

'Pleiotrophic Strategies to Prevent Surgery-induced Cognitive Decline in Normal and Vulnerable Aged Brain'.

<https://www.neurodegenerationresearch.eu/survey/%c2%91pleiotrophic-strategies-to-prevent-surgery-induced-cognitive-decline-in-normal-and-vulnerable-aged-brain%c2%92/>

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Institution

Funder

Alzheimer's Society

Contact information of fellow

Country

United Kingdom

Title of project/programme

'Pleiotrophic Strategies to Prevent Surgery-induced Cognitive Decline in Normal and Vulnerable Aged Brain'.

Source of funding information

Alzheimer's Society

Total sum awarded (Euro)

€ 296,438

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01/05/13

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3.0

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Research Abstract

The number of patients at risk of developing postoperative cognitive dysfunction (POCD) is set

to rise dramatically as over 65-yr olds are predicted to become the largest consumers of surgery. We have shown that surgery in prodromal APP23 mice accelerates Alzheimer's pathogenesis and is accompanied by aberrant cerebrovascular and microglial inflammation. Our work suggests the key to preventing the switch from self-limiting to chronic neuroinflammation will require pleiotropic interventions targeting multiple pathogenic cascades. This approach would not only limit the acute effects of systemic inflammation on the brain following surgery but also capitalize on the beneficial effects of peripheral-immune regulation to promote a protective glial phenotype and support synaptic flexibility. Utilizing in vivo imaging, cognitive testing and extensive biochemical analyses, the project will (1) determine whether orthopaedic surgery induces more persistent cerebrovascular alterations, neuroinflammatory responses and lasting cognitive deficits in aged versus adult mice (2) examine the influence of pre-existing pathology on POCD in aged mice using a high-fructose diet as a model of sporadic AD and (3) establish the efficacy of pleiotropic strategies (i) Atorvastatin + Q10, (ii) Celestrol or (iii) Tropicsetron to protect aged mice +/- pre-existing pathology from aberrant surgery-induced neuroinflammation, synaptic impairment and progressive cognitive decline.

Types:

Fellowships

Member States:

United Kingdom

Diseases:

Alzheimer's disease & other dementias

Years:

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Database Categories:

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