

Is use of glycine-containing drugs in anesthesia safe?

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To the Editor:

In this letter, we discuss the safety of generic drugs that have recently been widely used to reduce medical costs. We particularly focus on glycine, which is present in these drugs as an additive.

Glycine is a known inhibitory neurotransmitter. Since glycine is a major constituent of collagen, it is present in many foods. For example, 100 g of both skipjack tuna and soybeans contain more than 3 g of glycine.

We investigated the components of 110 perioperative drugs used in our hospital. Among them, 6 drugs, as listed in Supplemental Table 1, contained glycine. For example, a recently launched generic form of rocuronium bromide, but not Eslax[®], contains glycine.

There is concern that glycine-containing drugs may affect the central nervous system (CNS) of patients during the perioperative period, because glycine can diffuse passively from blood to brain [1]. The action of glycine on NMDA receptors (NMDARs) is more worrisome than its effect on glycine

receptors, because NMDARs can be activated by 1000 times lower concentrations of glycine (~0.1 μM) [2]. Overactivation of NMDARs may induce various CNS symptoms, such as hyperalgesia and seizures. The concentration of glycine in the CNS is tightly regulated by its cleavage system. It is, however, unknown whether the cleavage system and the amount of endogenously released glycine remain unchanged under general anesthesia.

Since the volume of glycine contained in drugs is much lower than that in foods, the possibility that they will cause serious adverse effects might be low. However, anesthesiologists should be cautious when using glycine-containing drugs, including generic ones, perioperatively.

Compliance with ethical standards

Conflict of interest The authors declare that they have no competing interests.

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