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Pharmacological Pain Treatments Among Adult Patients Undergoing Surgery For Traumatic Limb Injuries; The Effectiveness Of Preoperative Non-Pharmacological Interventions On The Postoperative Level Of Pain

Shadia Hamoud Al shahrani, RN, PhD

King Khalid University, Medical-Surgical Department, Almahala, KhamisMushate
Alshahrani.shadia@gmail.com

Abstract

Patients with traumatic limb injury differ from orthopaedic patients having elective surgery as they are already in pain, and have high levels of anxiety and stress of many aspects that may change their life such as unexpected complications, negative outcomes, changes in body image, diminished self-esteem. Also, uncertainty about their physical status, for example, having a disability that may affect their productivity, or make them unable to perform their responsibilities, Therefore, patients with traumatic limb injuries require specific care for their pain.

Keywords— Traumatic injury, pain, postoperative, pharmacological intervention, preoperative, non-pharmacological.

A REVIEW OF LITERATURE

Traumatic limb injuries are a common cause of hospitalisation. These injuries are often caused by motor accidents, falls, or sports incidents, for which orthopaedic surgeries with internal fixation of screws, surgical nails, plates or wires to fix the limb fracture is the treatment, and this can be very stressful for patients (Esser& McRae 2002). Patients with Traumatic limb injuries may experience anxiety and intense pain after an unexpected injury or after undergoing surgery. Coll and Ameen (2006) stated that postoperative anxiety is a common consequence affecting patients' level of pain and recovery, specifically, in cases of people with limb and hip injuries because patients are worried about getting a physical disability. Additionally, anxiety may be related to fear of engaging in activities that precipitate pain (Wong, Chan & Chair 2010).

According to Otto and Pollack (2009), Anxiety is a feeling of distress, uncontrolled nervousness, tension, fearfulness and a sense of worry. Furthermore, Pain is defined as a subjective experience (Hains 2007). It is, therefore, a unique experience for each individual. Each person's experience of pain is different, and it is essential to remember that, when given the same set of circumstances, the pain felt will differ markedly from person to person (Hawthorn & Redmond 2004). Therefore, making a comparison of pain tolerance between individuals is difficult to measure. Moreover, pain may denote a variety of feelings not only physical dimension but also emotional dimension. Pain could be described as a painful experience, or painful loss (Hawthorn & Redmond 2004).

A patient undergoing orthopaedic surgery usually requires high demands of analgesia postoperatively, that is because orthopaedic surgery is often a painful procedure and needs significant relief management (Srivastava et al. 2007). Poorly treated pain can hurt a patient's recovery, especially, when the patient refuses to engage in physiotherapy because of anticipated

pain. As a result, he or she will develop limb weakness, or limb stiffness, reduce physical endurance, and quality of life (Melzack& Wall 2003). Therefore, there is a need to help patients with traumatic limb injuries to overcome pain and anxiety after surgery.

Heye et al (2002) stated that few studies have addressed the psychological wellbeing of patients with traumatic limb injuries undergoing surgeries, because such patients would be stressed about many aspects such as intolerable pain, undergoing multiple surgeries, and their physical status. It is, therefore, difficult to engage these patients in non-pharmacological preoperative intervention activities.

Patients with higher levels of anxiety have higher levels of postoperative pain (Pellino et al 2008). According to Vaughn, Wichowski and Bosworth (2007) anxiety can alter the way a person thinks, cause behavioural problems, and stimulate cognitive changes as well. Vaughn, Wichowski and Bosworth (2007) also stated that higher levels of anxiety might sensitize patients to noxious stimuli. Therefore, the reduction of patients' preoperative anxiety may decrease their post-operative pain (Pellino et al 2008). Effective pain management in the postoperative period requires effective anxiety management in the preoperative phase (Vaughn, Wichowski& Bosworth 2007).

Preoperative teaching has been the focus of anxiety reduction for surgical patients (Wang et al. 2002). In recent years, integrative therapies such as counselling, relaxation techniques, diversion therapy (divert the mind from unpleasant feelings), guided imagery therapy (mental pictures of relaxing scenes), "deep breathing" exercise, physical exercises, and more have gained support in the literature are methods to control anxiety, which enhance and complement preoperative non-pharmacological treatments. Moreover, Preoperative non-pharmacological interventions for patients suffering from traumatic limb injuries may be necessary to prepare them for the surgical procedures, and for the recovery period in advance (McDonald, Hetrick& Green 2004). Patients, who are more knowledgeable about what to expect after surgery, and have an opportunity to express their goals and opinions, often cope better with postoperative pain, and anxiety (Oshodi 2007).

Non-pharmacological preoperative intervention is essential prior to any invasive procedure regardless of whether the procedure is minimally invasive or a form of major surgery. Preoperative non-pharmacological interventions can be individualised to each patient or group. Some patients want as much information as possible. While, other patients prefer only a minimal information because too much knowledge may increase their anxiety (Oshodi 2007). Furthermore, patients have different abilities to comprehend medical procedures; some prefer printed information or watch the videotape, whereas, others learn more from oral presentations. Additionally, it is essential to encourage patients to ask questions during preoperative interventions sessions.

Teaching patients' preoperative anxiety, and pain relief strategies such as relaxation techniques, diversion therapy, guided imagery therapy, "deep breathing" exercise, and physical exercises, may help to relieve the pain and may enhance non-pharmacological pain management measures (Heye et al 2002).

According to Day, Paul and Williams (2009) preoperative teaching or counselling is a type of communication and information delivery, because it helps patients to understand their condition, enhance their knowledge, and improve their postoperative rehabilitation.

Counselling includes information such as; what to expect after surgery, possible complications, rehabilitation phase, control of the unpleasant feelings, pain medications, and information about non-pharmacological treatments alternatives (Lin & Wang 2005). Therefore, patients will have a better understanding of their condition. A better understanding may

help patients with traumatic limb injury to cope with anxiety.

Relaxation training involves teaching patients ways of reducing their feelings of stress and tension through various techniques (Tappen, Whitehead &Folden 2003). One of these techniques is listening to (calming) music, which can be delivered to patients by recording audiotapes. Listening to music can be combined with some other relaxing techniques such as looking at some pictures; it could be pictures of loved ones, or pictures of nature (Kwekkeboom&Gretarsdottir 2006; Antall&Kresevic 2004).

A range of attention-based strategies (diversion therapy) is from those involving distraction from the pain through to attention to imagined scenes and sensations, or to external stimuli such as music, scenes, smell, and watching television. Some techniques also involve deliberately attending to the pain but in ways intended to modify the threat value of pain, which is attempting to alter the patient's emotional state from stress or fear to comfort or peace (Haase et al 2005).

One of the preoperative non-pharmacological interventions is the "deep breathing" exercises, which is performed to help patients to relax by facilitating gas exchange through the lungs, and it can help in preventing the accumulation of mucus in the airway, or lungs when it is accompanied by coughing (Day, Paul & Williams 2009). The client assumes a sitting position and takes a breath (inhalation) through the nose, and holds it for 2 to 3 seconds, then breaths out through the mouth (exhalation), the patient might repeat it many times.

Another non-pharmacological preoperative intervention is the physical exercises, which are essential to patients suffering from traumatic limb injuries undergoing surgery, and different from other surgical procedures because the skeletal system is involved and exercises can be impaired by pain (Evgeniadis, Beneka&Malliou 2008). Additionally, physical exercises may be impaired by the swelled limb, or by immobilization devices such as splints, casts, or tractions. Also, the preoperative intervention includes teaching the patient how to move with limits of therapeutic immobility. For example, performing simple active range of motion exercises of uninvolved joints, and, unless contraindicated. Furthermore, teaching the patient how to use assistive devices to strengthen their upper extremities, or use assisting devices such as crutches, walkers, wheelchairs.

The methods of delivering preoperative non-pharmacological interventions vary widely, and include, face-to-face sessions, written materials (Johansson et al. 2005), audiotaped or videotaped (Heye et al 2002), internet-based studies (Katja et al 2008). A substantial evidence supports the fact that preoperative non-pharmacological strategies or interventions are improving the physical and psychological outcomes of patients with traumatic limb injuries (Lin & Wang 2005; Johansson et al. 2005).

Although there have been some studies investigating the preoperative non-pharmacological interventions, only a few studies examined the effects on pain levels and the need for pharmacological pain treatments for traumatic limb injuries undergoing elective surgery (Evgeniadis, Beneka&Malliou 2008; Tappen, Whitehead &Folden 2003; Srivastava et al 2007). The reported effects of postoperative pain levels of preoperative non-pharmacological interventions such as counselling, relaxation techniques, guided imagery therapy, diversion therapy, "deep breathing" exercises, physical exercises, and more in traumatic fracture patients were diverse. Some of the studies show positive postoperative outcomes, such as decreased levels of anxiety, and pain when applied preoperative non-pharmacological interventions (Antall&Kresevic 2004). While, some studies show no difference in postoperative levels of pain between the traumatic limb injury

controlled group, and the uncontrolled group (Thomas &Sethares 2010).

Conclusion

There are few reported evidence-based studies on the effect of preoperative non-pharmacological interventions on postoperative levels of pain. Therefore, there is a need for studies evaluating the non-pharmacological against the pharmacological pain management of patients with traumatic limb injuries.

Conflict of interest

The author declares no conflict of interest in this review.

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