Brain Stimulation and General Anesthesia

The use of brain stimulation either without drugs at all or with ones that are currently obsolete for the promotion of general anesthesia [1]. Furthermore, different intensities and time durations of stimulation were reported, making it difficult to compare between studies.

In the past few decades, there has been an intensive development in the techniques of neurostimulation [2], including the use for chronic pain management [3]. Although it has not been assessed for general anesthesia anymore, current data on brain stimulation suggests that low intensity electric currents may have mechanisms that could be useful as an add-on therapy in anesthesia; this supports ethical and well-designed experimental and clinical studies focusing on their anesthetic and analgesic effects.

The development of chemical anesthetics quelled the interest for brain stimulation. Currently, most anesthetic drugs are active only a short time period, after being safely metabolized or eliminated. However, in addition to the cardiovascular effects of drugs, the incidence of neuropsychological adverse events related to general anesthesia is not negligible, especially in the elderly undergoing cardiac or orthopedic surgery. It is suggested that delirium and postoperative cognitive dysfunction are more frequent after depth of brain stimulation for evaluation of the analgesic potential of this procedure.

The current knowledge related to brain stimulation in neurology, psychiatry, neuropsychology, neurophysiology, and chronic pain treatment could help in the re-evaluation of brain stimulation for a novel application. This could lead to the improvement of safety and long-term outcomes of patients undergoing general anesthesia.

References

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