

An examination of the connections between postoperative pain and subsyndromal delirium in older adults: A review article

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Abstract

Subsyndromal delirium is linked to significant negative consequences such as lengthier hospital stays, more people being admitted to long-term care facilities, and higher 6-month mortality rates. Although postoperative pain is a risk factor for delirium, it is unknown whether it affects the severity of the condition's subclinical symptoms. Improved knowledge will guide nurse interventions to lessen the adverse effects of delirium symptoms. When age, cognitive status, smoking status, and opioid intake were considered, higher pain levels were significantly related to subsyndromal delirium (p.05.) Opioid use, however, was not significantly associated with subsyndromal delirium after age; cognitive function, smoking status, and pain were taken into account. Nurses caring for elderly patients after joint replacement surgery are urged to maintain good pain management to delay the onset and worsening of delirium symptoms.

Keywords: Diagnostic; Postoperative Pain; Risk Factors; Subsyndromal Delirium

1. Introduction

When older persons have significant orthopedic surgery, up to 69% have subsyndromal delirium (SSD) (Denny & Lindseth, 2017; Liptzin, Laki, Garb, Fingeroth, & Krushell, 2005). SSD, like delirium, is a sign of a dire prognosis and negative results and may indicate an impending likelihood of complete delirium occurring soon (Hakim, Othman, & Naoum, 2012). SSD—a condition less severe than delirium—occurs when a patient exhibits some delirium-like symptoms but not all of them. According to some studies, even one delirium sign can lead to more extended hospital stays and a decline in functional status (Shim, DePalma, Sands, & Leung, 2015). Recent research suggests that delirium increases the likelihood of developing dementia (Davis et al., 2012), which could have disastrous long-term effects. Furthermore, patients may endure long-lasting deleterious effects from the emotional discomfort brought on by a delirious experience (Pollard, Fitzgerald, & Ford, 2015). Some risk factors, such as advanced age, numerous comorbidities, and cognitive impairment predisposing older persons to delirium symptoms, may be difficult or impossible to eliminate or modify (Cole, Ciampi, Belzile, & Dubuc-Sarrasin, 2013). Leung, Sands, Lim, Tsai, & Kinjo (2013) recognized poorly regulated pain as a significant risk factor for delirium, although the connection between pain

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and SSD has not been extensively studied. This study examined the connection between SSD and postoperative pain in older patients who had joint replacement surgery.

2. Purpose

Delirium has four primary symptoms and signs of an outside origin (Inouye et al., 1990). The Confusion Assessment Method (CAM) is used to diagnose delirium, which is an acute state of transient confusion characterized by an acute onset or fluctuating course and inattention, as well as either the third core symptom (disorganized thinking) with or without the fourth core symptom (altered level of consciousness) (Inouye et al., 1990). Subsyndromal delirium is not often understood, but we characterized it as the existence of CAM core delirium symptoms that are not diagnostic and did not precede or follow an episode of delirium. Delirium is typically believed to arise when physiological stress results in widespread brain malfunction. Because of brain changes brought on by aging, typically, adaptive stress responses may turn into abnormal ones (Cole et al., 2016). Additionally, sedatives, hypnotics, and psychoactive drugs that change neurotransmitter activity and cognitive function are one of the many pathogenic mechanisms for delirium that are currently known. Other pathogenic mechanisms for delirium include drug toxicity, inflammation, and the use of these drugs (Maldonado, 2013). The theoretical foundation for the present investigation was provided by Inouye and Charpentier's (1996) prediction model for delirium, which states that delirium is caused by a complex combination of predisposing risk factors (such as age and cognitive impairment) and precipitating risk factors (e.g., major surgery, pharmacological agents, and pain). The risk for delirium is thought to rise cumulatively with each added risk factor. When triggering events, or "noxious insults," interact to cause delirium symptoms after surgery, older patients, who already have a higher risk of developing delirium symptoms due to age and comorbidities, have an increased risk. Subacute delirium Incidence rates of subsyndromal delirium among hospitalized older persons range from 13% to 68% (Cole et al., 2013; Liptzin et al., 2005). Subsyndromal delirium is believed to be between no and delirium (Sepulveda et al., 2017). One delirium symptom may or may not be followed by another, and delirium might appear suddenly over a few hours or less. By definition, delirium symptoms are temporary, transitory, and thought to be caused by an underlying medical disease, with advancing age and dementia being the two most significant risk factors (Inouye, Westendorp, & Saczynski, 2014). Delirium symptoms include issues with cognition and focus. However, counting the symptoms of delirium does not necessarily indicate how severe they are. When delirium symptoms have been identified, validated delirium severity assessments offer crucial information beyond simply identifying delirium symptoms—preoperative delirium risk factors for surgical patients. In older persons who get total knee arthroplasty, advanced age is a significant risk factor for delirium (Chung, Lee, Park, & Choi, 2015). The presence of multiple comorbidities, cognitive impairment, poor functional status, excessive alcohol use, and a history of current smoking without or with inadequately dosed nicotine replacement therapy are additional risk factors for postoperative delirium (Cole et al., 2013; Oldham et al., 2015). (Hessler et al., 2015). Although some preoperative risk factors (such as advanced age, cognitive impairment, and sensory impairment) cannot be removed when a patient seeks elective treatment, preventative initiatives have concentrated on variables that may be changed. Critical preventive interventions that can be started several weeks before a scheduled surgery can be smoking cessation with appropriately dosed nicotine replacement therapy, strength-building exercises to improve functional status, and the conclusion of a medication evaluation focused on eliminating medications associated with delirium. Measures to prevent lengthy preoperative fasting durations in older adults may lower the risk for delirium symptoms the day before surgery (Denny & Lindseth, 2017). Assuring effective management of preoperative pain in older persons who are having major elective orthopedic surgery is another factor that may lessen the risk for delirium the day before surgery (Cunningham et al., 2017; Kosar et al., 2014).

Pain following surgery, using opioids, and delirium. Higher postoperative pain ratings are associated with a higher likelihood of delirium than lower pain assessments (Leung et al., 2013). The stress already placed on the body by the surgical joint replacement method and postoperative pain has an additive effect. Strategies for preventing postoperative delirium center on reducing or eliminating patient risk factors, such as pain. Given current worries about the abuse of opioids and the fact that delirium frequently occurs, the difficulties associated with postoperative pain treatment call for creative solutions. Following joint replacement surgery, pain treatment frequently uses a multimodal approach that combines opioid administration with additional pharmacological and nonpharmacological pain relief techniques. Opioids, acetaminophen, nonsteroidal anti-inflammatory drugs, and gabapentin are among the pharmaceutical treatments advised for postoperative pain following joint replacement surgery (Chou et al., 2016). Physical modalities (like transcutaneous electrical stimulation) and cognitive modalities (like guided imagery and relaxation techniques) are nonpharmacological pain management strategies that can be used (Chou et al., 2016). Except for meperidine, which is known to cause delirium to spike, information is sparse addressing the etiological impact of opioids on postoperative delirium (Fong, Sands, & Leung, 2006).

There is little doubt that postoperative pain is a significant delirium risk factor. Less is understood, though, about how pain impacts how severe an SSD is. In order to prevent SSD, the progression of symptoms to delirium, and to reduce negative consequences that may occur from SSD or delirium, nurses must recognize the association between postoperative pain and SSD. Up to two-thirds of elderly persons who undergo joint replacement surgery experience SSD. In this study, postoperative pain was a substantial SSD factor. Some occurrences of SSD may be prevented or treated with improved pain management. Although older adults are more susceptible to the adverse effects of opioids than younger people, even modest reductions in pain through pharmacological and nonpharmacological therapies may help prevent a rise in delirium symptoms and other adverse outcomes. During the postoperative phase, nurses are urged to offer elderly patients appropriate pain relief while remaining vigilant for any pharmaceutical side effects that might necessitate modifying the pain management strategy.

3. conclusion

When age, cognitive status, smoking status, and opioid intake were considered, higher pain levels were significantly related to subsyndromal delirium (p.05.) Opioid use, however, was not significantly associated with subsyndromal delirium after age; cognitive function, smoking status, and pain were taken into account. Nurses caring for elderly patients after joint replacement surgery are urged to maintain good pain management to delay the onset and worsening of delirium symptoms.

Compliance with ethical standards

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Disclosure of conflict of interest

There are no conflicts of interest declared by the authors.

References

- [1] Denny, D. L., & Such, T. L. (2018). Exploration of relationships between postoperative pain and subsyndromal delirium in older adults. *Nursing Research*, 67(6), 421-429.
- [2] Chua, J. R., Gibson, K. A., & Pincus, T. (2017). Pain and other self-reported scores in patients with osteoarthritis indicate generally similar disease burden to patients with rheumatoid arthritis. *Clinical and Experimental Rheumatology*, 35, S88-S89. Retrieved from <http://www.clinexprheumatol.org/article.asp?a=12230>.
- [3] Cole, M. G., Bailey, R., Bonnycastle, M., McCusker, J., Fung, S., Ciampi, A., & Belzile, E. (2016). Frequency of full, partial and no recovery from subsyndromal delirium older hospital inpatients. *International Journal of Geriatric Psychiatry*, 31, 544-550. doi:10.1002/gps.4372.
- [4] Cunningham, E. L., Mawhinney, T., Beverland, D., O'Brien, S., McAuley, D. F., . . . McGuinness, B. (2017). Observational cohort study examining apolipoprotein E status and preoperative neuropsychological performance as predictors of post-operative delirium in older elective arthroplasty population. *Age and Ageing*, 46, 779-786. doi:10.1093/ageing/afx042.
- [5] Hessler, J. B., Brönnner, M., Etgen, T., Gotzler, O., Förstl, H., Poppert, H., . . . Bickel, H. (2015). Smoking increases the risk of delirium for older inpatients: A prospective population-based study. *General Hospital Psychiatry*, 37, 360-364. doi: 10.1016/j.genhosppsych.2015.03.009.
- [6] Mu, D. L., Zhang, D. Z., Wang, D. X., Wang, G., Li, C. J., Meng, Z. T., . . . Li, X. Y. (2017). Parecoxib supplementation to morphine analgesia decreases incidence of delirium in elderly patients after hip or knee replacement surgery: A randomized control trial. *Anesthesia and Analgesia*, 124, 1992-2000. doi:10.1213/ANE.0000000000002095.
- [7] Pollard, C., Fitzgerald, M., & Ford, K. (2015). Delirium: The lived experience of older people who are delirious post-orthopedic surgery. *International Journal of Mental Health Nursing*, 24, 213-221. doi:10.1111/inm.12132.
- [8] Oldham, M. A., Hawkins, K. A., Yuh, D. D., Dewar, M. L., Darr, U. M., Lysy, T., & Lee, H. B. (2015). Cognitive and functional status predictors of delirium and delirium severity after coronary artery bypass graft surgery: An interim analysis of the Neuropsychiatric Outcomes After Heart Surgery study. *International Psychogeriatrics*, 27, 1929-1938. doi:10.1017/S1041610215001477