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Remimazolam – expectations and concerns

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Editorial

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The field of anesthesiology has continuously evolved as new pharmacological agents have emerged, offering potential improvements in patient safety and recovery. One such advancement is remimazolam, a novel ultra-short-acting benzodiazepine that has garnered attention owing to its rapid onset, predictable metabolism, and presumed hemodynamic stability [1]. Remimazolam exhibits pharmacokinetic properties that are distinct from those of other benzodiazepines; it is rapidly degraded by nonspecific esterases in the liver, resulting in a faster recovery and reduced accumulation in patients with impaired organ function. Among its various advantages, hemodynamic stability is particularly notable. Compared with propofol, remimazolam has been associated with a significantly lower incidence of hypotension, making it a valuable option for patients at risk of cardiovascular instability. This characteristic may be especially beneficial for elderly or critically ill patients in whom maintaining stable blood pressure is crucial. Additionally, its anesthetic effects are rapidly reversed by flumazenil, providing an added safety margin.

Postoperative delirium (POD) is a serious neurocognitive complication that can lead to prolonged hospitalization, increased mortality, and long-term cognitive decline [2,3]. The incidence of POD varies depending on the patient population and anesthetic technique used, with elderly individuals being at a particularly high risk. A growing body of evidence has linked benzodiazepine use to an increased risk of delirium [4,5], raising concerns about whether remimazolam shares this effect. As a benzodiazepine, remimazolam exerts its sedative effects through GABA receptor modulation, a mechanism that may contribute to the pathogenesis of delirium [6]. Therefore, further research is needed to determine whether remimazolam exacerbates delirium, particularly in high-risk populations.

In the current issue of the *Korean Journal of Anesthesiology (KJA)*, a meta-analysis of randomized controlled trials conducted by Park et al. [7] assessed the effects of remimazolam on POD and cognitive function compared with that of propofol. This study included 1,295 patients across 11 trials, and no significant difference was found in the incidence of POD between the remimazolam (8.0%) and propofol (10.4%) groups. Interestingly, cognitive function, as assessed by the Mini-Mental State Examination, was better preserved in remimazolam-treated patients. Additionally, the incidence of hypotension was significantly lower with remimazolam, further supporting its potential advantage in hemodynamically unstable patients. Although these findings alleviate some concerns regarding remimazolam, the limitations of this study, including the variability in patient populations and surgical procedures, must be acknowledged. Large-scale studies with long-term cognitive follow-up are necessary to establish definitive conclusions.

Two newly published studies in this issue of the *KJA* further explore the hemody-

namic effects of remimazolam. Min et al. [8] compared remimazolam with etomidate in patients undergoing coronary artery bypass grafting, and found that remimazolam did not demonstrate non-inferiority to etomidate in preventing post-induction hypotension. Therefore, the authors suggested that further studies on optimization of remimazolam dosing strategies should be conducted. Koo et al. [9] investigated the impact of remimazolam on hemodynamic stability during cerebrovascular bypass surgery. Their findings indicated a significantly lower incidence of intraoperative hypotension, reduced vasopressor requirements, and improved blood pressure stability for patients under total intravenous anesthesia (TIVA) with remimazolam than those under balanced propofol-induced and desflurane-maintained anesthesia. These findings reinforce remimazolam's potential as a safe alternative for patients with cardiovascular risk factors. Notably, these two studies provide multidimensional analyses of the hemodynamic stability of remimazolam. While one study evaluated its efficacy as an anesthetic induction agent, the other compared its effects in TIVA versus balanced anesthesia approaches. This broader scope allows for a more nuanced understanding of its clinical utility.

The inclusion of these studies in this issue of the *KJA* provides a more comprehensive perspective on remimazolam, addressing concerns regarding its potential role in POD and deepening our understanding of its hemodynamic stability. The concurrent discussion of both the risks and benefits of remimazolam in these studies enables a balanced evaluation, guiding clinicians toward more informed anesthetic choices in diverse surgical settings.

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Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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