

[1]罗文英,吴显劲,彭亮,等.肠道病毒71型诱导人脑微血管内皮细胞的凋亡[J].第三军医大学学报,2014,36(13):1359-1364.

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肠道病毒71型诱导人脑微血管内皮细胞的凋亡



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Title: Enterovirus 71 induces apoptosis in human brain microvascular endothelial cells

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关键词: 肠道病毒71型; 人脑微血管内皮细胞; 凋亡; DJ-1; 细胞因子

Keywords: enterovirus 71; human brain microvascular endothelial cells; apoptosis; DJ-1; cytokines

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摘要: 目的 探讨肠道病毒71型(enterovirus 71, EV71)诱导人脑微血管内皮细胞(human brain microvascular endothelial cells, HBMECs)的凋亡及其相关机制。 方法 流式细胞仪检测EV71能否诱导HBMECs的凋亡; 免疫荧光方法观察EV71诱导HBMECs线粒体膜电位的改变情况; 免疫印迹检测DJ-1蛋白在EV71感染HBMECs不同时间点的表达; 酶联免疫方法检测EV71感染HBMECs不同时间点TNF- α 、IL-10、IL-4的分泌情况。 结果 EV71感染HBMECs不同时间点的HBMECs的早期凋亡数与晚期凋亡、坏死细胞数具有显著差异($P<0.01$); 随着感染时间延长, HBMECs早期凋亡数与晚期凋亡、坏死细胞数均有所增加, 但以晚期凋亡、坏死细胞数增加更明显($P<0.01$)。与对照组相比, EV71感染HBMECs 8 h线粒体膜电位明显降低($P<0.01$); EV71感染HBMECs 16、24 h, DJ-1表达增强($P<0.05$)。EV71感染HBMECs不同时间点TNF- α 、IL-10、IL-4的浓度具有明显差异($P<0.01$)。 结论 EV71能诱导HBMECs的凋亡以及改变线粒体膜通透性, EV71还能诱导HBMECs中DJ-1的表达改变和TNF- α 、IL-10、IL-4的分泌改变。

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Abstract: **Objective** To investigate whether enterovirus 71 (EV71) induces the apoptosis in human brain microvascular endothelial cells (HBMECs) and the possible underlying mechanism. **Methods** The apoptosis of HBMECs was detected by flow cytometry after EV71 infection. The mitochondrial membrane potential of the infected HBMECs was detected by immunofluorescence staining. The expression of DJ-1 in the infected HBMECs was observed by Western blot analysis. Concentration of TNF- α , IL-4 and IL-10 in the supernatant of HBMECs was detected by ELISA. **Results** EV71 induced apoptosis in HBMECs in a time-dependent fashion ($P<0.01$). With the elapse of infection time, the numbers of terminal apoptosis cells and necrotic cells were increased significantly, compared with the cells at the early apoptosis ($P<0.01$). EV71 infected HBMECs resulted in significant decreased in the mitochondrial membrane potential in 8 h after infection than the control ($P<0.01$). Higher expression of DJ-1 protein was observed in 16 and 24 h after EV71 infection when compared with the control ($P<0.05$). Significant differences were found in the supernatant concentrations of TNF- α , IL-4, and IL-10 in EV71 infected HBMECs for different time periods ($P<0.01$). **Conclusion** EV71 induces the apoptosis and loss of $\Delta\psi_m$ of HBMECs, and the expression of DJ-1 and the releases of TNF- α , IL-4, and IL-10 in HBMECs.

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