The 2nd International Neuroinflammation Congress and 2nd Student Festival of Neurosience

Shefa Neuroscience Research Center, Tehran, Iran, 17-19 April, 2018

The Neuroscience Journal of Shefaye Khatam

Volume 6, No. 2, Suppl 1

Oral Presentation

The Heart and the Brain: Stroke Induced Heart Damage

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Published: *17 April, 2018*

Abstract

Cardiac diseases are common post-stroke and are associated with increased morbidity and mortality. One possible mechanism of acute cardiac injury is the neurogenic myocardial damage, where the cerebral injury is disturbing the normal sympathetic and parasympathetic neuronal outflow to the heart leading to cardiac damage including myocardial infarctions. The exact mechanism is not completely understood and the major objective of this project is to characterize the molecular phenotype of the neurogenic myocardial damage post-stroke. Our data demonstrate acute myocardial damage in wild-type mice after right or left-sided transient middle cerebral artery occlusion or photothrombosis. We analyzed the stroke outcome with a neurologic score and the stroke volume. For the myocardial damage, we measured catecholamines levels, the heart damage marker Troponin, and performed electrocardiograms in mice. Using different inbred wild-type mice strains (C57BL/6 J/N; Balb/c) for purposes of comparison, the stroke induced heart damage evolved highly divers. While some strains were protected against stroke and myocardial damage and had a much better survival and stroke outcome, others showed an increased morbidity and mortality. For our mechanistic analysis of the neurogenic myocardial damage, we compared different strains and stroke methods to get the right model with more heart damage, but without an increased mortality.

Keywords: Stroke, Cardiac Diseases, Neuroinflammation

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