Interferon regulatory factor 3

Interferon regulatory factor 3 (IRF3) is a member of IRF family which plays a significant role in the innate immune response, apoptosis, and oncogenesis. Mounting evidence has demonstrated that IRF3 was involved in central nervous system disease such as cerebral ischemic injury through promoting neuronal apoptosis. However, it remains unclear about the underlying mechanisms of IRF3 upon neuronal apoptosis following intracerebral hemorrhage (ICH).

In a study, Tao et al established an adult rat ICH model by injecting autologous whole blood into the right basal ganglia and evaluated their neurological deficits by behavioral tests. IRF3 protein level was up-regulated adjacent to the hematoma following ICH when compared with the sham brain cortex by western blot and immunohistochemistry. Immunofluorescent staining indicated IRF3 was mainly localized in neurons, a few in astrocytes. In addition, we also detected that IRF3 co-localized with active caspase-3 which is a neuronal apoptosis marker. Furthermore, in vitro study, knocking down IRF3 by using IRF3 interference in primary cortical neurons reduced the expression of active caspase-3 and Bax while increased Bcl-2. In conclusion, we speculated that IRF3 might exert pro-apoptotic function in neurons after ICH [1].

1)
Tao X, Xie L, Duan C, Dai S, Ren J, Yan Y, Shen J, Lu H, Ge J. Up-Regulation of Interferon Regulatory Factor 3 Involves in Neuronal Apoptosis After Intracerebral Hemorrhage in Adult Rats. Neurochem Res. 2016 Jul 22. [Epub ahead of print] PubMed PMID: 27447882.