Rehabilitation Medicine Approaches to Pain Management

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KEYWORDS

• Rehabilitation • Movement-associated pain • Musculoskeletal pain • Orthotices • Therapeutic exercise • Modalities

KEY POINTS

- Pain arising from musculoskeletal structures is prevalent, functionally devastating, and often refractory to conventional analgesic approaches but is significantly mitigated through rehabilitative approaches.
- Rehabilitative approaches modulate nociception, stabilize and unload painful structures, influence pain perception, and alleviate soft tissue musculotendinous pain.
- Conventional strategies for managing musculoskeletal pain, such as massage, orthotics, and therapeutic exercise, among others, are effective even among patients in the advanced stages of cancer and hematologic conditions, but their use warrants consideration of prognosis, patient resources and preferences, and functional/medical comorbidities.

INTRODUCTION

Pain is a principal driver of disablement and other negative outcomes among patients with hematologic disorders and malignancies. In addition to its adverse effects on the patient, uncontrolled pain radically increases the direct costs of care and results an increased use of the health care system and unplanned hospitalizations and emergency department visits. Analgesics have long been the mainstay of cancer pain management. Unfortunately, despite the use of the World Health Organization Pain

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Ladder, a huge expansion in the number agents available, and the increased use of interventional procedures, many patients fail to achieve adequate control of their pain.

Several factors limit the effectiveness of current modalities. Among these are poorly tolerated side effects; prohibitive cost; and, often, limited efficacy. Although all pain is limiting, pain from bone metastases by impeding movement and weight bearing is uniquely damaging given its profound effects on patients' mobility and activities.

Although it has been integrated into the management of cancer and/or hematologic conditions in only a limited fashion, rehabilitation medicine, has developed strategies that reduce musculoskeletal pain in general and targeted approaches to alleviate movement-related pain. A more systematic integration of its services and approaches into the management of hematology/oncology patients with painful conditions offers several important benefits. First, physical approaches have the potential to reduce pain intensity, particularly of musculoskeletal origin, and thereby lessen patients' dependence on analgesics and interventional procedures. Second, the use of stabilizing and deweighting devices can protect painful structures and thereby enhance patients' comfort, independence, and quality of life. Third, physical therapists (PTs) and occupational therapists (OTs) can work with patients to develop individualized strategies for essential activities (eg, transferring from a bed to a wheelchair) in ways that minimize exacerbation of their pain. Fourth, tailored exercise programs have been shown in diverse cancer and hematologic populations to not only alleviate some types of pain, but also to improve other common, distressing symptoms, such as disturbed sleep and fatigue that may exacerbate pain.

Rehabilitation approaches generally serve as adjuncts to conventional pain management strategies. Although few, with the exceptions of mobility aids and bracing, have a strong evidence base or history of robust use in palliative settings, extensive experience and face validity in other clinical contexts argues that the integration of rehabilitation services should, at a minimum, be considered for patients with refractory pain in light of (1) their potential to lessen the pain; (2) the proven benefits of therapeutic exercise on mobility, symptom burden, and independence; and (3) their limited side effects.

Rehabilitation approaches are grouped into the following categories which, in turn, provide structure for this article: (1) modulating nociception, (2) stabilizing and unloading painful structures, (3) influencing pain perception, and (4) alleviating soft tissue musculotendinous pain. This latter section is included because of benign pain related to the overloading or maladaptive use of muscles that occurs with the loss of skeletal muscle mass, a common feature of late-stage cancers and many hematologic conditions. This article reviews each of these categories and offers examples to illustrate their clinical application. Many applications focus on minimizing movement-associated pain and permitting the patient to remain as functional and independent as possible despite the persistence of pain.

MODULATION OF NOCICEPTIVE INPUT

Rehabilitation uses two approaches to lessen the effects of nociceptive input on pain perception. The first, the use of heat and cold, dates back thousands of years. The second uses low or moderate levels of sensory input to reduce or modulate nociceptive input. The concept, which was introduced by Melzack and Wall[1] in the 1960s, has been termed the "gate theory of pain" and posits that cells in the spinal cord's substantia gelatinosa inhibit the perception of pain by lessening the passage of nociceptive information to the brain in the presence of benign sensory afferent signals. The