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Invited Commentary

Commentary on "Ketamine reduces pain and opioid consumption after total knee arthroplasty: A meta-analysis of randomized controlled studies" (Int J Surg 2019;70:70–83)

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Dear Editor,

Total knee arthroplasty is an especially painful procedure, and adequate pain treatment has been demonstrated to improve patient rehabilitation. Patient-controlled opioid analgesia is only effective for treatment of pain at rest, but often it provides inadequate analgesia during movement. It may even provoke side-effects that can delay hospital discharge. Ketamine is a potent analgesic which interacts with several types of receptors including adrenergic, serotonergic, muscarinic, as well as receptors associated with opioids and N-methyl D-aspartate (NMDA). However, its role in postoperative analgesia remains controversial.

Several meta-analyses have been performed to evaluate the analgesic effect of ketamine in orthopedic surgery. Riddell et al. [1] reported that low-dose ketamine to be an effective adjuvant that decreased pain and opioid requirements after painful orthopaedic procedures, especially in the first 24 hours. Pan el al [2] reported that ketamine supplementation provided benefits to pain management and reduced ischemia reperfusion injury in patients with knee arthroscopy.

We read with interest the meta-analysis reported by Li et al. [3]. This is the first meta-analysis on randomized controlled trials to assess the efficacy and safety of ketamine for postoperative pain treatment after total knee arthroplasty. The authors concluded that ketamine was effective in reducing pain and cumulative morphine consumption during the early post-operative period after total knee arthroplasty. We have a number of concerns on this meta-analysis. First, preoperative analgesia was given in some trials which might produce an effect on postoperative analgesia, but not in other trials. Thus, a subgroup analysis should be carried out in the original paper. Second, a fixed effect model was used when no significant heterogeneity was found. Due to the diversity in the clinical or methodological characteristics, I prefer to pool the results using the random-effect model. For continuous outcomes, each characteristic was calculated using the weighted mean difference. Why not use the standard mean difference? Third, in the Method Section, a structured search was performed using the following search strings: (ketamine [Mesh Terms]) AND (TKA OR TKR OR total knee arthroplasty OR total knee replacement [Title/Abstract]). I think the search process is not accurate and some important papers may be missed. Fourth, in the full text focusing on discussion on postoperative pain score, opioid consumption is important. Furthermore, the duration of follow-up also varied across the studies. The authors should discuss this as a limitation in the Discussion Section. The optimal dose of ketamine is an interesting topic for further investigation, and its adverse effects should be investigated by using long-term follow-up studies.

Provenance and peer review

Invited Commentary, internally reviewed.

Ethical approval

It is not required because it is a comment.

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Conflicts of interest

There is no conflict of interest.

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Weizhong Ding, Shirong Chen*
Department of Orthopedic Surgery, The Second Affiliated Hospital, Chongqing Medical University, 400010, China
E-mail address: chensr128@sohu.com (S. Chen).

* Corresponding author.