG + ventricular septal defect (VSD) closure. Patients who had undergone ASD closure (n=34) or

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combined surgery such as CABG, VR or CABG +VSD closure (n=5) were excluded.

Data Collection

Formal permission from the authorities and informed consent from the patients were obtained. The tools included Wong Baker FACES Pain Rating Scale and a validated questionnaire to describe pain. The first section of the questionnaire covered identification data like name, age and sex of the patients. Data on selected variables like type of surgery, day of surgery were collected from the patients medical records.

The second part of the questionnaire measured the presence and characteristics of post-operative pain (POP) in the previous 3 days. Each patient was asked to recall and describe his or her three days' pain experience (day 0, post-operative day 1, and post-operative day 2). A standard Wong Baker FACES Pain Rating Scale (0 = no pain, 10 = worst pain possible) was used to assess POP intensity. Patients were asked to indicate the exact location or locations and severity of their pain. The effect of POP on daily living was measured with 5 items, which used a 0 to 3-point scale (0 = does not interfere, 3 = severely interferes). The last part was pharmacologic and non-pharmacologic methods used to alleviate pain, aggravating and alleviating factors of pain as recalled by the patients and effectiveness of pain management. The medical records were consulted to get data on post-operative analgesics (type, dose, and route) administered in the intensive care unit (TCU) for pain management. A pilot study was done among five patients to find out the feasibility of the study. The assessment was done on the post-operative day 2 before sending the patients to the ward/intermediate ICU in the ward.

Data Analysis

Data were analysed using Epi Info version 3.2. The results were expressed as means + standard deviation for continuous variables or as number and per-

centages for categorical variables. For continuous variables, comparison of groups was performed with the 't' test and for categorical variables, comparison of groups was performed with the chi-square tests or Fisher exact tests where appropriate. Probability value of 0.05 or less was the criteria used to conclude statistical significance.

Results

Sample Characteristics: Of the 101 patients who had undergone CABG or VR surgeries during the study period, some were unable to answer the questionnaires because of mechanical ventilation on post-operative day 2 (n=25), had insufficient knowledge of vernacular language (Malayalam) (n=17), or death in the immediate post-operative period (n=2). The investigator missed quite a few patients due to personal inconveniences (n=27). The study participants (n=30) included 19 (63.3%) males and 11 (36.7%) females in age range 29 to 67 years (mean 47.7 ± 12.1 years). Ten patients (33.3%) had undergone CABG and 20 patients (66.7%) had undergone valve replacement surgery.

Characteristics of Post-operative pain: Seventy percent of the patients had pain in the chest incision site. Others had pain in the chest tube insertion site (16.7%), or in the intravenous / intra-arterial insertion site in extremities or back (6.7% each). Sixty percent of patients had recalled maximum pain intensity on post-operative day 2, whereas 36.7 percent of patients recalled maximum pain intensity on the first post-operative day. Only one patient (3.3%) recalled maximum pain on the day of surgery. The post-operative activities that caused increased pain as recalled by the patients were chest physiotherapy (50%), chest tube removal (33.3%), endotracheal suctioning (13.3%) and turning in bed (3.3%). The mean pain score, standard deviation and p values according to selected variables are given in Table 1.

The maximum obtainable pain score was 15. Table 1 shows that the patient who had undergone CABG had a mean pain score of 7 ± 2 and those who had undergone valve replacement surgery had a mean pain score of 6.75 ± 1.29 . An unpaired 't' test showed that there was no statistically significant difference in the mean pain score of patient who had undergone CABG or valve replacement surgery ($p=0.68$). Similarly there was no significant difference in the mean pain score of male

Table1 : Comparison of pain score according to type of surgery / sex

Characteristics of patients	Mean pain score	Standard deviation	p value
Type of Surgery			
CABG	7	2	0.68
Valve replacement surgery	6.75	1.29	
Sex			
Male	6.84	1.83	0.97
Female	6.81	0.87	

and female patients ($p=0.97$).

Relief from post-operative pain

Post-operative morphine infusion duration ranged from 5 to 29 hours with a mean of 14.06 hours, and median 14. There was no significant difference between type of surgery and duration of morphine infusion ($p=0.6$). The duration of morphine infusion seems to be based on the intensity of pain of the patient rather than the type of surgery. Most of the patients would ask for analgesics for alleviating pain (60%) whereas 40 percent reported that they tolerated pain. Wong Bakers FACES Pain Rating Scale score showed that most of the patients' post-operative pain was mild to moderate and all the patients recalled that pain relief from pain medications was adequate.

Discussion

The present study showed that pain after open heart surgery was mild to moderate and there was no significant difference in acute postoperative pain according to sex or type of surgery. These were not found to be significant risk factors for chronic postoperative pain after cardiac surgery (Taillefer et al. 2006). However, the results contrast with those of Valdix and Puntillo (2009) and York and colleagues (2004) wherein women recollected having a higher pain in ICU than men. Post-operative pain experiences varied from 'no pain' to 'pain all the time' (Leegaard et al, 2008).

Turning was the most frequent source of pain experienced by the cardiac surgery ICU patients and a large proportion of the patients (47.3%) identified the thorax as the location of their pain (Gelinas, 2007). The present study supports the latter observation in that more than 86 percent of patients had pain in the chest either at the incision site (70%) or at the chest tube insertion site (16.7%). However, patients in the present study recalled chest physiotherapy as the activity that caused increased pain rather than turning in bed. Patients in the present study used small soft pillows to support their chest incision while turning. This might be a reason for decreased pain during turning. All postoperative activities were associated with increased pain sensation wherein patients received intravenous prn bolus doses of morphine and less than half the participants always communicated their pain experience to nurses (York et al, 2004).

In the present study sixty percent of patients would ask for analgesics for alleviating pain. The patients in the present case series received morphine infusion for varying periods (5 -29 hours), which could

have helped them to tolerate many of the post-operative activities. Moreover these patients were told the reason for each postoperative activity, as well as the analgesics they were getting. Valdix and Puntillo (2009) suggested that a more proactive approach to pain management by health care professionals, which included informing patients when they were receiving analgesics, might help to improve pain relief in cardiac surgical patients. Nevertheless, majority of participants were satisfied with their post-operative pain experience in the Australian critical care unit (York et al, 2004), very similar to the recalled experiences in the present study.

Conclusion

The post-operative pain in open heart surgery as per patients' recall seems to be mild to moderate and analgesics given provided adequate pain relief. Use of analgesics, particularly opioids, is the foundation of treatment for most types of pain. Wong Bakers FACES Pain Rating Scale could be used as an easy tool to assess post-operative pain. The practical knowledge obtained through this study can be used to answer pre-operative queries of patients regarding post-operative pain. We couldn't find any difference in recalled mean pain score between male and female patients or between patients who had undergone CABG and valve replacement surgery. Further research is needed to provide a comparative evaluation of both acute and chronic pain after open cardiac surgery.

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