عنوان مقاله:

Respiratory syncytial virus infection of microglia exacerbates SH-SY5Y neuronal cell injury by inducing the secretion of inflammatory cytokines: A Transwell in vitro study

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خلاصه مقاله:

Objective(s): To elucidate the mechanism of Respiratory Syncytial Virus (RSV) infection and central neuronal disease and to understand the role of microglia in neuronal injuries during RSV infection.Materials and Methods: The effects of RSV and the cytokines produced by RSV-infected CHME-5 microglial cells on SY5Y neuronal cells were evaluated based on an in vitro Transwell coculture system. Five treatment groups were established in this study, including the

normal control SY5Y group, RSV+SY5Y infection group, (cytokine+CHME-5)+SY5Y Transwell group, (RSV+CHME-5)+SY5Y Transwell group, and (RSV+cytokine+CHME-5)+SY5Y Transwell group. The morphological and physical alterations in SY5Y cells and their synapses were analyzed by confocal microscopy. The mRNA and protein expression levels of TLR3/RIG-I, as well as the expression of Hv1, in microglia were measured by qRT-PCR and Western blot assays. In addition, the apoptosis ratio of neuronal cells was determined by flow cytometry.Results: RSV infection activated the protein expression of Hv1 protein in microglia in vitro ($p < 0.05$), induced morphological changes in SY5Y cells, lengthened synapses (73.36±0.12 μm vs 38.10±0.11 μm), simultaneously activated TLR3 and RIG-I protein expression ($p < 0.05$), upregulated the secretion of the inflammatory cytokines TNF-α, IL-6, and IL-8 ($p < 0.01$), and increased the apoptosis rate of SY5Y cells ($p < 0.01$).Conclusion: The results demonstrate that RSV infection of microglia can induce SY5Y neuronal cell injury and stimulate apoptosis through inflammatory cytokine release.

کلمات کلیدی:

Cytokines, In Vitro Techniques, Microglia, Neurons, Respiratory syncytial virus infections