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## Postoperative cognitive dysfunction in the aged: the collision of neuroinflammaging with perioperative neuroinflammation.

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### Abstract

The aging population is burgeoning globally and this trend presents great challenges to the current healthcare system as the growing number of aged individuals receives procedures of surgery and anesthesia. Postoperative cognitive dysfunction (POCD) is a severe postoperative neurological sequela. Advanced age is considered as an independent risk factor of POCD. Mounting evidence have shown that neuroinflammation plays an essential role in POCD. However, it remains debatable why this complication occurs highly in the aged individuals. As known, aging itself is the major common high-risk factor for age-associated disorders including diabetes, cardiovascular disease, cancer, and neurodegenerative diseases. Chronic low-grade neuroinflammation (dubbed neuroinflammaging in the present paper) is a hallmark alternation and contributes to age-related cognitive decline in the normal aging. Interestingly, several lines of findings show that the neuroinflammatory pathogenesis of POCD is age-dependent. It suggests that age-related changes, especially the neuroinflammaging, are possibly associated with the postoperative cognitive impairment. Understanding the role of neuroinflammaging in POCD is crucial to elucidate the mechanism of POCD and develop strategies to prevent or treat POCD. Here the focus of this review is on the potential role of neuroinflammaging in the mechanism of POCD. Lastly, we briefly review promising interventions for this neurological sequela.

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