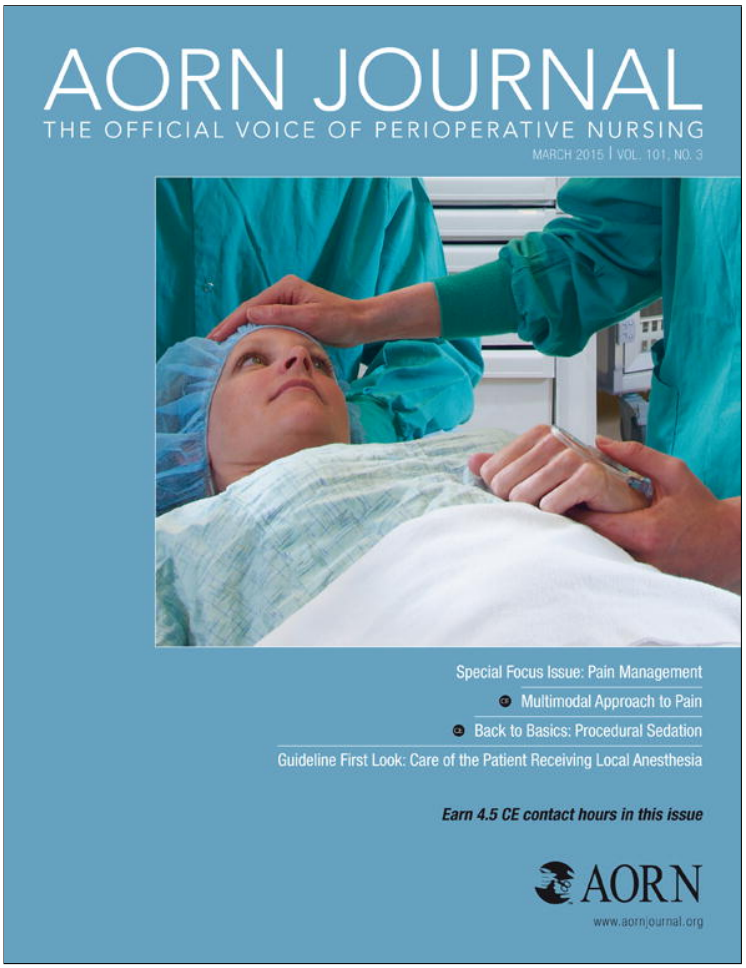

Considerations for Complementary and Alternative Interventions for Pain

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ABSTRACT

Nurses play an important role in pain management. When considering strategies for effective pain management, nurses must consider and be able to provide information about complementary and alternative therapies. Awareness of alternative interventions for pain extends across herbal therapies, energy medicine, and mind-body exercises. Treatment regimens that integrate conventional therapies with alternative therapies based on the medical systems of non-Western cultures may affect outcomes positively through medical interactions. Nurses should question patients and families about complementary health practices to determine whether they may affect postsurgical recovery and also to determine the level of openness to alternative practices that have evidence of success or equivalency in managing pain. *AORN J* 101 *(March 2015) 319-326. © AORN, Inc, 2015. http://dx.doi.org/10.1016/j.aorn.2015.01.013*

Key words: *pain management, complementary and alternative therapies, non-Western medicine, homeopathic, naturopathic, rehabilitation, holistic.*

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According to the California State Board of Registered Nurses, the role of the nurse in pain management may include complementary and alternative therapies:

> *Direct and indirect patient services include the competence of RNs to provide information about the complementary and alternative therapies. . . . Because of the theoretical congruence between nursing practice and the practice of complementary and alternative therapies, RNs are in a unique position to bridge the gap between conventional biomedical therapies and complementary alternative therapies.*[1]

Conventional Western medicine commonly treats pain with anti-inflammatory medications and physical therapy. As a complementary approach to patient care, there are other less traditional approaches to pain management, such as herbal therapy, acupuncture, acupressure, dietary therapy, and various forms of relaxation exercises. Alternative or holistic therapies address the entire patient, recognizing that a wide variety of factors are associated with pain. These alternative methods can be incorporated into traditional medical approaches and may assist in patient recovery.

This article summarizes some of the most common complementary health care practices used to address pain and provides reviews or meta-analyses regarding specific practices. The information is not intended to be prescriptive. Not all complementary and alternative practices are mentioned; however, the effectiveness of many practices remains unclear in conventional Western medicine chiefly because of a lack of research.

UNDERSTANDING THE COMPLEMENTARY HEALTH APPROACH TO PAIN THERAPY

Pain arises from many causes (eg, back pain, joint pain, postsurgical pain, pain from traumatic injury, cancer-related pain, pain from inflammation). Although conventional Western medicine most often treats pain with anti-inflammatory medications, practitioners of complementary and alternative medicine (CAM) recognize that pain may arise from many inter-related factors, and these practitioners seek to identify and address the contributing factors associated with a patient's pain. Complementary health approaches can be incorporated into traditional Western patient care plans, augmenting the effect of pharmaceuticals and physical therapy. For example, a patient's care plan might include herbal therapy, acupuncture, acupressure, dietary therapy, and various relaxation exercises such as yoga, Pilates, tai chi, and qigong. Other modalities include homeopathy, Jin Shin Jyutsu, and electrical stimulation. Physical therapies such as chiropractic or osteopathic manipulation, manual lymphatic therapy, massage, and other deep fascial therapies are also common. While scientific evidence for the use of CAM therapies is limited, the National Institutes of Health National Center for Complementary and Alternative Medicine (NCCAM) funds studies on the most common CAM therapies to "define, through rigorous scientific investigation, the usefulness and safety of complementary health approaches and their roles in improving health care."[2]

COMPLEMENTARY HEALTH SYSTEMS

Complementary health care encompasses a broad range of systems, both ancient and recent. Here we discuss three major systems of CAM (homeopathy, traditional Chinese medicine, naturopathy) and multiple therapies that may be used in each of these three systems or separate from any traditional system.

Traditional Chinese Medicine

Traditional Chinese medicine incorporates a broad range of methods, including acupuncture, the use of plants and herbs, specific exercises, and dietary therapy. Acupuncture and acupressure are commonly used for pain relief. Traditional Chinese medicine teaches that by stimulating the electrical and electromagnetic energy that flows through the body along specific electrical pathways called meridians, imbalances that cause pain are released.

Acupuncture

Acupuncture treatment consists of the insertion of thin needles into specific sites on the body known as acupoints. Systematic reviews reveal that acupuncture may be effective in relieving low back pain,[3,4] migraines,[5] fibromyalgia,[6] and pain from osteoarthritis (OA) of the knee.[7] An overview of systematic reviews shows there is conflicting evidence regarding the treatment of postoperative pain with acupuncture.[8]

Acupressure

Acupressure is the stimulation of acupoints with the hand, elbow, or other devices, but not with needles. A Cochrane

Collaboration review stated that acupressure or pressure-point massage techniques provide more relief than classic massage in relieving low back pain, though more studies are needed to confirm this finding.[9]

Homeopathy

The father of modern homeopathy is Samuel Hahnemann (1755–1843), a German physician and researcher in pharmacology. Dr Hahnemann proposed that the tissue changes associated with a clinical case of disease were merely the results of disease, but not the disease itself. He found that a medication, when taken in large doses by a healthy individual, produced a certain group of symptoms similar to the disease it was intended to treat in an ill person. He proposed that the same medicine, when given in small doses, cured a similar set of symptoms. He posited that the first law of cure was in fact the law of similars (ie, like cures like), which is homeopathy's defining principle. Homeopathy treats disease naturally with substances that produce symptoms similar to those of the disease.[10]

Homeopathic remedies contain very small, diluted quantities of substances called "potencies," derived from multiple dilutions acquired by dividing and subdividing a substance multiple times. A potency indicates the strength of the diluted substance in terms of homeopathy. To establish the appropriate dosage, medicines were energetically "potentized" to be effective.

The NCCAM asserts that homeopathy is a controversial topic in the complementary health care field. Most rigorous clinical trials and systematic analyses have concluded there is little evidence to support homeopathy for the treatment of any condition.[11]

Naturopathy

The practice of naturopathy is a unique system of noninvasive wellness care and health assessment in which neither surgery nor pharmaceutical drugs are used. Examples of such a system include nutrition, herbology, traditional Chinese medicine, iridology (a technique involving examination of the characteristics of the iris that can be examined to determine information about a patient's systemic health), various methods of energy or electrical magnetic modalities (eg, acupuncture, homeopathy, laser, light), frequency tools (eg, the pulsed frequency generator), and hands-on techniques (eg, massage, lymphatic drainage, Jin Shu Jyutsu, Reiki, reflexology). Naturopathy often integrates both Western medicine and alternative methods for wellness and recovery. In the United States, laws vary from state to state regarding the licensure and scope of practice of naturopaths.

MEDICINAL HERBS AND OTHER PLANT-DERIVED PAIN RELIEVERS

Various plants and herbs are used in naturopathy, traditional Chinese medicine, and other forms of complementary health therapy. Some herbs have anti-inflammatory or analgesic properties to help relieve pain. These include

- noni, which in vitro studies have shown to exhibit antioxidant, immune-stimulating, and tumor-fighting properties, although in vivo studies are lacking. Noni is contraindicated in patients who are on potassium-restricted diets and with liver disease. Complementary health practitioners may recommend noni for joint pain[12];
- ginger root, which may be given as a remedy for rheumatoid arthritis (RA), OA, and joint and muscle pain, although it is unclear whether it is effective for this purpose. However, studies are mixed as to whether ginger is effective in treating nausea caused by surgery, chemotherapy, or motion, although it is effective in treating pregnancy-related nausea[13];
- Boswellia (frankincense), which is prescribed for OA and RA, among other conditions. A systematic review of the literature revealed that Boswellia was clinically effective in treating OA, RA, collagenous colitis, asthma, and Crohn disease[14];
- feverfew, which is often used to prevent migraines. A Cochrane review revealed no safety issues with feverfew, though there was insufficient evidence regarding its effectiveness over placebo for preventing migraines[15]; and
- red beet, which has been shown to improve knee joint discomfort and function.[16]

Some herbs are believed to relieve intestinal discomforts postoperatively and promote elimination, including dandelion, which is thought to relieve minor digestive issues, though no compelling scientific evidence exists regarding its effectiveness.[17]

Certain essential oils, which are derived from the distillation of botanicals, may be used for inflammatory conditions, particularly neem oil.[18] Hong et al[19] tested 170 natural products in mouse cells for the ability to inhibit the production of prostaglandin E_2, an inflammatory mediator. They found that multiple botanicals have profound anti-inflammatory activity, including *Astrolochia*, certain kinds of cinnamon (*Cinnamomun cassia* and *loureirii*), white turmeric (*Curcuma zedoaria*), cloves, red sandalwood, and *Tribulus terrestris*, among others.

Herbs have the potential to interact with conventional medications, affect blood sugar and blood clotting, and exert other biological effects that are relevant to the pre- and postsurgical care of patients. Inquiring about the use of herbal supplements is important for the safety of all patients.

Figure 1. Lymphatic therapy in a care plan for pain may include the use of a chi machine.

MANIPULATIVE AND BODY-BASED THERAPIES FOR PAIN RELIEF

Complementary health practitioners believe that pain should be addressed by viewing the body as a whole. Therefore, they may suggest exercises or manipulations of the body that are believed to reduce pain by either promoting relaxation, increasing movement of energy through the body, or achieving an appropriate alignment of tissues. Patients may use them alone or in combination with herbals and traditional medicine.

Exercise Therapies

Complementary health practitioners believe that exercise such as yoga, tai chi, and qigong improve or prevent pain by stretching and strengthening the body, promoting relaxation and deep breathing, and improving lymphatic flow. These therapies may be advised by practitioners of traditional Chinese medicine or naturopathy. When an exercise is prescribed by an alternative practitioner, it should be cleared with the patient's surgeon first because exercise that is undertaken too soon or inappropriately after the surgery may undo the surgery and cause further problems.

In randomized clinical trials, qigong has been shown to be effective in significantly reducing pain when compared with general pain care.[20] Tai chi appears to be effective in reducing pain in individuals with OA, low back pain, and fibromyalgia, but not headache or RA, although studies are few.[21] Villemure et al[22] have shown that yoga practitioners tolerated pain twice as long as controls and that regular yoga exercise leads to increased gray matter in the areas of the brain responsible for pain processing, pain regulation, and attention.

Lymphatic Therapy

The chief functions of the lymph system are

- restoration of excess interstitial fluid and proteins to the blood,
- absorption of fats and fat-soluble vitamins from the digestive system and transport of these elements to the venous circulation, and
- defense against invading organisms.[23-26]

Integrative practitioners believe the lymphatic system plays an important role in managing pain by preventing edema and inflammation. Some practitioners and lymphatic therapists use simple tools to stimulate lymphatic flow, such as a photomagnetic lymph machine, forms of electrical stimulus, chi machine (Figure 1), biomat, or rebounder. The patient is also encouraged to perform water exercises or hydrotherapy, jump roping, and cycling.

Complementary health practices can involve addressing lymphatic flow to relieve pain that can arise from swelling and edema in the surrounding tissues after surgery. For example, manual lymphatic drainage (MLD) is a gentle hands-on technique to manually reroute and move the lymph fluid through specific pathways to decongest the tissues, especially the tissues affected by trauma or surgery. This form of decongestive therapy shifts the interstitial fluid and stimulates the contraction of lymphangions to facilitate the flow of fluid in the lymph. Findings from a pilot study suggest that touch receptors in the skin communicate to the nerve fibers of the spinal cord, where they interrupt the transmission of pain.[27] This suggests that when performed correctly, the MLD technique may have an inhibitory effect on the transmission of pain at multiple locations simultaneously.[27,28] Manual lymphatic drainage may be used to help control lymphedema after breast cancer surgery, though its effectiveness is not established.[29]

Myofascial Release Therapy (MFR)

Fascia is generally considered to be connected layers of fibrous tissue that support and hold muscles, nerves, and organs. Because the fascia are connected, tension in one area can cause referred pain.[30] When the source of trauma is surgery, fascia adhere together as white blood cells and fibroblasts migrate to the surgical site or traumatic injury to aid in healing. Consequently, the contribution of increased edema to postoperative pain is caused by fluid collecting within the interstitial tissues around the surgical site. Myofascial release therapies include many modalities such as massage, indirect MFR, active MFR, and trigger point

therapy. Practitioners believe that myofascial release techniques penetrate deep into the tissues of a surgical site, contusion, or traumatic injury to disrupt adhesions between the layers of connective tissue to increase the circulatory flow of blood and increase lymphatic flow through the tissues at the surgical site or site of traumatic injury. Evidence regarding the use of MFR is difficult to interpret because there are multiple modalities, the patient and the practitioner each contribute to the experience in some modalities, and there are few high-quality studies. One systematic review of studies of indirect MFR showed mixed results, indicating a need for further, high-quality studies.[30]

Craniosacral Therapy

Craniosacral therapy is an osteopathic therapy aimed at shifting the skull plates to their correct positions and providing an MFR to the skull. Some complementary health practitioners advise craniosacral therapy for those with chronic head and neck pain, postsurgical pain, and traumatic head injuries, among other conditions. A systematic review of the literature on craniosacral therapy reveals studies of moderate quality that show evidence of pain relief for a variety of conditions, but the low power of these studies makes conclusions difficult.[31]

Chiropractic or Osteopathic Manipulation

Chiropractic or osteopathic manipulation is believed to realign body structures when malalignment is suspected or probable. High-quality evidence shows that osteopathic manipulation is as effective as conventional treatments for the relief of chronic low back pain.[32] Another review evaluates osteopathic therapy when used to treat acute low back pain. A review of the available literature suggests that for acute pain, osteopathic manipulation is no better than sham therapy and equivalent to other recommended therapies, though this review is limited by a low number of studies.[33]

ENERGY THERAPY

Energy therapies are based on the idea that life force, or *qi*, flows through all living beings and can be directed to ease pain and cause healing. Examples of energy therapies include Reiki, healing touch, and therapeutic touch. Specific energy modalities that focus on the electrical aspects of physical beings include Jin Shin Jyutsu, Ki Iki Jutsu, transcutaneous electrical nerve stimulation (TENS), and the use of sound, color, laser, and light. Practitioners believe that imbalances in the energy systems of the body cause disease and that application of energy can rebalance the energies.

While many energy modalities are not well studied, several reviews provide evidence-based information that can be helpful to patients who are dealing with pain and who may wonder if CAM can augment traditional pain relief treatment. Although little high-quality research has been done on the effect of Reiki on pain, Thrane and Cohen[34] conducted a literature review with effect-size calculations and found that Reiki may be effective in reducing pain and anxiety in adults, though larger studies are needed. A Cochrane review of the literature on healing touch, therapeutic touch, and Reiki combined revealed a modest effect in pain relief, though the authors comment that the larger therapeutic effects were attributed to the Reiki studies and that the experience of the practitioner played a role in the effectiveness of the therapy.[35]

> "Practitioners of complementary and alternative medicine recognize that pain may arise from many inter-related factors and seek to identify and address the contributing factors associated with a patient's pain."

The use of TENS for the treatment of acute pain in adults and for the treatment of low back pain was evaluated by the Cochrane Collaboration in two separate reviews and revealed there is insufficient evidence to support its use for either indication.[36,37] The evidence regarding light therapy (also known as low-level laser therapy) is inconclusive as it relates to the treatment of low back pain.[38] Similarly, the use of cold laser therapy and a precision function generator (Figure 2) may be helpful in decreasing pain,[39] though more research is needed.

Figure 2. Energy therapy in a care plan for pain may include the use of a precision function generator.

Mindfulness for Pain Relief

Complementary health care acknowledges the integral relationship between the mind, emotions, and the body. For example, negative thoughts before surgery or postoperatively, fear, or external stressors as a result of a lack of social or family support, other mental or emotional stress, and the physical trauma from surgery itself are known to be sources of anxiety and lower pain tolerance. When a patient experiences pain, using cognitive methods to cope with the pain may be helpful. For example, a study of patients near the end of life showed that relaxation techniques alone improved pain.[40] The mindfulness-based stress reduction (MBSR) program, which combines elements of yoga and meditation, originated at the University of Massachusetts Medical School.[41] A meta-analysis of the research studying patients with fibromyalgia shows that MBSR is effective in lowering pain sensations.[42] A systematic review in patients with low back pain revealed that evidence supporting its use is inconclusive for this condition.[43]

> "Some medicinal herbs are believed to relieve intestinal discomforts postoperatively and promote elimination."

DISCUSSION

Integrating conventional Western medicine with alternative therapies is an evolving field. Although evidence-based studies about the use of alternative therapies are increasing, further research is indicated for many alternative therapies, particularly those that are commonly used by the general public. Integrative medicine carries the belief that there is more to treating a disease than managing its pathophysiology. For example, these practitioners believe that the internal environment of the individual and the external environment surrounding the individual contribute to his or her ability to heal and that the levels of stress in the mind and emotions influence the perception of pain and the experience and tolerance of pain.

Addressing the entire person, his or her emotions, attitudes, diet, and environment, is the task of the practitioner of complementary health. This includes considering the internal milieu of the body and how alternative therapies affect the body and relate to pain. Although there is limited evidence-based research on this topic, well-known educational resources such as *Biological Medicine: The Future of Natural Healing*[44] suggest that when pH in the mesenchyma becomes more acidic, pain receptors become more active, resulting in an increase in sensitivity to pain. Interruption of the body's homeostasis, either from toxins or a highly acidic pH environment, may lead to sluggish or inefficient activity of the organs and body systems; therefore, when considering pain management, practitioners of complementary health may include detoxification in care plans, to cleanse the internal environment of the body.[44] Detoxification may occur through diet and nutrition, metabolic-nutritional therapy, natural cleanses, exercise, far-infrared saunas, chelation therapy, biological dentistry, spiritual and emotional counseling, homeopathics, supplements, water therapy, oxygen therapy, massage and lymphatic therapy, and different forms of energy therapies. The goal of complementary alternative therapies such as these is to relieve symptoms, modify or remove contributing factors, and restore balance to the body.

It is important for the conventional health practitioner to inquire about complementary health practices of their patients to provide the best health care possible and maintain a nonjudgmental and accepting attitude. Research into complementary health practices continues apace, though not as quickly as the use of these practices warrants.

CONCLUSION

Alternative interventions for pain relief postoperatively and during the rehabilitation and recovery phases represent a holistic

approach to patient care, complementing conventional Western medicine. Integrating conventional Western medicine with alternative interventions may provide a more positive outcome in managing postoperative pain. Discussing options with patients will open the door for frank discussions that might improve recovery and that may reveal the use of complementary health care that patients may not otherwise consider significant, which is important when considering drug interactions of specific herbal and homeopathic supplements.

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