Injury to the nervous system: A look into the ER

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Injury to the central or peripheral nervous systems leads to the loss of cognitive and/or sensorimotor capabilities that still lack an effective treatment. Although injury to the nervous system involves multiple and complex molecular factors, alteration to protein homeostasis is emerging as a relevant pathological mechanism. In particular, chronic endoplasmic reticulum (ER) stress is proposed as a possible driver of neuronal dysfunction in conditions such as spinal cord injury, stroke and damage to peripheral nerves. Importantly, manipulation of the unfolded protein response (UPR), a homeostatic pathway engaged by ER stress, has proved effective in improving cognitive and motor recovery after nervous system injury. Here we provide an overview on recent findings depicting a functional role of the UPR to the functional recovery after injury in the peripheral and central nervous systems. This article is part of a Special Issue entitled SI:ER stress.