

Endovascular treatment of ischemic stroke, what is behind the detrimental effects of general anesthesia?

Volume 3 Issue 2 - 2015

Opinion

In recent years there have been several publications regarding a worse clinical outcome with the use of general anesthesia compared to conscious sedation during mechanical thrombectomy.^{1,2} Given the high level of evidence for the efficacy of the endovascular treatment in acute ischemic stroke, the use of general anesthesia becomes problematic and therefore in those cases it would be reasonable to attempt the use of conscious sedation. Nonetheless, in certain scenarios, general anesthesia becomes a necessity. To provide guidance on the dilemma whether general anesthesia is detrimental, it would be important to understand the mechanisms of injury and whether the worst outcome is related exclusively to hemodynamic changes. Löwhagen Hendén et al.³ reported their experience in 108 patients, all of whom underwent endovascular treatment using general anesthesia, but those with a fall in the mean arterial blood pressure of >40% was an independent predictor of poor neurological outcome.

We do think that hypotension is deleterious for acute ischemic stroke, importantly, general anesthesia commonly causes hypotension, however; we think is important to be critical to advance the field. The fact that patients with acute ischemic stroke in which the blood pressure is reduced do worse is not novel and has been extensively reported. This notion follows physiological and observational reasoning, however, we should not assume that general anesthesia causes hypotension and that is the sole reason behind a worse outcome. If that is confirmed, efforts should focus on a more careful anesthetic use and/or tighter blood pressure control during anesthesia to avoid its deleterious consequences.

Are we overlooking other effects of general anesthesia besides hypotension? We would like to bring up the idea of other factors to consider in general anesthesia. Studies looking at the cerebral blood flow effects of anesthetics in healthy subjects found cerebral blood flow changes and those were not in association with the decline experienced in the mean arterial blood pressure. Even more, these effects were not always dose-dependent, they differed depending on the anesthetic agent utilized and the cerebral blood flow changes affected unequally different areas of the brain.⁴

A second factor to consider is the impairment of cerebral autoregulation present in patients with ischemic stroke. Those areas with impaired autoregulation could be more susceptible to anesthetics, or in a similar mode anesthetics could affect the collateral circulation.⁵

While we know hypotension is deleterious in acute stroke, there is a need to proceed with a prospective study to clarify these issues. Is it really hypotension the reason behind general anesthesia that makes stroke patients worse or is there anything else?

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Received: October 28, 2015 | **Published:** October 29, 2015

Acknowledgments

None.

Conflicts of interest

None.

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