Dexmedetomidine or Clonidine: Action Expresses Priorities

The α-2 agonists as adjuncts to improve sedation, analgesia, and euphoria in anesthesia practice and partial block of acute withdrawal symptoms in chronic opioid users have been used for decades (1). α-2 agonists can produce sedation, analgesia, and euphoric effects centrally through locus ceruleus while it is postulated that the spinal mechanism is the main route for creating analgesic effects of α-2 agonists (2). Dexmedetomidine is around 8 times more selective in its alpha 2 adrenoreceptor affinity than clonidine (alpha 2: alpha1affinity in clonidine is 220: 1 while in dexmedetomidine it is 1620:1) and hence it can be used in higher doses with less α1 effect. Dexmedetomidine has more intense motor block ability and higher quality of sedation without adding the noticeable side effects (2,3).

There are a lot of comparative studies, including both clinical and cellular studies added with many systematic reviews about the effects of dexmedetomidine and clonidine as adjuvants to local anesthetics for improving the quality of the motor and sensory nerve blocks or as adjuvants for facilitating the quality of sedation and analgesia during general anesthesia or in intensive care unit patients. Moreover, the hemodynamic effects of these two medications and their effects on postoperative complications have been assessed in different studies; the more reasonable properties of dexmedetomidine during local/general anesthesia and providing a better quality of sedation with its fewer side effects at the cellular level in different studies are noticeable (4,5). The neuroprotective effects of dexmedetomidine have created new cellular and molecular windows to a challenging field with limited available solutions; discussed in this issue by Hajiesmaeili et al. (6).

Since the arrival of alpha 2 agonists in the field of anesthesia, their subgroup medications and the manner of applications have been noticed by anesthesiologists and we can say that nowadays the alpha 2 agonists have assigned a remarkable position during the routine practice.

References

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