Editorial

Neuroprotection is *Always* Critical!

"O brother, you are that same thought
…… The rest is just bone and fibers"

***Rumi**, 1207-1273*

Anesthetics affects the Nervous system, especially the Central Nervous System as the main target; with neuroprotective strategies being developed shoulder to shoulder with anesthesia, at least for more than seven decades (1, 2).

Anesthetic drugs work in several ways; however, perhaps one of the most important mechanisms of the effects of anesthetics is to intensify or strengthen the synapses of the nervous system. The important point here is that, contrary to what some people think, the effects of anesthesia on the nervous system are not always irreversible. Sometimes the effects caused by anesthetic drugs, both positive and negative effects, may not be resolved and become lasting effects; Something that is especially important in babies and children, as well as in some elderly patients, that cannot be ignored (3).

The CNS cells will be encountered both the neuroprotective and neurotoxic effects of anesthetics, but this is not all the issue. The other main challenge that should be managed is the inflammatory and apoptotic effects of the perioperative events; both due to the stress of the surgical procedure and the detrimental effects of any hypoxic event (4-6).

Despite the various non-pharmacological methods, pharmaceutical methods still play a unique, sensitive and fundamental role in the perioperative care of the brain by anesthesiologists. The development of the pharmacological methods of brain protection has well paced the invention of new drugs, step by step, and even, sometimes, especially in recent years, ahead of them (4-6). That is, the primary focus was on discovering the "hypnotic, amnestic, or analgesic" effects of anesthetics in the first step, and then, their potentially beneficial or detrimental effects on the CNS were investigated. However, this process has been dramatically changed in recent years; with more efforts being made to discover molecules whose main goal is to protect the brain (7, 8).

In this issue of the JCMA, Salarian, *et al*. have demonstrated the significant neuroprotective effect of thiopental using the serum Neuron-specific enolase (NSE) level in neurocritical care patients (9). However, in another study, Jameie, *et al*. assessed the effect of Chalcone on diseased neural cells in an in-vitro Parkinson's model to figure out the neural fate issues, they used cellular markers including "P53, Caspase III Expression" and checked the "D2-like dopaminergic receptor up-regulation" (10).

The CNS-related challenges are *always* critical and essential during perioperative care; as ***Rumi*** quoted:

"*O brother, you are that same thought (of yours)*
The rest is (only) bone and fibers
If your thought is a rose, you are a rose garden
And if it is a thorn, you are fuel for the bath stove"

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