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Mini Review

Treating Pain in Older Adults in Critical Care Settings

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Abstract

With the older adult population rapidly increasing it is of the utmost importance that we continue to develop interdisciplinary strategies for pain management, particularly in critical care situations. This group faces a multitude of unique concerns that are of vital importance to safe and effective treatment strategies in emergent situations in which there may be an unstable medical status. Pain is severely under-treated in older adults and they are most likely to be prescribed pharmacological intervention than any other method. Concerns of medication use, cognitive status, comorbid disorders, and the unique combination of factors in older adults under these conditions are a few of the key topics covered in this review.

Keywords: *Older Adults; Pain; Critical Care; Medication Use; Biopsychosocial; Anesthesia; Interdisciplinary-Care Team*

The development and implementation of interdisciplinary pain management strategies is of the utmost importance in critical care situations, particularly for older adults. Critical care patients are at elevated risk for complications of care or in life-threatening conditions. Many older adults require a more intensive care-setting due to a number of hurdles concerning pain, including adherence issues, fall risk, and cardiac conditions. Due to their unique challenges, it is often necessary for older adults to have contact with multiple medical providers including nurses, general practitioners, specialists, and therapists. These interdisciplinary strategies have shown to be particularly effective for pain management [1-4]. Interdisciplinary communication and designation of a "lead physician" managing the case is essential to this effort. Older adults often face complications due to comorbid disorders such as depression, cardiac issues, mobility concerns and movement disorders, and cognitive declines and memory disorders. Such issues can affect treatment options from necessary medications, potential side effects, adverse reactions, and adherence. Additionally, if the patient was involved in trauma or required surgery, transitional care is often necessary to help the patient recover, regain strength, skills, and confidence, as well as acclimating to physical demands, and adjust to any new-medication regimens. Indeed, a team-based interdisciplinary management approach has also been shown to be effective, as well as less costly, with complex high-risk primary-care cases [5].

Medication Use

Older adults take multiple medications daily for a wide variety of conditions [6]. Frequently used compounds include antidepressants, aspirin, opioids, non-steroidal anti-inflammatories (NSAID), antidiuretics, blood thinners, vitamins, and heart medications [7-9]. Maher and colleagues [10]. also report that of the multiple medications taken by older adults, one or more is often not medically necessary. This may be a contributing factor to a finding by Pasina and colleagues [11]. in which the researchers noted low or no adherence in more than half of older patients receiving polypharmacy after being discharged from an inpatient setting. It is important to critically evaluate each patient's management strategies already in place while in critical care so that any unnecessary measures are not perpetuated, particularly for those in transition to an outpatient setting or being discharged.

Common pharmacological options include opioids, non-steroidal anti-inflammatories (NSAIDs), antidepressants, over-the-counter (OTC) medicines, topical analgesics, and injectable drugs. In a critical care setting, intravenous delivery is most common for direct access and quick pain relief, though sometimes oral medications or via transdermal patches are used. The prescribed medication depends on the patients' condition, communicated pain experience, and overall health. Each type of medication comes with risks and benefits, and several factors such as comorbid disorders and other medications taken are important influential factors. Opioid compounds are often administered in critical care settings as they are strong and effective pain relievers. However, the risks of opioids include potential for addiction and abuse following treatment, and an extensive list of potential side effects including respiratory depression, gastrointestinal upset and constipation, mood changes, sedation, nausea, dizziness, sleep disturbances, as well as the risk of adverse drug interactions (ADRs) [12-14]. NSAIDs also carry an increased risk of gastrointestinal problems in older adults including ulcers and toxicity concerns yet are not always prescribed a gastro-protective agent in conjunction with an NSAID [15-19]. Furthermore, NSAIDs pose an ADR threat in patients on an aspirin or selective serotonin reuptake inhibitor (SSRI) regimen [13,16,20,21]. Antidepressants used for pain management can also carry risks of mood imbalance and depression, as well as suicidal thoughts and behaviors, and can react negatively with other medications such as steroids and hormones [13,22,23]. Polatin and colleagues [9] is a thorough review of use of antidepressants for pain management in older adults, addressing several key biopsychosocial concerns. Topical analgesics can be effective for superficial injuries, they have trouble penetrating the body effectively and are not effective with osteoarthritic concerns. However, for some muscular pain these creams can be a useful and easy to obtain management tool, as many are available OTC. Other OTC options include aspirin and NSAIDs like Ibuprofen, both of which are frequently used for a variety of pain conditions such as headaches, mild muscular aches, and tooth pain. However, even adding OTC medications without consulting a medical professional can be risky, aspirin and NSAIDs carry risk of ADRs, so before self-diagnosis occurs without knowledge of how these medications may affect a patients' existing regimen and conditions, the patient should always consult their physician before adding any additional medicine.

Excessive use of medications can exacerbate fall risk, an issue that often plagues older adults [24]. Opioids and anti-depressants in particular often have sedative effects that can influence balance even in low activity patients [18,25]. Additionally, considerations of age-related changes in older adults such as decreased liver function, decreases in water absorption, decreased cardiac output and blood flow, and increases in fat retention can all affect medication efficacy and half-life in their system [9,18,21]. Furthermore, older adults are at increased risk for gastrointestinal complications from using NSAIDs, including ulcers and bleeding [21,24]. Atkinson and colleagues [21] also reviewed under-utilized compounds like medicated patches and tapentadol that may be better options for older adults, and further research should include these medications when studying the best options for pain management in older adults in all care settings.

Anesthesia for Pain Management

Anesthesia and local blocks are often used for preoperative and perioperative care, but some providers are considering use of anesthetic for general pain management and recovery [26,27]. However, many patients experience post-operative cognitive decline, and current research is attempting to uncover the mechanisms of action and how to best combat this problem [27,28]. Of course, it is imperative to assess each patient for risks associated with the use of anesthesia and such use requires close and constant monitoring by a medical professional trained in the use of anesthetics. Local and nerve blocks are used frequently to perform procedures that would be otherwise painful, such as dental work, biopsies, or cataract surgeries, without having to fully sedate the patient. These methods could be particularly useful in critical care settings in which multiple providers closely monitor them. Such procedures could have potential for pain sufferers but present new complications of decreased function, permanent nerve damage, or pain exacerbation [29]. These methods must be studied more closely before they become part of a treatment or management program.

Unique Concerns of Assessing Pain in Older Adults

Pain management in older adults requires a careful analysis of their specific concerns including lifestyle, adherence, comorbid disorders, and existing medication regimens. As previously noted, older adults are more likely to be prescribed pharmacological interventions over any other modality for pain management [13,24]. Older adults generally tend to have decreased liver function, decreases in water

absorption, and increases in body fat that all affect how drugs interact and last in the body [9,12,14,30]. The physical changes that occur with age, as well as cognitive, social and support changes as a consequence of aging contribute to the unique concerns surrounding pain management in older adults. Additionally, older adults are often plagued with certain conditions like Parkinson's Disease, Alzheimer's Disease, and dementia that affect which treatment options are available and manageable.

Many comorbid disorders have great impact on adherence, especially when physical activity and medications are involved, therefore, implementing a psychosocial treatment aspect could be a beneficial tool in a management program. Techniques like mindfulness meditation have shown to improve sleep, increase physical activity, decrease pain, and improve overall quality of life in older chronic low back pain patients [14,31,32]. There is also evidence that social support is important in helping to reduce pain by helping to alleviate some depression and anxiety [14]. Additionally, cognitive behavioral therapy (CBT) and biofeedback may also help alleviate pain by promoting relaxation and stress reduction, as well as helping to change the perception of pain [14,33-36].

It is also important to note that more traditional therapies, such as physical exercise, may not always be possible, manageable, or maintainable in older adults and often require assistance and/or supervision [14]. Furthermore, in a critical care setting, physical measures are not often the priority in treatment as many patients are confined to bed or on a restricted activity schedule. When possible, integrating physical activity and strength training for pain management and prevention is beneficial, when done reasonably and safely, especially for older adults [14,37-40]. Provided the patient has safe access, water therapy is a great option for older adults as it allows the patient to engage in movement without the joint pressure or impact often experienced otherwise [41-45]. Other physical options include myofascial release therapy, massage, and chiropractic adjustments, and like medications, these therapies have their own set of risks and benefits that must be considered against the patients' individual needs. Older adults often have a unique combination of comorbidities, established treatment regimens, higher number of daily medications, and lifestyle considerations that are critical to consider when designing an effective pain management program. These concerns are crucial in both critical care settings and daily management of pain.

Summary

Pain management is of critical importance to overall quality-of-life. However, relationships with pain, both acute and chronic, are complicated and face a great number of challenges concerning treatment and management. It is crucial to re-evaluate each individual patient's needs routinely to customize a program that provides the least risk of potential complications and maximizes outcomes. Whether surgical, physical, psychosocial, or pharmacological, each method carries specific risks and benefits that must be considered for each individual. For older adults, their unique circumstances are critical when designing management programs and require constant re-evaluation by providers and cooperation from patients.

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