Title: Blood-brain barrier dysregulation in postoperative delirium

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Biography

Dr. Terrando is originally from the countryside of Torino, Italy. After high school, he moved to the U.K. reading for a dual honors degree in neuroscience and biochemistry (B.S. with honors) at Keele University. He received his Ph.D. from Imperial College London (D.I.C.) working at Chelsea and Westminster Hospital and the Kennedy Institute of Rheumatology under the mentorship of professors Mervyn Maze, Sir Marc Feldmann and Claudia Monaco. He undertook his postdoctoral training at the University of California, San Francisco where he described in Dr. Akassoglou's laboratory at the Gladstone Institute of Neurology a key role of macrophages and blood-brain barrier disruption in mediating neuroinflammation and cognitive decline after surgery. In 2012 Dr. Terrando moved to the Karolinska Institute as Assistant Professor before returning to the US and establishing his laboratory at Duke University in 2015 where is currently a tenured Associate Professor. Dr. Terrando's research is centered on surgery-induced neuroinflammation and perioperative neurocognitive disorders. His laboratory is funded by the National Institute on Aging and his mission is to define the underlying mechanisms leading to postoperative delirium and to develop safe strategies to resolve neuroinflammation in the perioperative setting.

Abstract

Every year millions of individuals undergo surgery for medically necessary conditions and are at risk for developing postoperative neurocognitive disorders (1). After a routine operation, such as orthopedic surgery, many patients experience perioperative neurocognitive disorders (PND), including acute cognitive deficits (delirium) and longer-lasting cognitive impairments, which in some cases may lead to permanent dementia. Classic features of these complications include changes in mental status, inattention, disorganized thinking, and altered consciousness, which have been overall associated with long-term morbidity and mortality, reduced quality of life and significant costs to the health care system. These conditions are especially frequent amongst older patients and are clearly associated with increased mortality, diminished quality of life, and soaring healthcare costs. The mechanisms underlying the pathophysiology of these complications are not fully understood and currently without effective therapies.

Our lab studies the pathophysiology of delirium with a strong focus on the role of neuroinflammation and innate immunity in disrupting behavior after

anesthesia and surgery (2). Using an integrated interdisciplinary and translational approach (3), we are addressing the biological complexity of this disease using clinically relevant models combined with molecular, genetic, physiological and imaging techniques (4-6). Our aims are to define the underlying mechanisms leading to memory deficits after surgery and to develop safe strategies to resolve neuroinflammation in the perioperative setting (7).

Key References

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