Treating a patient with acute post-mastectomy pain

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Talitha is a recent nursing graduate, currently continuing her post-graduate studies in nursing through Auckland University while living and working in New Plymouth, Taranaki. Her article was completed as part of her Bachelor of Nursing course requirements through Massey University in Manawatu as a final year nursing student. The article formed part of an entry to the Undergraduate Awards programme based in Dublin, Ireland in 2016 and was highly commended and awarded the regional Oceania prize under the midwifery and nursing category. Talitha is passionate about nursing and aspires to continue her research to better understand the patient experience within a nursing context.

Abstract

The management of acute pain is essential within clinical practice, particularly when dealing with post-mastectomy patients. Post-mastectomy pain is associated with the physical removal and subsequent damage of tissue, psychological distress, and inadequate pain management. Acute pain is the perception of pain for three months or less following mastectomy. An examination of pain definitions and theories, together with the use of a hypothetical post-mastectomy case study, allowed for a broad understanding of acute pain. Pain management strategies are guided by pain pathway concepts. However, the emotional and psychological aspects of pain suggest that post-mastectomy pain is a multidimensional and unique experience, and therefore pain management is also guided by an understanding of how pain is experienced. This is done through a pain assessment, either verbal or non-verbal in nature. Yet, some assessment techniques lack specific descriptive information, which can lead to the under or overestimation of the patient's pain. Acute pain can worsen or persist if the health professional only focuses on the physical aspects of pain, disregarding the psychosocial influences. Therefore, a holistic assessment is required to comprehensively evaluate post-mastectomy pain. Post-mastectomy pain is complex, requiring several analgesics with different mechanisms of actions. Non-pharmaceutical interventions can be used in collaboration with medication to control and manage post-mastectomy pain without further side-effects. Some effective post-mastectomy pain interventions include: hot or cold therapy; patient support; transcutaneous electrical neural stimulation; and music therapy. These holistic pain-management strategies have been shown to improve patient outcomes, making the health professional, and especially nurse, instrumental in preventing the persistence of acute pain. Central to holistic pain management is tailored patient care, addressing individualised aspects of pain to prevent post-mastectomy pain developing into chronic pain.

Introduction

Acute pain management is a vital component of patient care for all members of the medical team in the clinical setting. Patients are known to experience high levels of pain after mastectomy procedures.[1] A mastectomy is a surgical procedure that removes breast tissue to prevent or treat breast cancer.[2] This treatment may result in acute post-mastectomy pain, which may lead to chronic pain if left untreated. Acute post-mastectomy pain can be better understood by analysing definitions and theories regarding acute pain. Before treating pain, it is important to understand how the patient experiences their pain. Several assessment techniques are used, but pain is multidimensional. Therefore, assessment tools focusing on the whole person are just as important as those focusing solely on pain. Acute post-mastectomy pain may require pharmacological interventions in conjunction with non-pharmacological therapies to offer the best possible chance of recovery for the patient. Considering post-mastectomy pain as a unique experience and tailoring the pain management to the individual, gives the patient the best possible chance of a full recovery.

Definitions of acute pain

Formulating a definition of acute pain is fundamental in analysing post-mastectomy pain. Appropriate treatment is provided based on how pain is classified.[3] Without the use of pain definitions, health professionals are at risk of providing unsatisfactory pain management

to their patients.[3] Pain can be described as an unpleasant sensation, physical or emotional in nature, and related to possible or genuine tissue damage.[4] Li et al. supported this notion and additionally inserted a multidimensional element.[2] Acute pain refers to sharp pain that is short in duration, while chronic pain is associated with a dull pain longer in duration.[5,6] Farrell and Dempsey's definition of acute pain stipulated a duration of up to six months, which contrasts with Fishbain et al. and Riskowski's classification of equal to or less than three months.[7,8,9]
Even though pain definitions found in literature incorporate similar aspects, an absence of an overall consensus remains. As such, the following article will utilise the subsequent combined definition when discussing acute pain: equal to or less than three months in duration, caused by a surgical procedure.[4,7,8,9] This definition will be used in assessing the patient's experience of acute post-mastectomy pain.

A mastectomy procedure involves the removal of breast and/or lymph tissue and could result in nerve, muscle or tissue damage.[2,10] Although mastectomies can be provided prophylactically to prevent breast cancer, women in their 40s are more likely to undergo a mastectomy following a diagnosis of breast cancer.[11] Schreiber et al. outlined that the majority of mastectomy patients state pain as their most distressing symptom.[7] This may lead to psychological anguish, physical disability, and impediments to their pain management.

Pain theories

To fully appreciate post-mastectomy pain, one needs to consider theoretical models of pain.[12] The Specificity Theory (TST) by Charles Bell formulated a concept of specificity, where each neuron responds to a distinct stimulus.[12,13,14] Central to TST is the idea that pain travels along a pathway from the periphery to the spinal cord and into the brain. [12] The Gate Control Theory of Pain (GCTP) by Melzack and Wall uses the idea of a pain pathway to theorise that the pain signal can be inhibited through sensory stimulation.[13] These theories can be applied to the post-mastectomy patient through careful selection of pain management techniques. However, TST and GCTP do not explain the complexities of pain experienced by post-mastectomy patients.[15,16] Vilkolm et al. suggested that this could be due to both nociceptive and neuropathic involvement in post-mastectomy pain sensation.[17] The majority of pain theories overlook the situational, physical, and psychological aspects of pain, which are central to the Theory of Unpleasant Symptoms by Lenz et al.[18] This theory raises the idea that pain, including post-mastectomy pain, is multidimensional, supporting a holistic view of pain.[18,19] Furthermore, Khan argued that pain is a unique experience which cannot be shared or measured, suggesting that pain should be assessed and valued as a distinct experience.[20]

Pain assessment

The concept that pain is an idiosyncratic experience is reinforced by assessing how the patient experiences their pain. Pain can be assessed verbally, through observations or by using holistic patient assessment methods. The first type of assessment to be considered relates to verbal pain assessment tools (VPAT). A VPAT commonly used in the clinical environment is the numeric rating scale (NRS).[21,22] The NRS requires the patient to assign a number between zero and ten, based on their current pain.[23] Eriksson et al. argued that the NRS is open to interpretation, as the post-mastectomy patient and health professional may have subjective interpretations of the same pain score.[24,25] Regardless of the criticism, NRS is a valuable tool that formulates a common language between the health professional and the patient, allowing changes in pain to be tracked.[26] Describing pain is an alternative, if the post-mastectomy patient finds it difficult to assign numerical values to their pain[24] and pain-descriptive tools can be used to assess the patient's pain.[15,27] The verbal descriptor scale is similar to the NRS, but instead of using a numerical scale it uses descriptive phrases such as 'intense', 'mild' or 'no pain'.[15] However, despite its descriptiveness, it lacks specificity.[15] In contrast, COLDSPA is a comprehensive mnemonic used to assess the character, onset, location, duration, severity, pattern, and associated patterns of pain.[27,28] COLDSPA can be used to better understand how patients experience pain. Acute pain is often undetected or inadequately treated, which has led some to suggest that pain assessment should be considered as a fifth vital sign.[23,29]

Pain assessment is important for patients unable to communicate their pain.[22] Immediately post-surgery, the patient may be drowsy or sedated, therefore highlighting the need for non-verbal pain assessment tools such as the behavioural pain scale (BPS) and non-verbal adult pain assessment scale (NVAPAS).[22] Arbour et al. stated that vital signs are not an adequate predictor of pain, hence why BPS and NVAPAS also use a combination of behavioural and physiological observations to assess the patient's pain level.[22,30] Acute pain can lead to physiological and behavioural changes such as increased blood pressure, increased respiration rate, increased heart rate, flushed skin appearance, pupillary dilation, decreased body movements, and facial grimacing.[22] Even though Pudas-Tähkä et al. found BPS to be the most valid indicator of acute pain, its applicability in assessing post-mastectomy pain is yet to be determined.[22] Acute pain experienced by the patient could be due to the mastectomy procedure itself. Alternatively, it could be indicative of a potential post-operative complication.[31] Adequate wound assessment could highlight possible infection, rather than assume that the causation of post-operative pain is due to the surgical procedure.[31] Furthermore, it may be suitable to assess the patient's circulation, neurological function, and respiration, as these can impact post-mastectomy pain and complications.[32] Non-verbal pain-assessment tools may underestimate the patient's pain, however this could be due to the assessment tools focusing on the physical aspects of pain and disregarding the biopsychosocial components of pain.[6,22]

Pain has been described as being multifaceted in nature, highlighting the need for a holistic pain assessment.[33] Schreiber et al. demonstrated a strong correlation between psycho-social aspects and the development of chronic post-mastectomy pain.[6] They observed that acute pain is particularly associated with psychological anguish, anxiety, depression, disturbed sleep, and dysfunctional coping strategies.[6,8] It is theorised that the emotional and sensory neurological pathways act independently, while simultaneously functioning in parallel, giving rise to a strong association between the emotional and physical feeling of pain.[8] This provides a possible explanation for why some post-mastectomy patients often describe both the physical and psychological elements of pain.[18] The patient may report intensified feelings of pain due to psychological and social distress related to an altered body image, separation from family, or coping with a breast-cancer diagnosis.[34] If pain is assessed purely from a physical standpoint it is possible that post-mastectomy pain could worsen or persist.[4,35] Jia-Rong et al. illustrated that pain assessment tools incorporating coping strategies can empower post-mastectomy patients, thereby improving their pain.[34,36] The whole-person assessment (WPA) is such a tool, although it also covers physical, emotional, environmental, spiritual, and social aspects of health.[19] By treating the patient holistically, the health professional is able to address each component of the patient's health.[37] Kress et al. showed that holistic care is able to improve the patient's emotional anguish, quality of life, and overall recovery.[38] As such, by taking into account the psychological, emotional, and physical aspects of health, health professionals are ideally placed to provide care that can vastly improve the overall health outcomes of patients.[39] Even though the WPA was redesigned to address chronic pain, Hayes et al. advised that it can also be used to address acute post-operative pain.[19] And despite the WPA being time consuming to complete, Newson stressed its importance, as cultural and spiritual elements could influence how the patient expresses their pain.[33] The use of suitable pain assessment can ensure appropriate pain-management strategies are put in place.

Pain management – Pharmacological

Invaluable information obtained through pain assessment can assist to formulate appropriate pain management for the patient. Applicable pain-management techniques can include pharmacological and non-pharmacological interventions that are continuously monitored and tailored to the individual. The first management approach to be discussed deals with pharmaceutical interventions. Opioid analgesics function by reducing the perception of pain signals in the central nervous system.[40] According to Amaya et al., most analgesics suppress acute post-operative pain, however, post-mastectomy pain may require several analgesics to target both nociceptive and neuropathic receptors.[15, 41] The analgesia ladder is a useful paradigm in addressing pain in the patient by using non-steroidal anti-inflammatory drugs, paracetamol, and adjuvant medications in conjunction with opioid analgesics.[15] Legeby et al. showed that administering several different analgesic medications can significantly reduce post-mastectomy pain.[42] Using a combination of medications to treat acute pain allows for effective pain relief at a reduced dose.[15] A lesser dose can also decrease the analgesic side-effects, such as nausea and vomiting, experienced by some post-mastectomy patients.[43]

Nausea and pain should be considered in unison, as both can have the same physiological consequences. Montgomery et al. suggested that pain and nausea are particularly unfavourable for post-mastectomy patients, as they can significantly prolong patient recovery, delay hospital discharge, and lead to unforeseeable readmissions.[44] The adverse health effects of nausea can be worsened by the presence of emesis.[45] Vomiting can impact the patient's overall health, as it can lead to dehydration, reduced nutritional intake, and pulmonary complications.[46] Amaya et al. argued that the inclusion of anti-emetic medications into post-mastectomy recovery treatment is therefore just as important as analgesia.[41] The health professional's role in pain management relates to the administration of medications, monitoring of side effects, and providing patient education.[25] Timmerman et al. showed that patients are more likely to adhere to treatment regimens if they are provided education, specifically related to the medication, and associated side effects.[47] Some medications are prescribed on an 'as needed' basis, which requires the medical team to use their assessment skills to analyse suitable pharmaceutical interventions.[48] Alternatively, the health professional can administer medications to assist the patient with mobilisation, hygiene cares, or nutritional intake.[42] Pharmacological strategies can be used in conjunction with non-pharmacological interventions to help manage acute pain post-mastectomy.

Pain management – Non-pharmacological

As medical professionals, and in particular nurses, provide holistic patient care, it is important to consider non-pharmacological interventions to help manage post-mastectomy pain. Vilkhom et al. found that patients experiencing pain have intensified cold and warm detection thresholds, supported by the findings of Kaunisto et al.[17,49] As such, hot or cold therapy can be used to treat post-mastectomy pain.[49] Silva et al. on the other hand found that transcutaneous electrical neural stimulation (TENS) has a similar analgesic effect, particularly for intercostal pain in post-mastectomy patients.[50] Both hot or cold therapy and TENS support the GCTP by using a non-noxious stimulus to disrupt the pain signal.[14,51] Other non-pharmacological therapies have a psychological focus. Clarke et al. showed that post-mastectomy patients experience increased feelings of depression and anxiety.[52] After receiving emotional support, these patients reported lower levels of pain.[52] This could be due to actual decrease in pain, better coping skills, or distraction.[2] Regardless of the mechanism of pain relief, addressing a patient's emotional and psychological health plays an integral part in post-mastectomy pain management.[52] Hovind et al. found that post-mastectomy patients reported the need to discuss the recovery process, therapy options, and risk of developing ongoing chronic pain.[1] The nurse, or other health professional, can address the patient's psychological health by creating instances to communicate these concerns, which could lead to further educational opportunities.[53] Hayes et al. showed that post-mastectomy patients provided with adequate information are able to cope better with their acute pain, while Cho et al. showed that it could lead to better health outcomes.[19,53] Another useful pain treatment option addressing psychological aspects of pain in the post-mastectomy case study is music therapy.[2] Music therapy is effective and non-invasive with no added side-effects, and can also be used to treat depression, anxiety, nausea, and vomiting.[2] Even though some of these non-pharmacological therapies may be useful, it is imperative to understand that each individual has a unique response to treatment.

To provide suitable holistic patient care, interventions must be individualised. Pain is a subjective experience and should be recorded and treated as it is described by the patient.[21,54] Two studies found a difference in pain threshold between various ethnicities.[9,10] This was attributed to potential socio-economic influences, discrimination, or physiological differences.[9] Newson suggested that acute post-mastectomy pain can lead to chronic pain due to cultural attitudes forming barriers to pain management.[33,55] In some cultures, it is considered inappropriate to show weakness such as pain.[56] This could influence pain management, thereby prolonging the patient's recovery. Another influencing element of post-mastectomy pain is identity. Patients must overcome Erikson's crisis stage of generativity versus stagnation.[57] Developing resiliency, a coping mechanism in itself, can lead the patient to experience improvements in acute post-mastectomy pain.[8,58] At this stage there is already a heightened sense of self-awareness, which is further compounded by the loss of breast tissue, highlighting a potential risk for the patient to develop body image concerns.[57,59] This highlights the importance for health professionals to assess and provide holistic care, tailored to each individual's co-morbidity that may arise.[38] As breasts are associated with motherhood, femininity, and sexuality, removal could adversely impact body image.[60] Schreiber et al. noted that an altered body image could lead to feelings of anxiety, stress, and depression which can worsen post-mastectomy pain.[6,52] Pre- and post-operative counselling or breast reconstructive surgery can not only help mastectomy patients to feel more attractive, but can improve their pain and overall well-being.[59,60] Addressing acute post-mastectomy pain prevents the risk of it developing into chronic pain.

If post-mastectomy pain is not adequately treated, it can persist and develop into chronic pain. Clarke et al. outlined that mastectomy patients have a high risk of developing chronic pain, which Mohamed et al. suggested could be due to uncontrolled acute pain.[35,52] This was supported by Schug et al. who stated that 64% of post-mastectomy patients experience pain for six months or more post-surgery, implying that chronic pain is inevitable.[4] Even though Li et al. suggested that chronic pain post-mastectomy was mostly associated with tissue damage, Schreiber et al. argued that untreated psychological factors have similar risk factors for developing chronic pain.[2,6] As such, it is paramount for mastectomy patients to receive treatment tailored to their own situation.[54] An essential component of post-mastectomy recovery requires the involvement of a multidisciplinary team, each focusing on certain aspects of overall health.[26] Milby et al. found that post-operative pain management handovers are often incomplete, which negatively impacts the patient's recovery.[61] Thus, an important aspect of managing post-mastectomy pain involves accurate documentation to ensure continuity of care.[62] Both Mularski et al. and Nworah suggested that it is not adequate to simply document pain, but to act on the information with appropriate interventions.[55,63] Eaton et al. recommended the use of evidence-based pain management strategies in cancer patients, taking into account clinical experience, research findings and patient predilections.[64] They also stipulated the need for continuous research development to establish and strengthen robust evidence-based practice, further allowing nurses to independently implement holistic pain management strategies.[64] The adequacy of the patient's pain management regime can be further

enhanced by referring them to a specialised pain team.[23] This team will assess the patient's pain and response to treatment, while also taking into consideration how the pain impacts the patient's sleep and psychological well-being.[23,46] Establishing interventions that deal with all aspects of health allows the individual to receive the appropriate treatment for their unique situation, with the hope of preventing the persistence of post-mastectomy pain.[6,54]

Conclusion

Pain is an unpleasant sensation, often associated with surgical procedures such as a mastectomy.[4] Acute post-mastectomy pain is comparatively short in duration and mostly a direct result of the mastectomy procedure. The medical team can incorporate the knowledge of pain manifestations and influences into their clinical practice by providing tailored, research-based pain-management interventions. Even though there are pain theories that describe how pain is perceived, post-mastectomy pain continues to be a subjective experience. Therefore, health professionals should assess pain either through verbal assessment, non-verbal assessment, or a WPA. Tailoring treatment to the patient can occur through careful selection of pain-management techniques. Post-mastectomy patients may find pharmacological interventions beneficial, however non-pharmacological measures can be invaluable for their analgesic relief. By offering these therapies in conjunction with one another, the patient is able to access pain management suitable for them. Tailored pain management strategies give the patient a greater chance of recovery from post-mastectomy pain, without the development of chronic pain. Central to this recovery process is the role of the medical team and how they assess, manage, and document the patient's pain. Without appropriate pain management, the patient runs the risk of experiencing persistent post-mastectomy pain. Numerous pain-management strategies are available to health professionals, requiring ongoing research and tailored utilisation, with the view to ultimately improve patient outcomes.

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